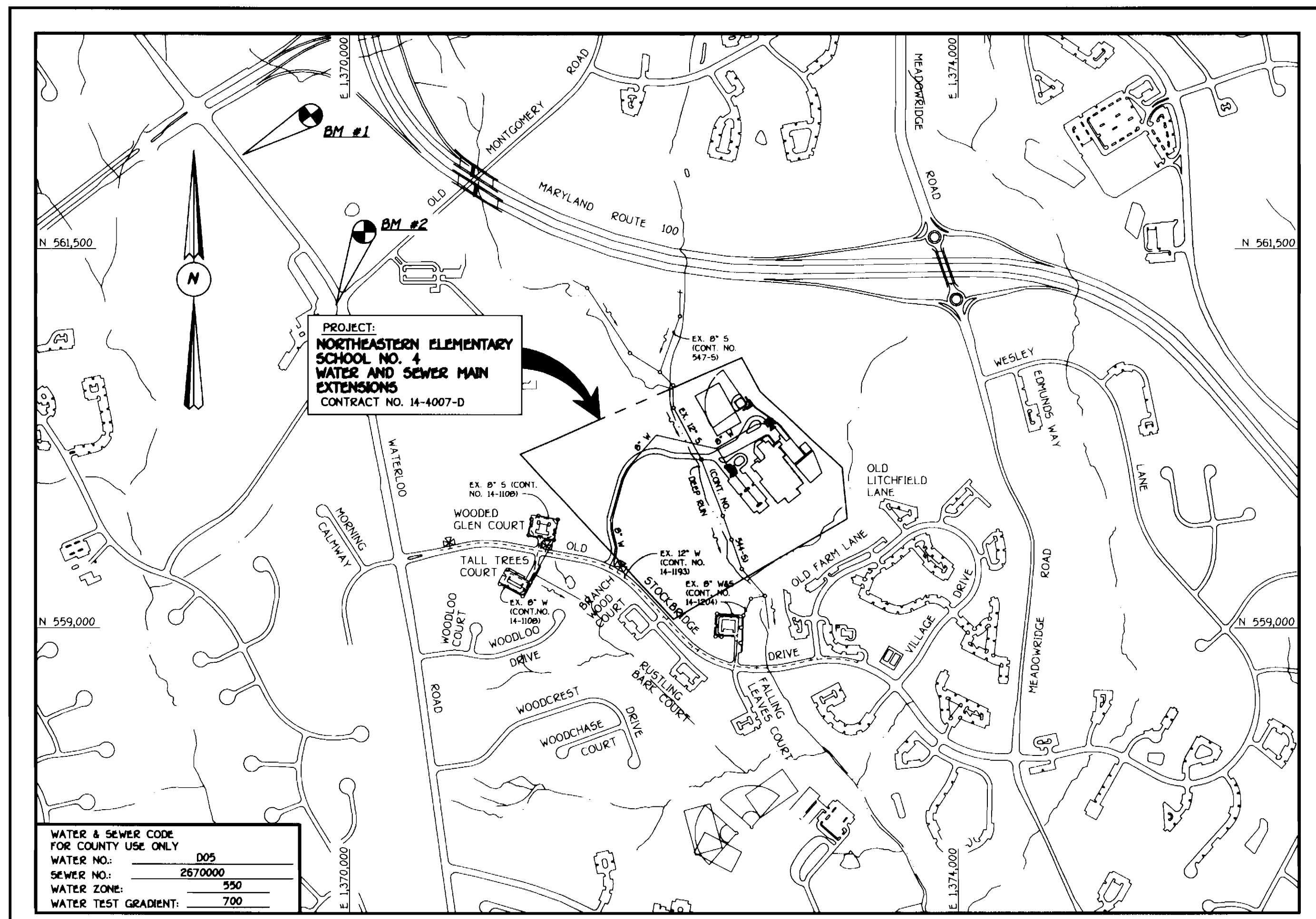


QUANTITIES				
ITEM	ESTIMATED	QUANTITIES	AS-BUILT	SUPPLIER
			TYPE	
8" WATER	1,950.57 LF.	1,660.66 LF	DIP CLASS 52	GRIFFIN PIPE PROD.
6" WATER	27 LF.	27.26 LF	DIP CLASS 52	GRIFFIN PIPE PROD.
FIRE HYDRANTS	2 EACH	2 EA		MUELLER CO. BELAIR RD. SUPPLY
12" X 8" TAPPING SLEEVE & VALVE	1 EACH	1 EA	STAINLESS STEEL RESILIENT SEAT	DRESSER MUELLER CO.
8" X 8" TEE	1 EACH	1 EA	DIP, MS	BELAIR RD. SUPPLY U.S. PIPE AND FOUNDRY
8" X 6" TEE	2 EACH	2 EA	DIP, MS	"
8" VALVES	4 EACH	4 EA	RESILIENT SEAT	BELAIR RD. SUPPLY MUELLER CO.
6" VALVES	2 EACH	2 EA	"	"
1/8" H.B.	3 EACH	3 EA	DIP, MS	BELAIR RD. SUPPLY U.S. PIPE AND FOUNDRY
1/16" H.B.	5 EACH	5 EA	DIP, MS	"
1/32" H.B.	4 EACH	3 EA	DIP, MS	"
AIR RELEASE MANHOLES	1 EACH	1 EA	PRECAST CONCRETE	ATLANTIC CONCRETE PROD.
4" BLOW-OFF	1 EACH	1 EA	9" 9" 6"	BELAIR RD. SUPPLY MUELLER CO.
8" PLUG & BUTTRESS	2 EACH	1 EA	DIP, MS	BELAIR RD. SUPPLY U.S. PIPE AND FOUNDRY
8" X 4" TEE	1 EACH	1 EA	DIP, MS	"
4" VALVE	1 EACH	1 EA	RESILIENT SEAT	BELAIR RD. SUPPLY MUELLER CO.
2" AIR RELEASE VALVE	1 EACH	1 EA	AIR RELEASE 145	AT&T

NAME OF UTILITY CONTRACTOR: ANGELOZZI BROS, INC.  
SURVEY & DRAFTING DIVISION AS-BUILT DATE:



WATER & SEWER CODE FOR COUNTY USE ONLY	005
WATER NO.	2570000
SEWER NO.	550
WATER ZONE:	700
WATER TEST GRADIENT:	

TYPE OF BUILDING:	PUBLIC ELEMENTARY SCHOOL
NUMBER OF LOTS & PARCELS:	1
NO. OF WATER HOUSE CONNECTIONS:	1
NO. OF SEWER HOUSE CONNECTIONS:	N/A
DRAINAGE AREA:	PATAPSCO
TREATMENT PLANT:	PATAPSCO WASTEWATER TREATMENT PLANT, CITY OF BALTIMORE

VICINITY MAP  
SCALE: 1"=600'

GENERAL NOTES

- APPROXIMATE LOCATION OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SUPPLY. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
- ALL HORIZONTAL CONTROLS ARE BASED ON MARYLAND STATE COORDINATES, NAD 83.
- ALL VERTICAL CONTROLS ARE BASED ON NAVD 29.
- ALL PIPE ELEVATIONS ARE INVERT ELEVATIONS.
- CLEAR ALL UTILITIES BY A MINIMUM OF 12" VERTICAL. CLEAR ALL POLES BY 5'-0" HORIZONTAL MINIMUM.
- FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (1991 AMENDMENTS) THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB SITE.
- WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATION OF THE TEST PIT. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE VERIFIED BY THE CONTRACTOR TO HIS OWN SATISFACTION. ANY DAMAGE TO THE EXISTING FACILITIES DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
  - AT&T . . . . . 1-800-526-2000
  - BGE (CONTRACTOR SERVICES) . . . . . 410-850-4620
  - BGE (UNDERGROUND DAMAGE CONTROL) . . . . . 410-787-9096
  - BUREAU OF UTILITIES, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS . . . . . 410-313-4900
  - BELL ATLANTIC MARYLAND, INC. . . . . 1-800-821-9900
  - COLONIAL PIPELINE CO. . . . . 410-795-1390
  - MISS UTILITY . . . . . 1-800-257-7777
  - STATE HIGHWAY ADMINISTRATION . . . . . 410-531-9533
- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
- CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE CONSTRUCTION OF THE MAIN.
- ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
- T.B. DENOTES TEST BORING.
- MANHOLES SHOWN WITH 12" AND 16" WALLS ARE FOR BRICK MANHOLES ONLY.
- MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERTIGHT FRAME AND COVERS, STANDARD DETAIL G5.52.
- WHERE WATERTIGHT MANHOLE FRAME AND COVER IS USED, SET TOP OF FRAME 1'-6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE PLANS OR SPECIFICATIONS.
- HOUSE(S) WITH THE SYMBOL "C.N.S." INDICATES THAT THE CELLAR CANNOT BE SERVED.
- ALL WATER HOUSE CONNECTIONS SHALL BE FOR INSIDE METER SETTING, UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS.
- MANHOLES LOCATED WITHIN THE PROPOSED ROADWAY SHALL HAVE STANDARD HEAVY TRAFFIC MANHOLE FRAMES AND COVERS, STANDARD DETAIL G5.51.
- WATER MAINS AND WATER HOUSE CONNECTION LINES MUST BE PLACED AS TO HAVE ONE (1) FOOT SEPARATION FROM THE SEWER MAIN OR SEWER HOUSE CONNECTION AS THEY PASS ABOUT IT.
- ALL WATER MAINS SHALL BE DIP. CLASS 52 UNLESS OTHERWISE NOTED.
- TOPS OF ALL WATER MAINS TO HAVE A MINIMUM OF 3'-1/2" COVER UNLESS OTHERWISE NOTED.
- VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
- ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
- FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATION SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE RESTRAINED AND BUTTRESSED WITH CONCRETE IN ACCORDANCE WITH THE STANDARD DETAILS (W111 AND W213). SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND 1005 OF THE STANDARD SPECIFICATIONS.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER MAIN SYSTEM.
- ALL DIP. FITTINGS SHALL BE IN ACCORDANCE WITH THE AWWA SPECIFICATIONS C-153; DUCTILE IRON COMPACT FITTINGS, 3-INCH THROUGH 12-INCH FOR WATER AND OTHER LIQUIDS.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, (410) 313-2450 AT LEAST FIVE (5) WORKING DAYS BEFORE ANY OPEN CUT OF ANY COUNTY ROAD OR BORING/JACKING OPERATION IN COUNTY ROADS FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.14(a) OF THE HOWARD COUNTY CODE.
- ALL FILL AREAS ARE TO BE BROUGHT TO THE PROPOSED GRADE AND COMPACTED TO 95% STANDARD PROCTOR DENSITY PRIOR TO THE INSTALLATION OF ANY UTILITIES.

DEVELOPER'S CERTIFICATION

"I/WE HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT THE DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

Signature of Developer: *[Signature]* DATE: 3/13/02

ENGINEER'S CERTIFICATION

"I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

Signature of Engineer: *[Signature]* DATE: 03/13/02

REVIEWED FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

Signature: *[Signature]* DATE: 4/8/02  
U.S.D. NATURAL RESOURCES CONSERVATION SERVICE

THIS DEVELOPMENT IS APPROVED FOR EROSION AND SEDIMENT CONTROL BY HOWARD SOIL CONSERVATION DISTRICT.

APPROVED: *[Signature]* DATE: 4/8/02  
HOWARD SOIL CONSERVATION DISTRICT

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 219 OF THE HOWARD COUNTY DESIGN MANUAL & STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL IN DEVELOPING AREAS AND AS SHOWN ON SOP 02-36 AS REFERENCED ON THESE PLANS.

Signature of Developer: *[Signature]* DATE: 3/13/02

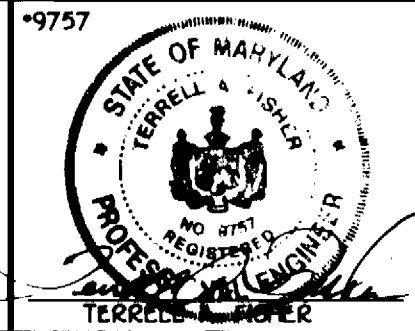
CONTRACT No. 14-4007-D  
**NORTHEASTERN ELEMENTARY SCHOOL NO. 4**  
WATER AND SEWER MAIN EXTENSIONS  
HOWARD COUNTY, MARYLAND

BENCHMARK INFORMATION	
B.M. #1 - HOWARD COUNTY CONTROL STATION 37A2	N 562120.845 E 1369300.204 ELEVATION = 403.656
B.M. #2 - HOWARD COUNTY CONTROL STATION 37A3	N 56130.798 E 1369913.218 ELEVATION = 395.625

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
Signature: *[Signature]* DATE: 3-27-02  
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND  
Signature: *[Signature]* DATE: 4/10/02  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERS, CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 10772 BALTIMORE NATIONAL PIKE  
ELLCOTT CITY, MARYLAND 21114  
(410) 461-2999



DESIGNED BY:	M.D.T.	
DRAWN BY:	M.D.T.	
CHECKED BY:	P.W.K.	
DATE:	JUNE, 2002	
BY:	KCI	AS-BUILT DATA
NO.:		
REVISION:		

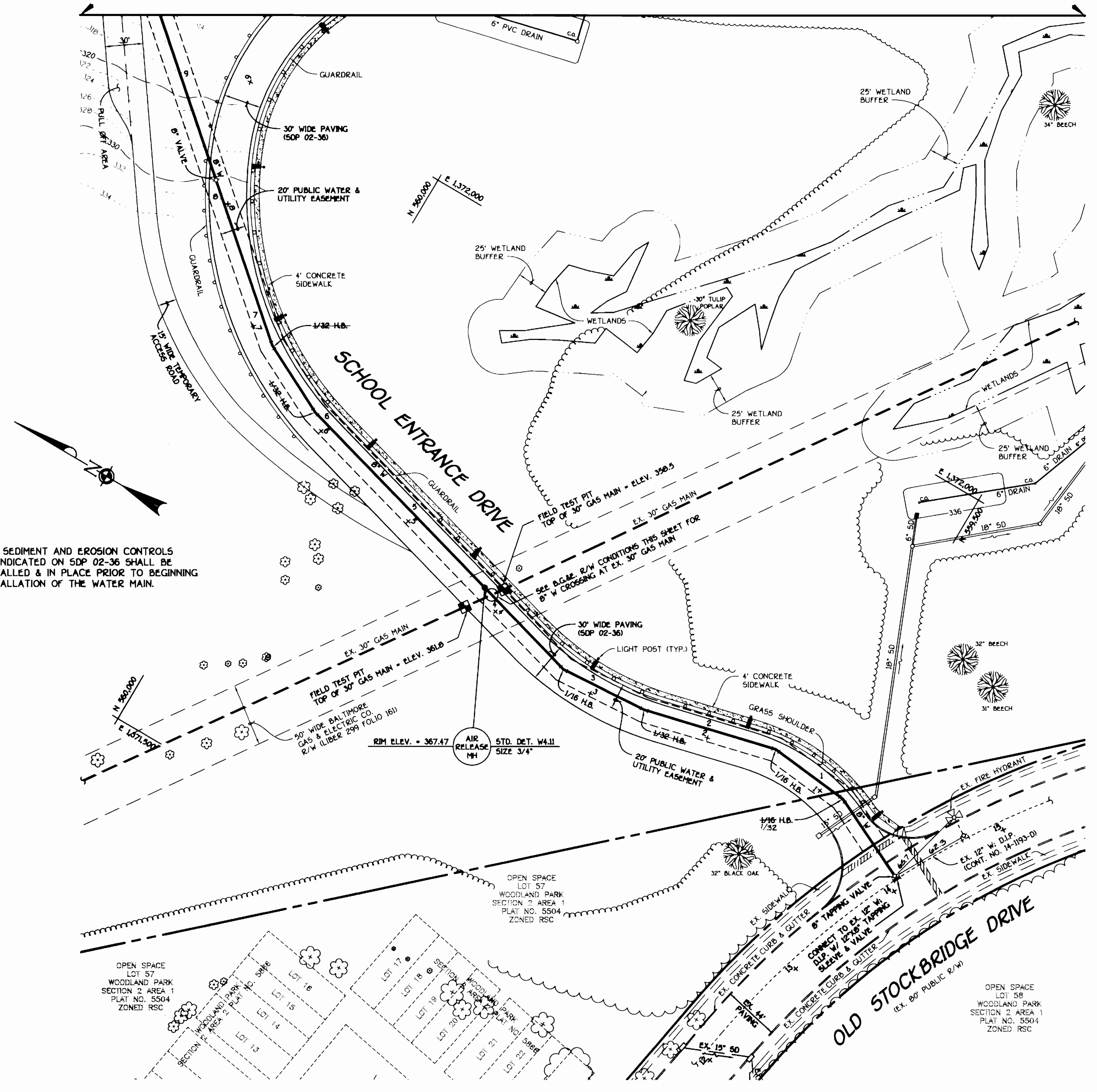
WATER & SEWER MAINS TITLE SHEET	
600' SCALE MAP NO. 37	BLOCK NO. B & 9
F.C.C. WORK ORDER NO. 40357	
FILE NAME:	40357.FINAL.WATER.MAIN.SHT.1

NORTHEASTERN ELEMENTARY SCHOOL NO.4  
WATER & SEWER MAIN EXTENSIONS  
CONTRACT NO. 14-4007-D  
SECOND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 1 of 7

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MATCH LINE SEE SHEET 3



NOTE: ALL SEDIMENT AND EROSION CONTROLS AS INDICATED ON SDP 02-36 SHALL BE INSTALLED & IN PLACE PRIOR TO BEGINNING INSTALLATION OF THE WATER MAIN.

PLAN  
SCALE: 1" = 50'

WATER MAIN TABULATION CHART			
W.M. STATION	APPURTENANCE	NORTHING	EASTING
8" WATER MAIN OLD STOCKBRIDGE DRIVE TO NORTHEASTERN ELEMENTARY SCHOOL, NO. 4			
0+00.00	12" X 6" TAPPING SLEEVE	559404.82	1371708.56
0+03.00	6" TAPPING VALVE	559404.53	1371707.87
0+77.02	1/16 H.B.	559471.37	1371735.66
1+43.32	1/16 H.B.	559537.31	1371746.56
2+52.86	1/32 H.B.	559643.64	1371720.15
3+24.52	1/16 H.B.	559715.09	1371715.02
4+14.91	AIR RELEASE MANHOLE	559802.24	1371733.01
6+09.52	1/32 H.B.	559989.87	1371790.66
6+72.52	1/32 H.B.	560046.16	1371818.91
8+12.00	6" VALVE	560152.02	1371909.76
9+72.52	1/8 H.B.	560273.82	1372014.31
9+82.52	1/32 H.B.	560274.05	1372024.31
8" WATER MAIN TO FIRE HYDRANT WM STA. 13+82.76			
12+08.84	4" BLOW-OFF	560223.56	1372244.92
13+76.76	1/8 H.B.	560186.09	1372408.61
13+82.76	6" X 6" TEE	560189.16	1372413.77
13+85.76	6" VALVE	560190.89	1372416.35
16+81.92	1/16 H.B.	560341.84	1372671.04
17+21.46	1/16 H.B.	560346.83	1372709.95
17+47.20	1/8 H.B.	560344.81	1372735.38
17+64.36	6" X 6" TEE	560331.47	1372746.18
17+67.36	6" VALVE	560329.14	1372748.07
17+74.36	6" PLUG & BUTTRESS	560323.70	1372752.48
0+00.00	6" X 6" TEE	560189.16	1372413.77
0+03.00	6" VALVE	560186.56	1372415.30
1+76.21	6" X 6" TEE	560037.82	1372503.70
1+76.21	6" VALVE	560039.15	1372506.28
1+76.21	FIRE HYDRANT	560040.88	1372508.86
1+76.21	6" PLUG & BUTTRESS (THRU END OF TEE)	560039.04	1372505.23

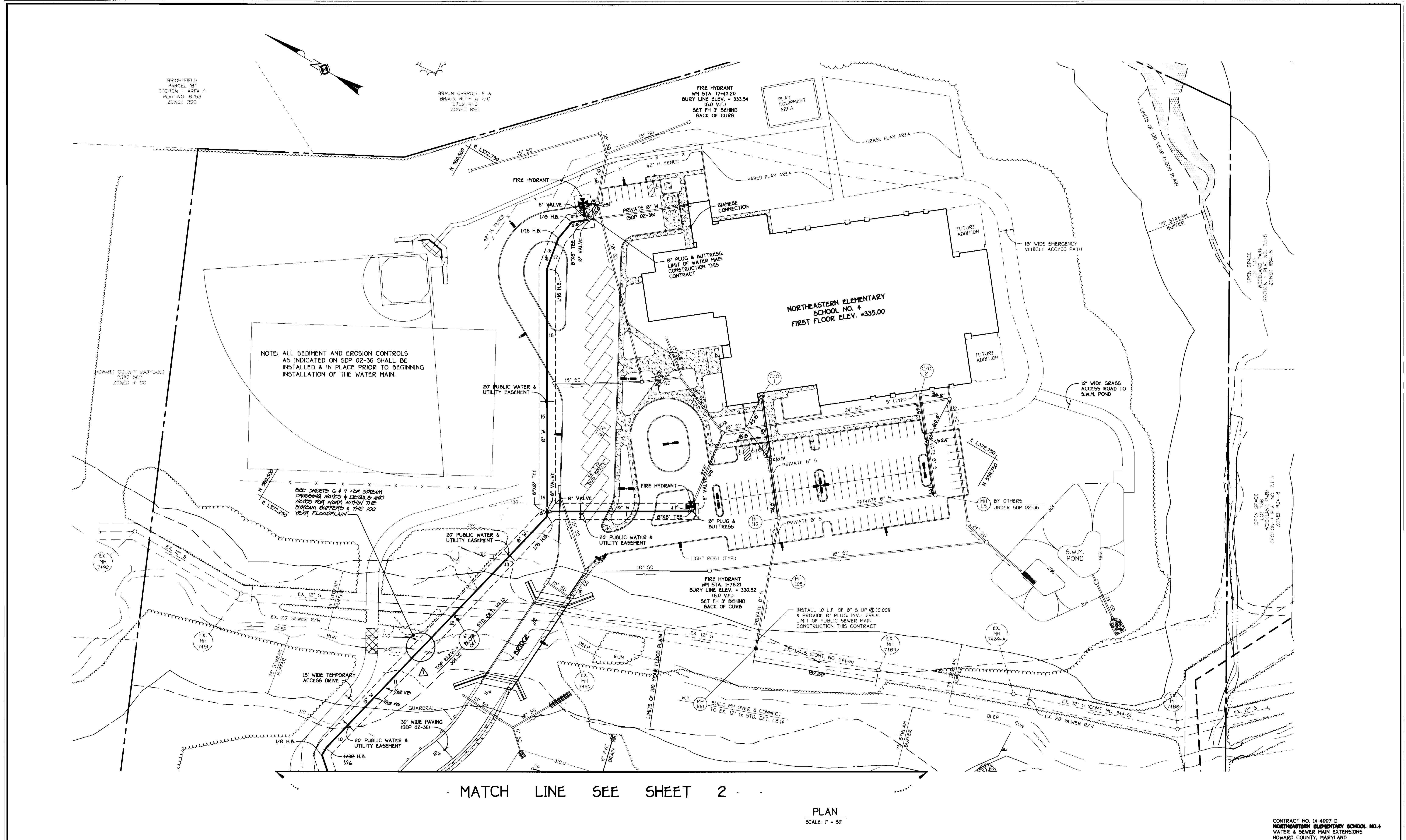
**B.G.&E. RIGHT-OF-WAY CONDITIONS**  
B.G.&E. JOB NO. 5E 01-011

- A. ACCESS TO AND FROM THE GRANTOR'S FACILITIES MUST BE MAINTAINED AT ALL TIMES. IF EXISTING ACCESS TO AND ALONG THE GRANTOR'S FEES SIMPLE AND/OR EASEMENT RIGHT-OF-WAY OR ACCESS TO THE GRANTOR'S FACILITIES IS DENIED DUE TO THE GRANTEE'S CONSTRUCTION, THE GRANTEE WILL PROVIDE TEMPORARY ACCESS DURING CONSTRUCTION AND PERMANENT ACCESS THEREAFTER OR REIMBURSE THE GRANTOR FOR ACCESS OBTAINED BY THE GRANTOR AFTER APPROVAL BY THE GRANTEE OF SAID COST (AND WHERE APPLICABLE, THE APPROVAL OF OTHER GOVERNMENTAL AGENCIES), WHERE ANY ACCESS ROAD IS RELOCATED AND/OR DISTURBED, THE ROAD SHALL BE THOROUGHLY COMPACTED AND RESTORED TO A CONDITION EQUAL TO OR BETTER THAN ITS PRESENT CONDITION.
- B. HAND EXCAVATION SHALL BE REQUIRED WHEN WORKING WITHIN FIVE FEET OF ANY OF THE GRANTOR'S UNDERGROUND FACILITIES.
- C. CLEARANCES BETWEEN THE GRANTOR'S UNDERGROUND FACILITIES SHALL BE MAINTAINED IN CONFORMITY WITH ACCEPTED GOOD ENGINEERING PRACTICE TO AVOID DAMAGE DURING CONSTRUCTION AND PROVIDE CLEARANCE FOR FUTURE MAINTENANCE. A MINIMUM HORIZONTAL CLEARANCE OF FIVE (5) FEET AND A VERTICAL CLEARANCE OF TWELVE (12) INCHES MUST BE MAINTAINED WITH UNDERGROUND FACILITIES, UNLESS GREATER CLEARANCES OR SPECIAL PROTECTIVE MEASURES ARE STIPULATED.
- D. NO BLASTING WILL BE PERMITTED WITHIN THE GRANTOR'S RIGHT-OF-WAY AND/OR WITHIN FORTY FEET OF THE GRANTOR'S FACILITIES WITHOUT PRIOR APPROVAL AND UNDER ARRANGEMENTS SATISFACTORY TO THE GRANTOR. THE GRANTOR SHALL BE FULLY REIMBURSED IN THE EVENT ANY DAMAGES OCCUR AS THE RESULT OF SUCH OPERATIONS. THE GRANTOR MUST BE NOTIFIED AS PROVIDED FOR IN SECTION 13 AT LEAST THREE WORKING DAYS IN ADVANCE OF ANY BLASTING IN THE VICINITY OF THE GRANTOR'S RIGHT-OF-WAY IN ORDER THAT IT MAY ARRANGE TO HAVE A REPRESENTATIVE ON THE JOB SITE.
- E. THREE (3) WORKING DAYS NOTICE MUST BE GIVEN BEFORE THE START OF THE WORK OR CONSTRUCTION AND OR ANY FUTURE MAINTENANCE WHICH WILL AFFECT THE GRANTOR'S FEES SIMPLE OR EASEMENT RIGHT-OF-WAY OR THE GRANTOR'S FACILITIES BY TELEPHONING 410-391-4457 BETWEEN THE HOURS OF 7:00 A.M. AND 3:30 P.M., SO THAT ARRANGEMENTS CAN BE MADE TO SEND GRANTOR'S REPRESENTATIVE TO THE SITE OF SUCH WORK. WHEN THE GRANTEE'S AGENTS, SERVANTS, EMPLOYEES AND/OR CONTRACTORS CALL FOR THE NOTIFICATION PLEASE BE SURE TO REFER TO THIS JOB NUMBER: 5E 01-011.

CONTRACT NO. 14-4007-D  
NORTHEASTERN ELEMENTARY SCHOOL NO. 4  
WATER & SEWER MAIN EXTENSIONS  
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND 3-27-02 DATE	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND 4/10/02 DATE	FISHER, COLLINS & CARTER, INC. CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS CENTRAL SQUARE OFFICE PARK - 10725 BALTIMORE NATIONAL PIKE ELLEOTT CITY, MARYLAND 20628 (410) 461-2995		DESIGNED BY: M.D.T.	WATER MAINS PLAN VIEW	NORTHEASTERN ELEMENTARY SCHOOL NO. 4 WATER & SEWER MAIN EXTENSIONS CONTRACT NO. 14-4007-D SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 2 OF 7
				DRAWN BY: M.D.T.			





NOTE: ALL SEDIMENT AND EROSION CONTROLS AS INDICATED ON SDP 02-36 SHALL BE INSTALLED & IN PLACE PRIOR TO BEGINNING INSTALLATION OF THE WATER MAIN.

SEE SHEETS G & 7 FOR STREAM CROSSING NOTES & DETAILS AND NOTES FOR WORK WITHIN THE STREAM BUFFERS & THE 100 YEAR FLOODPLAIN

MATCH LINE SEE SHEET 2

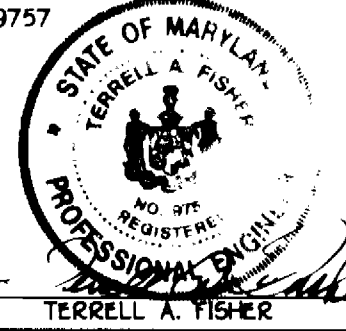
PLAN  
SCALE: 1" = 50'

CONTRACT NO. 14-4007-D  
NORTHEASTERN ELEMENTARY SCHOOL NO. 4  
WATER & SEWER MAIN EXTENSIONS  
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
3-27-22

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND  
4/10/22

FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
1401 461 2955

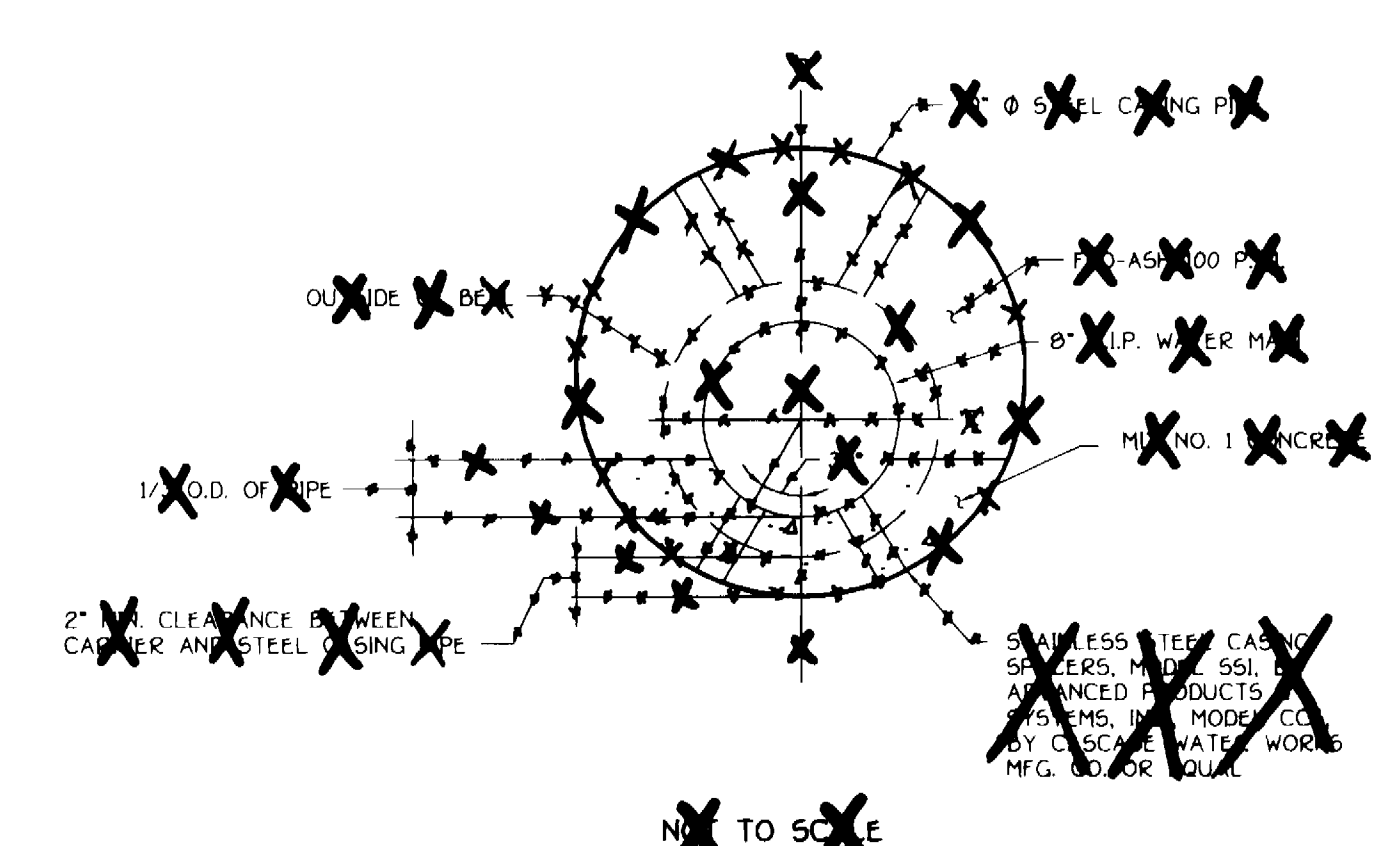
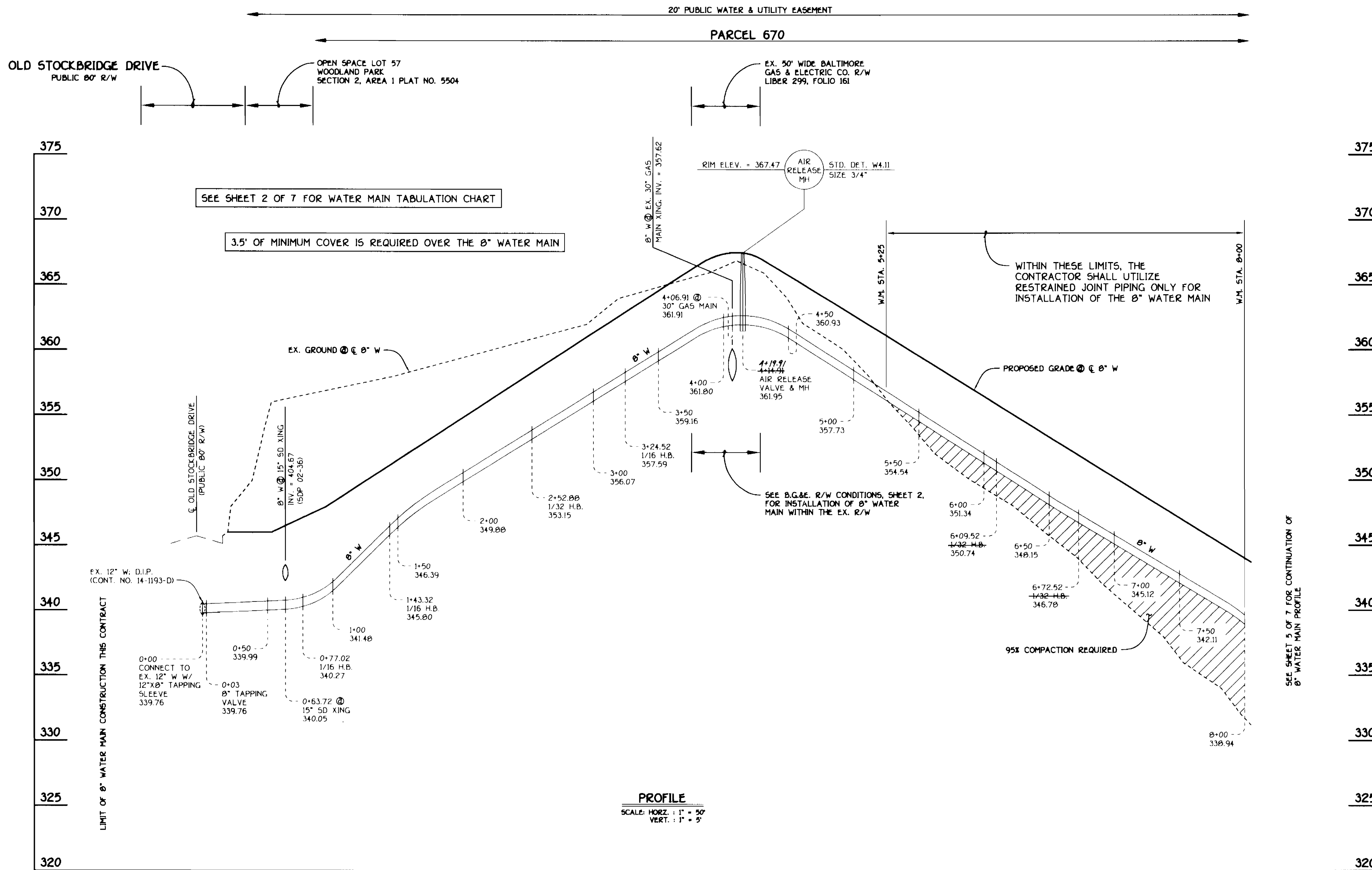


DESIGNED BY:	M.D.T.
DRAWN BY:	M.D.T.
CHECKED BY:	P.W.K.
DATE:	JUNE, 2002
BY NO.	8/6/02

WATER & SEWER MAINS  
PLAN VIEW  
600' SCALE MAP NO. 37 BLOCK NO. B & 9  
F.C.C. WORK ORDER NO. 40357  
FILE NAME: 40357.FINAL.WATER MAINS.PLAN.SHT.3

NORTHEASTERN ELEMENTARY SCHOOL NO. 4  
WATER & SEWER MAIN EXTENSIONS  
CONTRACT NO. 14-4007-D  
SECOND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN  
SHEET  
3 of 7



- NOTES**
- PROVIDE 8" THICK BRICK BUILDING AT EACH END OF CASINGS SHOWN ON DRAWING. COUNTY STANDARD DETAIL G-10 PROVIDE A JOINT IN THE MAIN WITHIN 2' OF THE END OF THE CASING.
  - 30" STEEL CASING PIPE, WALL THICKNESS, A.W. C-203 OR 210, IN 10' LENGTHS. JOINTS TO BE WELDED FULL CIRCUMFERENCE.
  - FILL ANNULAR SPACE WITH FLO-ASH PROVIDING CASING SPACES TO PREVENT FLOATION OF PIPE WHILE FILLING THE ANNULAR SPACE WITH FLO-ASH. PROVIDE 2" RAINS THROUGH BRICK BUSHHEAD WHILE FILLING WITH FLO-ASH TO PREVENT FLOATION OF WATER IN CASING.
- BORE & JACK DETAIL**

**8" WATER MAIN: OLD STOCKBRIDGE DRIVE TO NORTHEASTERN ELEMENTARY SCHOOL NO. 4**

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Ruth A. Bennett* 3-27-02  
DATE

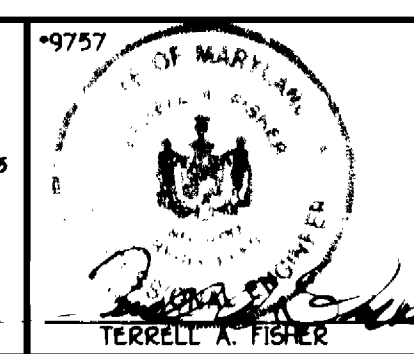
DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*Michael J. Bennett* 4/10/02  
DATE

FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS

CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
ELLEOTT CITY, MARYLAND 21042  
4101 461 - 2855

*Terrill A. Fisher*  
DATE



DESIGNED BY:	M.D.T.
DRAWN BY:	M.D.T.
CHECKED BY:	P.W.K.
DATE:	JUNE, 2002
BY:	NO.
M.D.T.	Delete Bore & Jack Detail
DATE:	8/6/02
REVISION:	

WATER MAIN PROFILES

600' SCALE MAP NO. 37 BLOCK NO. 8 & 9

F.C.C. WORK ORDER NO. 40357

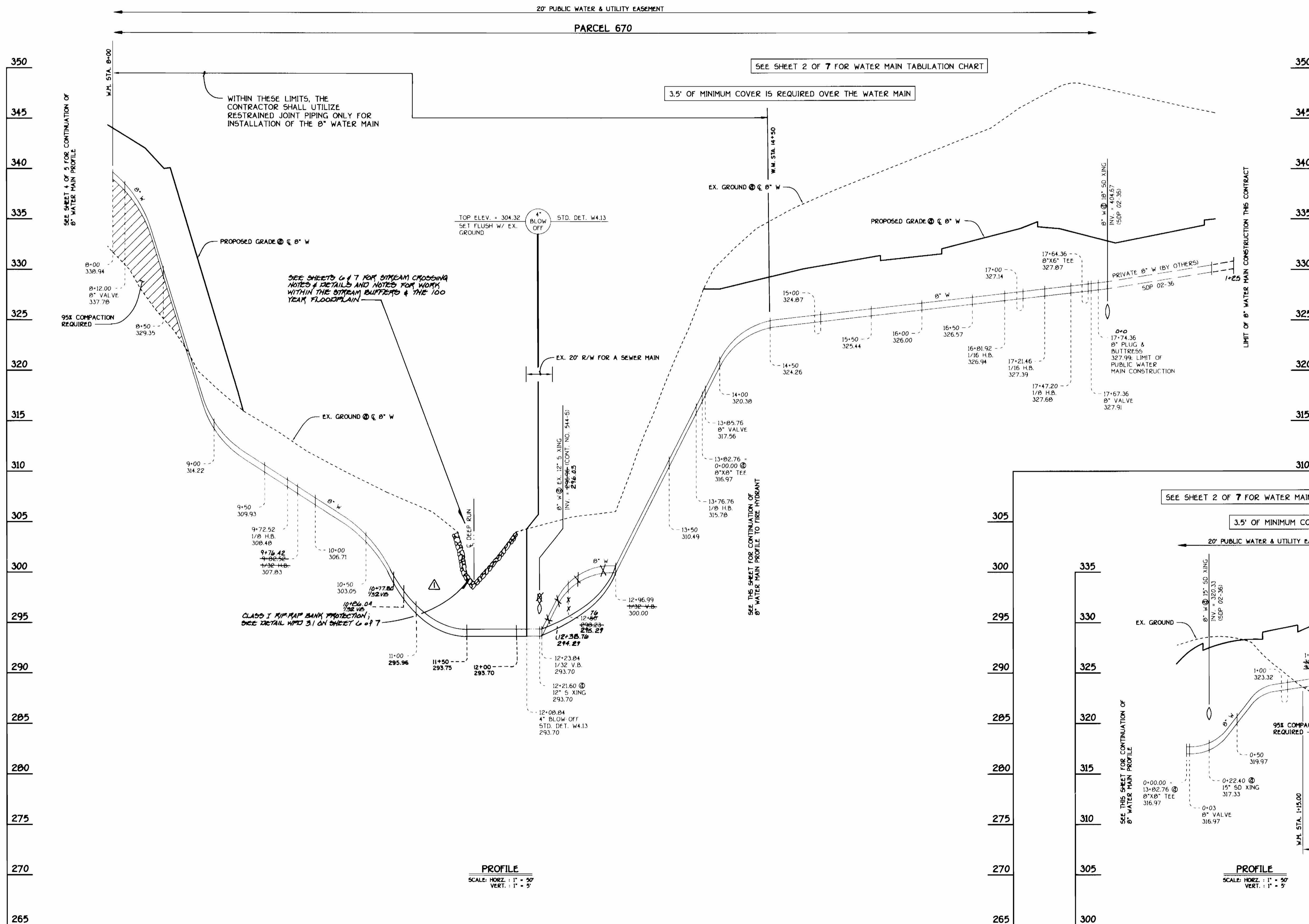
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NORTHEASTERN ELEMENTARY SCHOOL NO. 4  
WATER & SEWER MAIN EXTENSIONS

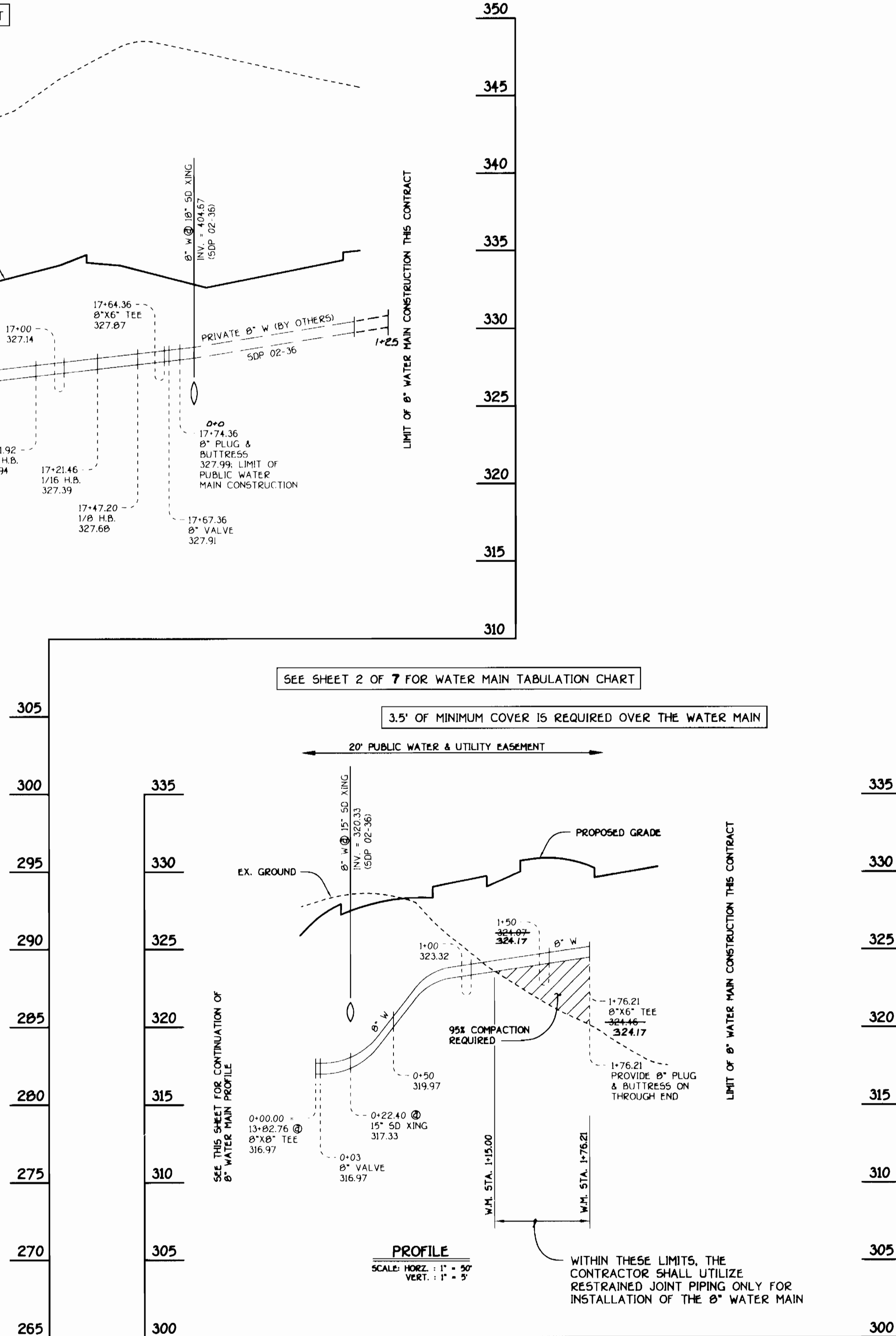
CONTRACT NO. 14-4007-D  
SECOND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 4 OF 7



**8" WATER MAIN: OLD STOCKBRIDGE DRIVE TO NORTHEASTERN ELEMENTARY SCHOOL NO. 4**

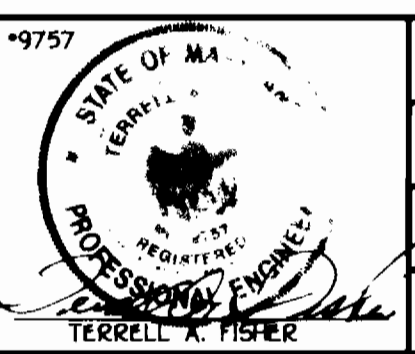


**8" WATER MAIN TO FIRE HYDRANT; WM STA. 13+02.76**

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
3-27-02  
DATE

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND  
4/10/02  
DATE

FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 10772 BALTIMORE NATIONAL PIKE  
FLEETCOTT CITY, MARYLAND 21747  
410.46.2955



DESIGNED BY: M.D.T.  
DRAWN BY: M.D.T.  
CHECKED BY: P.W.K.  
DATE: JUNE, 2002  
BY: NO. REVISION

WATER MAINS PROFILES  
600' SCALE MAP NO. 37 BLOCK NO. 8 & 9  
F.C.C. WORK ORDER NO. 40357  
FILE NAME: 40357 FINAL WATER MAIN PROFILES SH1 5

NORTHEASTERN ELEMENTARY SCHOOL NO. 4  
WATER & SEWER MAIN EXTENSIONS  
CONTRACT NO. 14-4007-D  
SECOND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 5 OF 7

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**BEST MANAGEMENT PRACTICES FOR WORK IN STREAM BUFFERS & 100 YEAR FLOODPLAIN**

**STREAM CROSSING NOTES:**

1. DELAY ALL WORK IN THE STREAM UNTIL THE START OF A 5-DAY CLEAR-WEATHER FORECAST. COMPLETE ALL WORK IN THE STREAM WITHIN THESE 5-DAYS.
2. FOLLOW THE SEQUENCE OF CONSTRUCTION WATERWAY CROSSING FOR ALL WORK IN THE STREAM. (SEE THIS SHEET)
3. FOR THE STREAM CROSSING THE CONTRACTOR SHALL USE THE FOLLOWING CONSTRUCTION DETAILS:

DETAIL	DESCRIPTION	SIZE
WPD 5.1	UTILITY CROSSING	N/A
WPD 2.3	SANDBAG/STONE FLOW DIVERSION	24"
WPD 3.1	RIPRAP OUTLET PROTECTION	CLASS 1
SCS DETAIL 20B	SUMP PIT	N/A
FB	FILTER BAG	N/A

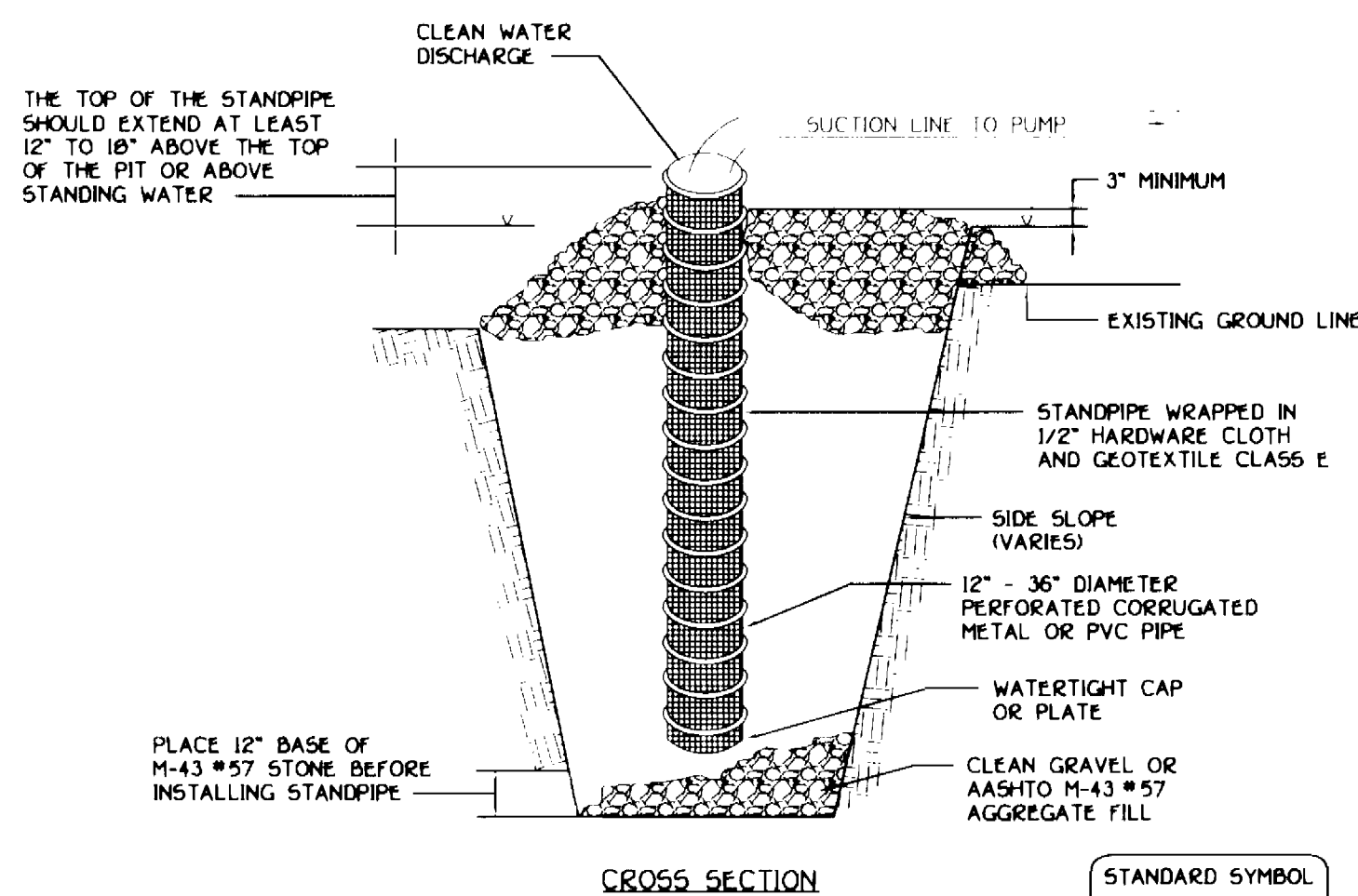
4. SEE THIS SHEET FOR BEST MANAGEMENT PRACTICES FOR WORK IN NONTIDAL WETLANDS AND WETLAND BUFFERS.

**SEQUENCE OF CONSTRUCTION: WATERWAY CROSSING**

1. OBTAIN THE REQUIRED PERMITS/APPROVALS FROM THE APPROPRIATE AGENCIES.
2. NOTIFY THE COMPLIANCE DIVISION OF THE MARYLAND WATER MANAGEMENT ADMINISTRATION AT LEAST FIVE (5) DAYS PRIOR TO THE INITIATION OF CONSTRUCTION AND FIVE (5) DAYS AFTER WORK ENDS. THE BALTIMORE OFFICE PHONE NUMBER IS (410) 631-3510.
3. CONTRACTOR SHALL NOTE THE TIME OF YEAR RESTRICTIONS ON WORK WITHIN THE STREAM SHOWN ON THE PERMITS.
4. INSTALL THE SANDBAG/STONE DIVERSION, THE FILTER BAG AND THE SUMP PIT. THE SEDIMENT CONTROL INSPECTOR MUST APPROVE ALL CONTROLS BEFORE COMMENCING WORK.
5. INSTALL PIPELINE AND THE RIPRAP BANK PROTECTION ACCORDING TO THE DRAWINGS AND SPECIFICATIONS DURING A TIME OF FAVORABLE WEATHER FORECAST.
6. WITH MINIMAL DISTURBANCE REMOVE DIVERSION CONTROLS AND FILTER BAG AND STABILIZE ALL DISTURBED AREAS.

1. CONDUCT ALL CONSTRUCTION ACTIVITIES SO AS NOT TO CAUSE OR CONTRIBUTE TO A DEGRADATION OF WATER QUALITY AS DETERMINED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
2. CONDUCT THE REGULATED CONSTRUCTION ACTIVITY SO AS NOT TO RESTRICT OR IMPIDE THE FOLLOWING:
  - a. MOVEMENT OF WILDLIFE INDIGENOUS TO THE STREAM BUFFERS & 100 YEAR FLOODPLAIN OR ADJACENT WATER.
  - b. PASSAGE OF NORMAL OR EXPECTED HIGH WATER FLOWS.
3. STREAMS ARE CLASSIFIED AS USE 1 WATERS; NO IN-STREAM WORK SHALL BE CONDUCTED DURING THE PERIOD MARCH 1st THRU JUNE 15th.
4. MAINTAIN THE HYDROLOGIC REGIME OF ALL ADJACENT AREAS.
5. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN THE STREAM BUFFERS OR 100 YEAR FLOODPLAIN.
6. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE STREAM BUFFERS.
7. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF ANY DELETERIOUS SUBSTANCES.
8. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE STREAM BUFFERS & 100 YEAR FLOODPLAIN.
9. RECTIFY ANY STREAM BUFFER TEMPORARILY IMPACTED BY ANY CONSTRUCTION OR MAINTENANCE ACTIVITY.
10. ALL STABILIZATION IN THE STREAM BUFFERS & 100 YEAR FLOODPLAIN SHALL BE OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYEGRASS (LOLLIUM MULTICOLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (Avena sp.), AND OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE DIVISION. KENTUCKY 33 FESCUE SHALL NOT BE UTILIZED IN THE STREAM BUFFERS. THE AREA SHOULD BE SEED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
11. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS OF THE STREAM BUFFERS & 100 YEAR FLOODPLAIN THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS.
12. STORMWATER RUNOFF FROM ADJACENT IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE STREAM.

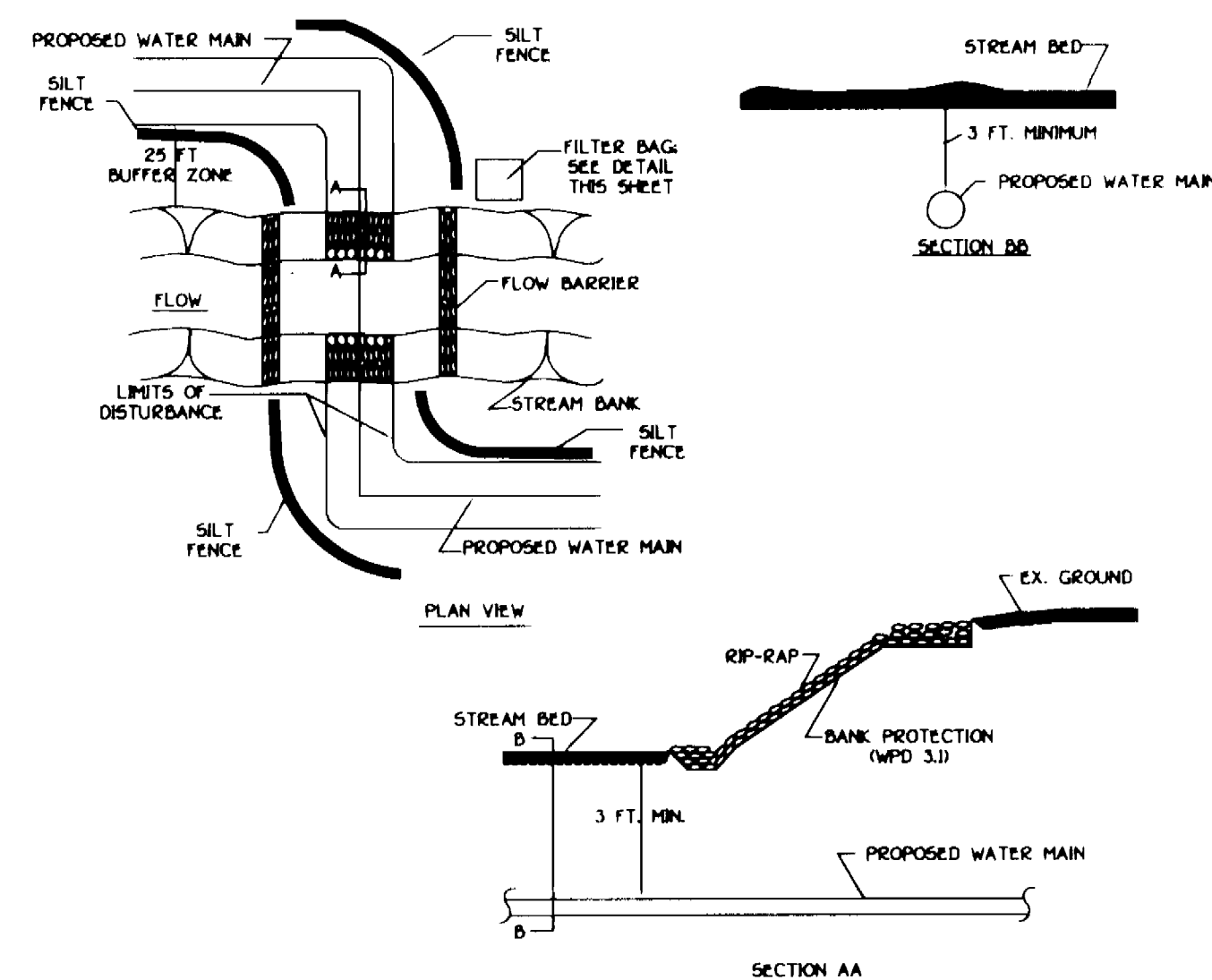
**DETAIL CROSSING WPD 5.1**



1. PIT DIMENSIONS ARE VARIABLE, WITH THE MINIMUM DIAMETER BEING 2 TIMES THE STANDPIPE DIAMETER.
2. THE STANDPIPE SHOULD BE CONSTRUCTED BY PERFORATING A 12" TO 24" DIAMETER CORRUGATED OR PVC PIPE, THEN WRAPPING WITH 1/2" HARDWARE CLOTH AND GEOTEXTILE CLASS E. THE PERFORATIONS SHALL BE 1/2" X 6" SLITS OR 1" DIAMETER HOLES.
3. A BASE OR FILTER MATERIAL CONSISTING OF CLEAN GRAVEL OR #57 STONE SHOULD BE PLACED IN THE PIT TO A DEPTH OF 12". AFTER INSTALLING THE STANDPIPE, THE PIT SURROUNDING THE STANDPIPE SHOULD THEN BE BACKFILLED WITH THE SAME FILTER MATERIAL.
4. THE STANDPIPE SHOULD EXTEND 12" TO 18" ABOVE THE LIP OF THE PIT OR THE RISER CREST ELEVATION (BASIN DEWATERING ONLY) AND THE FILTER MATERIAL SHOULD EXTEND 3" MINIMUM ABOVE THE ANTICIPATED STANDING WATER ELEVATION.

**DETAIL 20B - SUMP PIT**

NO SCALE

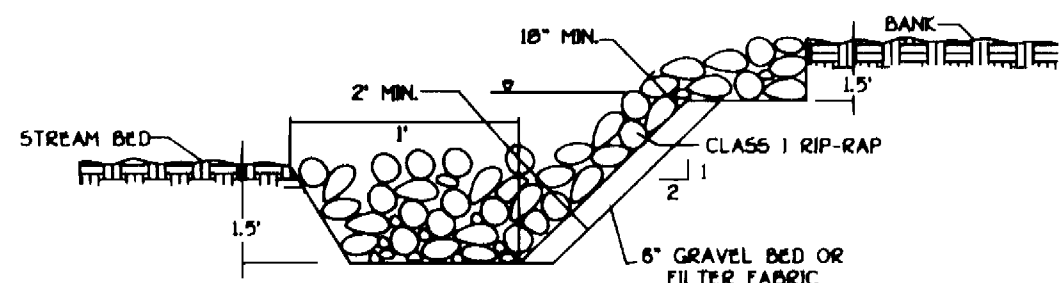


- I. DESCRIPTION
 

THIS WORK SHALL CONSIST OF INSTALLING EROSION CONTROL DEVICES IN & ADJACENT TO TEMPORARY STREAM CONSTRUCTION SUCH AS UTILITY CROSSINGS.
- II. CONSTRUCTION REQUIREMENTS
  1. ALL EROSION & SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS THE FIRST ORDER OF WORK.
  2. THE CONTRACTOR SHALL INSURE THAT A CONTINUOUS PERMEABLE CONTROL BARRIER IS IN PLACE SO AS TO MINIMIZE POLLUTANTS ENTERING THE WATER.
  3. EXCAVATED TOPSOIL & SUBSOIL SHALL BE KEPT SEPARATE & REPLACED IN THEIR NATURAL ORDER.
  4. ALL EXCAVATED MATERIALS SHALL BE PLACED ON THE UPLAND SIDE OF THE EXCAVATION.
  5. ALL CONSTRUCTION SHALL TAKE PLACE DURING STREAM LOW FLOWS. THE LENGTH OF CONSTRUCTION TIME SHALL BE LIMITED TO A MAXIMUM OF 5 DAYS FOR EACH CROSSING.
  6. ALL UTILITY CROSSINGS SHALL BE PLACED AT LEAST THREE FEET BENEATH THE STREAM BED UNLESS AN ALTERNATIVE SECTION IS SPECIFICALLY APPROVED BY THE ADMINISTRATION.
  7. THE CONTRACTOR MAY ELECT TO CONSTRUCT THE UTILITY CROSSING IN TWO STAGES. IN THIS CASE A WRA APPROVED FLOW BARRIER MAY BE CONSTRUCTED TO KEEP THE CONSTRUCTION AREA DRY.
  8. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED IN ACCORDANCE WITH AN APPROVED SEDIMENT & EROSION CONTROL PLAN & THE INSPECTION AUTHORITY APPROVES THEIR REMOVAL.

**UTILITY CROSSING DETAIL; WPD 5.1**

NO SCALE



**DESCRIPTION**

1. THIS WORK SHALL CONSIST OF PROTECTING SLOPES & CHANNELS FROM EROSION COVERINGS OF STONE IN ACCORDANCE WITH THE PLANS & SPECIFICATIONS SHOWN ON THIS DRAWING.

**II. MATERIAL SPECIFICATIONS**

1. BEDDING:
  - A. BANK RUN GRAVEL SHALL MEET THE FOLLOWING REQUIREMENTS:

LESS THAN	U.S. STANDARD SIEVE SIZE
100	2 1/2 IN.
85-100	1 IN.
60-100	1/2 IN.
35-70	NO. 10
20-50	NO. 40
3-20	NO. 200

2. GEOTEXTILE FILTER FABRIC SHALL MEET THE FOLLOWING REQUIREMENTS:

TENSILE STRENGTH	200 LBS.
BURST STRENGTH	350 LBS.
PUNCTURE STRENGTH	70 LBS.
PERMEABILITY	.02 CM/SEC.
ELONGATION AT FAILURE	30%
HIMPING LAP LENGTH	24 IN.

**III. CONSTRUCTION REQUIREMENTS**

1. THE CONTRACTOR SHALL INSTALL ALL SEDIMENT & EROSION CONTROL DEVICES AS A FIRST ORDER OF BUSINESS.
2. PROVISIONS MUST BE MADE TO ANCHOR THE RIP-RAP AT THE STREAM BED SO AS TO PROVIDE PROTECTION AGAINST UNDERMINING. IF THIS CANNOT BE ACCOMPLISHED BY EXTENDING THE TOE TRENCH AS INDICATED IN CROSS SECTION, AN ALTERNATIVE METHOD OF PROTECTION MUST RECEIVE PRIOR WRITTEN APPROVAL OF THE ADMINISTRATION.
3. EXCAVATION FOR RIP-RAP SHALL BE MADE IN REASONABLY CLOSE CONFORMITY WITH THE EXISTING STREAM SLOPE & BED.
4. A FILTER BEDDING IS REQUIRED UNDER ALL RIP-RAP. BEDDING MATERIAL SHALL CONSIST OF EITHER A BANK RUN GRAVEL OR A GEOTEXTILE FILTER FABRIC MEETING THE SPECIFICATIONS OF II. 1.B ABOVE.
5. THE PLACEMENT OF RIP-RAP SHALL BEGIN WITH THE TOE. THE LARGER STONES SHALL BE PLACED IN THE TOE AND ALONG THE OUTSIDE EDGES OF THE LIMITS OF THE SLOPE & CHANNEL PROTECTION. THE RIP-RAP SHALL BE PLACED WITH SUITABLE EQUIPMENT IN SUCH A MANNER AS TO PRODUCE A REASONABLY GRADED MASS OF STONES WITH ZERO DROP HEIGHT. THE PLACING OF STONES THAT CAUSE EXTENSIVE SEGREGATION IS NOT ALLOWED.
6. ANY EXCAVATION VOIDS EXISTING ALONG THE EDGES OF THE COMPLETED SLOPE & CHANNEL PROTECTION SHALL BE BACKFILLED.
7. ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED IN ACCORDANCE WITH AN APPROVED SEDIMENT & EROSION CONTROL PLAN.

**RIPRAP STREAM BANK PROTECTION DETAIL; WPD 3.1**

NO SCALE

CONTRACT NO. 14-4007-D  
NORTHEASTERN ELEMENTARY SCHOOL NO.4  
WATER & SEWER MAIN EXTENSIONS  
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERING, CONSULTANTS & LAND SURVEYORS  
CENTENNIAL SQUARE OFFICE PARK 30277 BALTIMORE NATIONAL PPK  
ELLSWOOD CITY, MARYLAND 21046  
(410) 451-7999

49757

DESIGNED BY : P.W.K.  
DRAWN BY : M.D.T.  
CHECKED BY : P.W.K.  
DATE : JULY, 2002

BY	NO.	REVISION	DATE

STREAM CROSSING & SEDIMENT CONTROL NOTES AND DETAILS

600' SCALE MAP NO. 37 BLOCK NO. 8 & 9

F.C.C. WORK ORDER NO. 40357

FILE NAME : 40357 FINAL WATER MAIN NOTES/DETAILS

NORTHEASTERN ELEMENTARY SCHOOL NO.4  
WATER & SEWER MAIN EXTENSIONS

CONTRACT NO. 14-4007-D  
SECOND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 6 OF 7

CHIEF, BUREAU OF UTILITIES DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

TERRELL A. FISHER

SECTION 20 :  
STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

**DEFINITION**  
Using vegetation as cover for barren soil to protect it from forces that cause erosion.

Vegetative stabilization specifications are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and run-off to downstream areas, and improving wildlife habitats and visual resources.

**CONDITIONS WHERE PRACTICE APPLIES**  
This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration (up to one year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary soil stockpiles, cleared areas and other areas at final grade, former stockpile and staging areas, etc. and for Permanent Seeding are lawns, dunes, cut and fill slopes and other areas at final grade, former stockpile and staging areas, etc.

**EFFECTS ON WATER QUALITY AND QUANTITY**  
Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Vegetation over time, will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth. Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control devices must remain in place during grading, seedbed preparation, seeding, mulching and vegetative establishment to prevent three quatrtes of sediment and associated chemicals and nutrients from washing into surface waters.

- SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS**
1. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
  2. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
  3. Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis.
  4. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warranty of the producer.
  5. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted which contains at least 50% total oxide calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 90-100% will pass through a #20 mesh sieve.
  6. Incorporate lime and fertilizer into the top 3-5" of soil by dicing or other suitable means.

7. **Seeded Preparation**
  1. Seeded preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or compacted. The surface shall be left in the rougher condition. Sloped areas greater than 3:1 should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
  2. Apply fertilizer and lime as prescribed on the plans.
  3. Incorporate lime and fertilizer into the top 3-5" of soil by dicing or other suitable means.
8. **Permanent Seeding**
  1. Minimum soil conditions required for permanent vegetative establishment:
    - a. Soil shall be between 6.0 and 7.0.
    - b. Soluble salts shall be less than 500 parts per million (ppm).
    - c. The soil shall contain less than 40% clay, but enough fine grained material to provide the capacity to hold a moderate amount of moisture. An exception is if loess or other special soils are to be planted, then a sandy soil (30% silt plus clay) would be acceptable.
    - d. Soil shall contain 1.5% minimum organic matter by weight.
    - e. Soil must contain sufficient pore space to permit adequate root penetration.
    - f. If these conditions cannot be met by soil on site, sodding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
  2. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3-5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
  3. Apply soil amendments as per soil test or as included on the plans.
  4. Mix soil amendments into the top 3-5" of topsoil by dicing or other suitable means. Lawn areas should be rolled to smooth the surface, remove large objects like stones and branches, and ready the area for seed and application. Where site conditions will not permit normal seeded preparation, loosen surface soil by digging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1-3" of soil should be loose and friable. Seeded loosening may not be necessary on newly disturbed areas.

9. **Seed Specifications**
  1. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to testing by a recognized laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on the job.
  2. Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.
  3. Inoculant: The inoculant for treating the seed mixtures shall be of the same culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when the seed mixture is very important to keep inoculant as cool as possible until used. Temperatures above 75°-80° F. can weaken bacteria and make the inoculant less effective.

10. **Methods of Seeding**
  1. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer) broadcast or drop seeding to a cultivated surface.
    - a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogen maximum of 100 lbs. per acre total of soluble nitrogen; P2O5 phosphate 200 lbs/acre; K2O potash 200 lbs/acre.
    - b. Lime: use only ground agricultural limestone, 4 to 3 tons per acre may be applied by hydroseeding. Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
    - c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
  2. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
    - a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 205 or 206. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.
    - b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
  3. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil. Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seeded must be firm after planting.
    - a. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

11. **Mulch Specifications (in order of preference)**
  1. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonable bright in color and shall not be moldy, much decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.
  2. Wood Cellulose Fiber Mulch (WCFM)
    - a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
    - b. WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniform spread slurry.
    - c. WCFM, including dye, shall contain no germs or growth inhibiting factors.
    - d. WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
    - e. WCFM shall contain no elements or compounds at concentration levels that will be phytotoxic.
    - f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., gel range of 4.0 to 6.5, ash content of 1.6% maximum and water holding capacity of 90% minimum.

12. **Mulching Seeded Areas** Mulch shall be applied to all seeded areas immediately after seeding.
  1. If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
  2. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.
  3. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.
13. **Securing Straw Mulch (Mulch Anchoring)** Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods listed by preference, depending upon size of area and erosion hazard:
  1. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface to a depth of 12 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping areas, this practice should be used on the contour if possible.
  2. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
  3. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and crest of banks. The remainder of area should be applied uniform after binder application. Synthetic binders such as Acrylic (D.R. Agro-Tac), DCA-73 (Petrolco), Terra Tac (Terra Tac, Inc.) or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
  4. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

TEMPORARY SEEDING NOTES

**SEEDING PREPARATION**  
LOOSEN UPPER THREE INCHES OF SOIL BY RAZING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

**SOIL AMENDMENTS**  
APPLY 800 LBS. PER ACRE 10-10-10 FERTILIZER OR LBS./1,000 SQ.FT.

**SEEDING**  
FOR THE PERIODS MARCH 1 THROUGH APRIL 30, AND AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 15 BUSSELS PER ACRE OF ANNUAL RYE (32 LBS./ACRE) OF WEEPING LOVEGRASS (27 LBS./1,000 SQ.FT.) FOR THE PERIOD NOVEMBER 15 THRU FEBRUARY 28. PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOIL.

**MULCHING**  
APPLY 1.5 TO 2 TONS PER ACRE (70 TO 90 LBS./1,000 SQ.FT.) OF UNROTTED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHORING TOOL OR 200 GALLONS PER ACRE (5 GALLON/SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS ON SLOPES 6 FEET OR HIGHER, USE 5# GALLONS PER ACRE (5 GALLON/SQ.FT.) FOR ANCHORING.

REFER TO THE 1996 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.

PERMANENT SEEDING NOTES

**SEEDING PREPARATION**  
LOOSEN UPPER THREE INCHES OF SOIL BY RAZING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING.

**SOIL AMENDMENTS**  
APPLY TWO TONS PER ACRE DOLOMITE LIMESTONE (52 LBS./1,000 SQ.FT.) AND 600 LBS. PER ACRE 0-20-20 FERTILIZER (18 LBS./1,000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 38-0-0 UREA/AMMONIUM FERTILIZER (4 LBS./1,000 SQ.FT.) AND 400 LBS. PER ACRE (1/2 LBS./1,000 SQ.FT.) OF 10-20-20 FERTILIZER.

**SEEDING**  
FOR THE PERIODS MARCH 1 THROUGH APRIL 30, AND AUGUST 1 THROUGH OCTOBER 15, SEED WITH 100 LBS. PER ACRE (2.3 LBS./1,000 SQ.FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THROUGH JULY 31, SEED WITH 60 LBS./ACRE (1.4 LBS./1,000 SQ.FT.) OF KENTUCKY 31 TALL FESCUE AND 2 LBS. PER ACRE (0.05 LBS./1,000 SQ.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 15 THROUGH FEBRUARY 28, PROTECT SITE BY OPTION (1) - TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OPTION (2) - USE 500-0-0 (5) SEED WITH 100 LBS./ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH TWO TONS/ACRE WELL ANCHORED STRAW. ALL SLOPES SHOULD BE HYDROSEEDING.

**MULCHING**  
APPLY 1.5 TO 2 TONS PER ACRE (90 TO 140 LBS./1,000 SQ.FT.) OF UNROTTED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING 200 GALLONS PER ACRE (5 GALLON/SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS ON SLOPES 6 FEET OR HIGHER, USE 5# GALLONS PER ACRE (5 GALLON/SQ.FT.) FOR ANCHORING.

**MAINTENANCE**  
INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

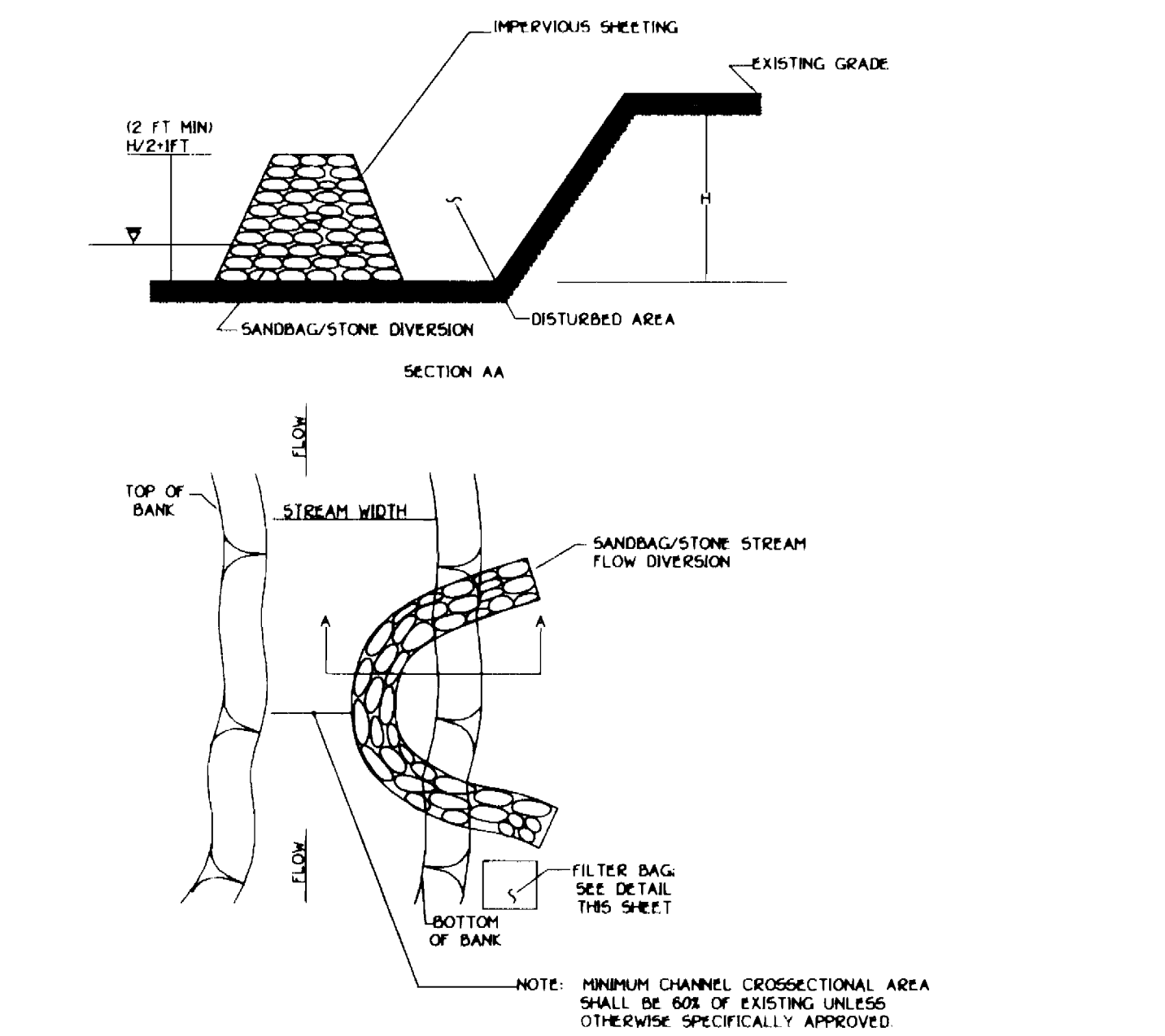
SEDIMENT CONTROL NOTES

1. A minimum of 48 hours Notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division Prior to the Start of Any Construction (313-1059).
2. All Vegetative and Structural Practices Are to be Installed According to the Provisions of This Plan and Are to be in Accordance with the Provisions of This Plan and Are to be in Conformance with the Most Current Maryland Standards and Specifications for Soil Erosion and Sediment Control and Erosion Therapy.
3. Following Initial Soil Disturbance Or Re-Disturbance, Permanent Or Temporary Stabilization Shall be Completed Within: A) 7 Calendar Days For All Perimeter Sediment Control Structures, Dikes, Perimeter Slopes And All Slopes Steeper Than 3:1, B) 14 Days As To All Other Disturbed Or Graded Areas On The Project Site. As To All Other Disturbed Or Graded Areas On The Project Site.
4. All Sediment Traps/Basins Shall be Fenced And Warning Signs Posted Around Their Perimeter In Accordance With Vol. 1, Chapter 12, Of The Howard County Design Manual, Storm Drainage, Chapter 12, Of The Howard County Design Manual, Storm Drainage.
5. All Disturbed Areas Must be Stabilized Within The Time Period Specified Above In Accordance With The 1996 Maryland Standards and Specifications for Soil Erosion and Sediment Control for Permanent Seeding (Sec. 50), Soil (Sec. 54), Temporary Seeding (Sec. 50), Permanent Seeding (Sec. 50), Soil (Sec. 54), Temporary Seeding (Sec. 50), and Mulching (Sec. 52). Temporary Stabilization With Mulch Above Can Only be Done When Recommended Seeding Dates Do Not Allow for Proper Germination and Establishment of Grasses.
6. All Sediment Control Structures Are to Remain in Place And Are to be Maintained in Operative Condition Until Permission for Their Removal Has been Obtained From the Howard County Sediment Control Inspector.

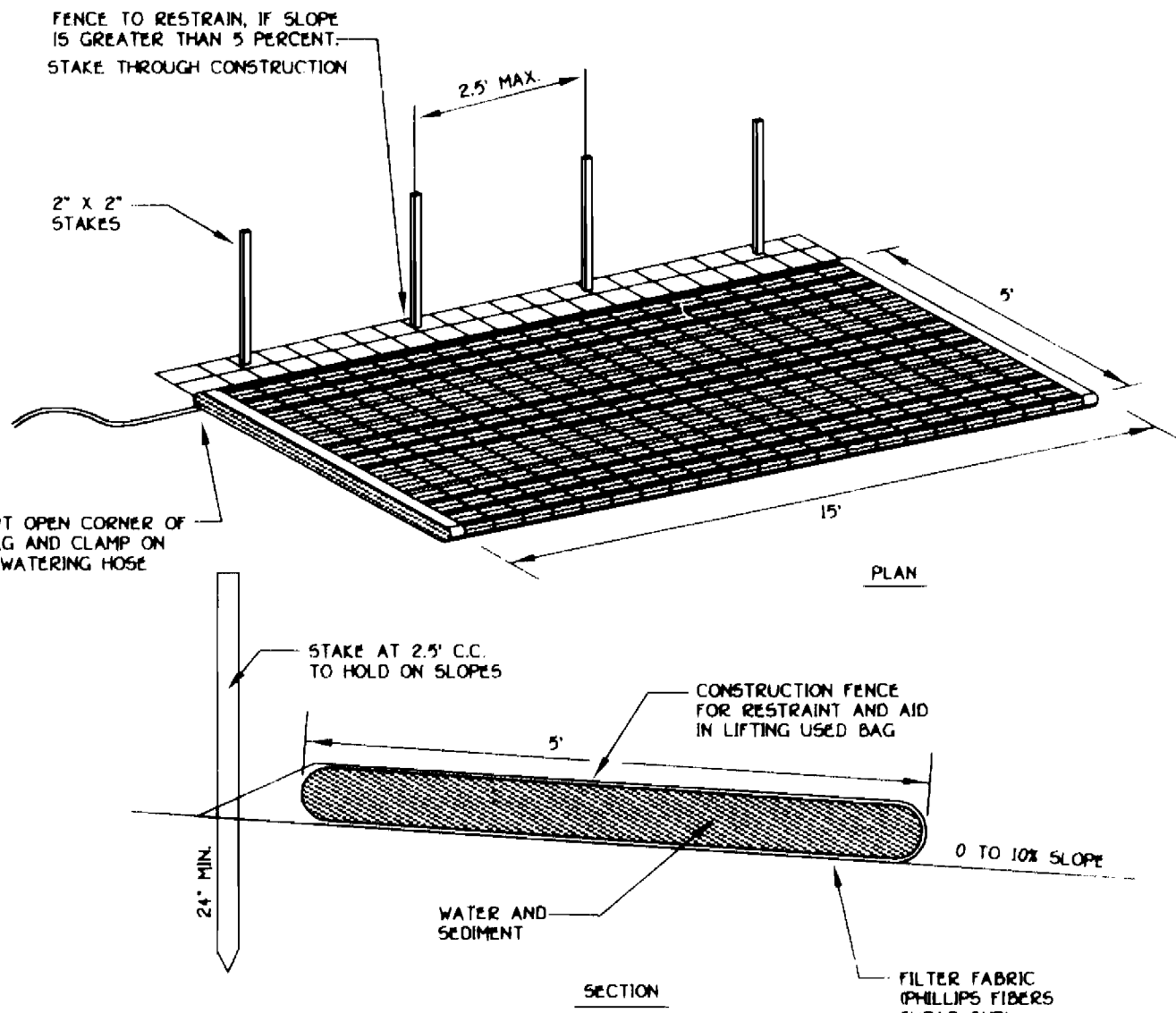
7. Site Analysis

Total Area Of Site	46.42 Acres (50% OF 36)
Area Disturbed	0.908 Acres (Installation Of Water Main Only)
Area To be Paved	0.575 Acres (Within School Entrance Drive Or Within Parking Area)
Area To be Vegetatively Stabilized	0.333 Acres
Total Cut	NOT APPLICABLE
Total Fill	INSTALLATION OF WATER MAIN ONLY
Off-Site Water/Borrow Area Location	

8. Any Sediment Control Practice Which is Disturbed by Grading Activity for Placement of Utilities Must be Replaced on the Same Day Of Disturbance.
9. Additional Sediment Controls Must be Provided, If Deemed Necessary by the Howard County Sediment Control Inspector.
10. On All Sites with Disturbed Areas in Excess Of 2 Acres, Approval Of The Inspection Agency Shall be Requested Upon Completion Of Installation Of Perimeter Erosion and Sediment Controls, But Before Proceeding With Any Other Earthwork Approve May Not be Authorized Until The Initial Approval by The Inspection Agency is Made.
11. Trenches For The Construction Of Utilities is Limited to Three Feet Lengths Or That Which Shall be Back-Filled and Stabilized Within One Working Day, whichever is Shorter.
12. The Total Amount Of Silt Fence = 50'.
13. The Builder is Responsible for Protecting Constructed and Stabilized Lots From Sediment Laden Runoff.



SANDBAG/STONE STREAM FLOW DIVERSION DETAIL; WPD 2.3



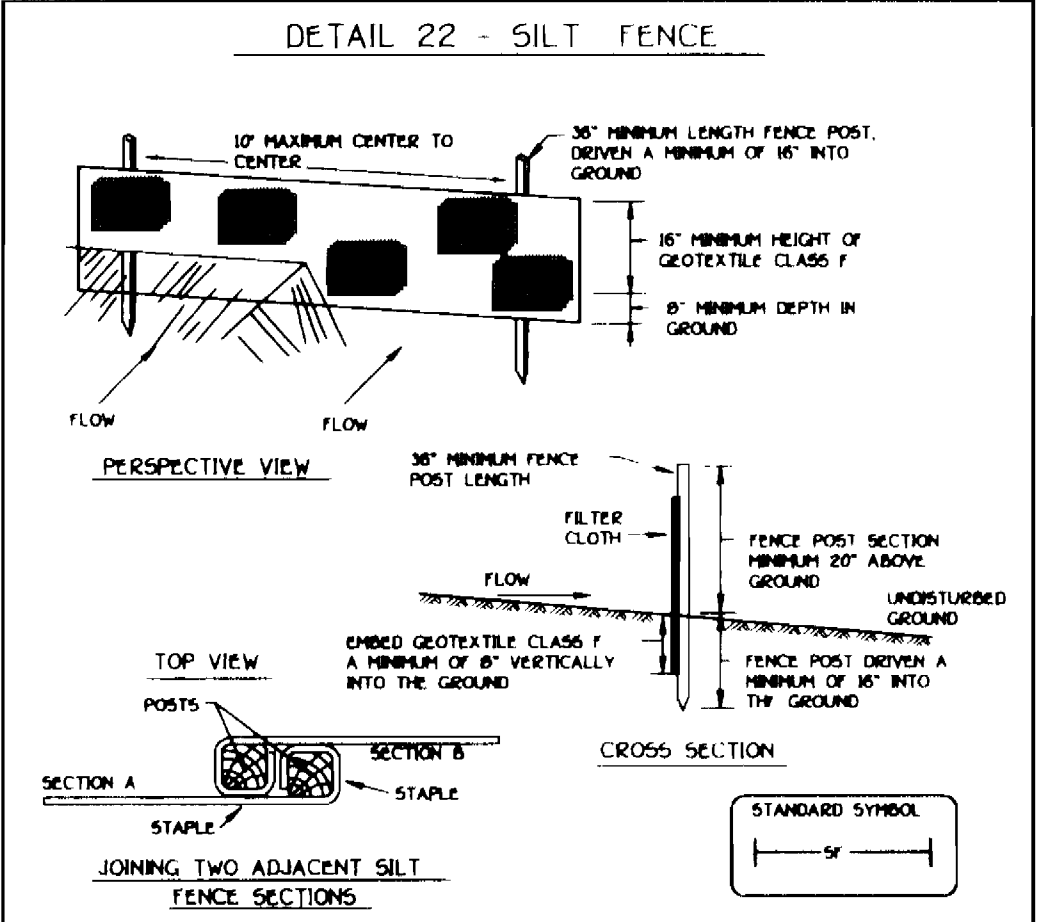
- NOTES**
1. FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL, WELL GRADED VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS.
  2. WIDTH AND LENGTH SHALL BE AS SHOWN.
  3. THE FILTER BAG MUST BE STAKED IN PLACE AND SECURED TO THE PUMP DISCHARGE LINE.
  4. FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM.
  5. DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA.

AVAILABLE FROM:

INDIAN VALLEY INDUSTRIES, INC. P.O. BOX 810 0800 899-3111	OR	A.C.F. ENVIRONMENTAL 1801-A WALLIS ROAD RICHMOND, VIRGINIA 23237 TOLL FREE 1-800-446-3636	OR	PRICE AND COMPANY, INC. 425 36TH STREET WYOMING, HI 49446 (408) 530-8230
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FILTER BAG DETAIL

NOT TO SCALE



- Construction Specifications**
1. Fence posts shall be a minimum of 30" long driven 18" minimum into the ground. Posts shall be 10" x 12" square ironwood or 1.54" diameter ironwood round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 100 pound per linear foot.
  2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:
 

Tensile Strength	50 lbs/in (min)	Test: FHMT 309
Tensile Modulus	20 lbs/in (min)	Test: FHMT 309
Flow Rate	0.3 gal/ft <sup>2</sup> /minute (min)	Test: FHMT 322
Filtration Efficiency	75% (min)	Test: FHMT 322
  3. Where ends of geotextile fabric come together, they shall be overlapped, lapped and stapled to prevent sediment bypass.
  4. Silt fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

SILT FENCE

Silt Fence Design Criteria

Slope Steepness	Maximum Slope Length	Maximum Silt Fence Length
Flatter than 5:1	unlimited	unlimited
5:1 to 10:1	125 feet	1,000 feet
10:1 to 15:1	100 feet	750 feet
15:1 to 20:1	60 feet	500 feet
20:1 to 25:1	40 feet	250 feet
25:1 and steeper	20 feet	125 feet

Note: In areas of less than 25 slope and steeper soils (25% general classification) or where soil class A1 minimum slope length and silt fence length will be unlimited in these areas a silt fence may be the only perimeter control required.

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p>DATE: _____</p>	<p>DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND</p> <p>DATE: _____</p>
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#9757

DESIGNED BY: P.W.K.

DRAWN BY: M.D.T.

CHECKED BY: P.W.K.

DATE: JULY, 2002

BY NO. \_\_\_\_\_

REVISION \_\_\_\_\_

TERRELL A. FISHER

STREAM CROSSING & SEDIMENT CONTROL NOTES AND DETAILS

600' SCALE MAP NO. 37 BLOCK NO. B & 9

F.C.C. WORK ORDER NO. 40327

FILE NAME: 40327.FINAL.WATER.MAIN.NOTES/DETAILS

NORTHEASTERN ELEMENTARY SCHOOL NO.4  
WATER & SEWER MAIN EXTENSIONS

CONTRACT NO. 14-4007-D  
SECOND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET: 7 of 7

FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERING, CONSULTANTS & LAND SURVEYORS