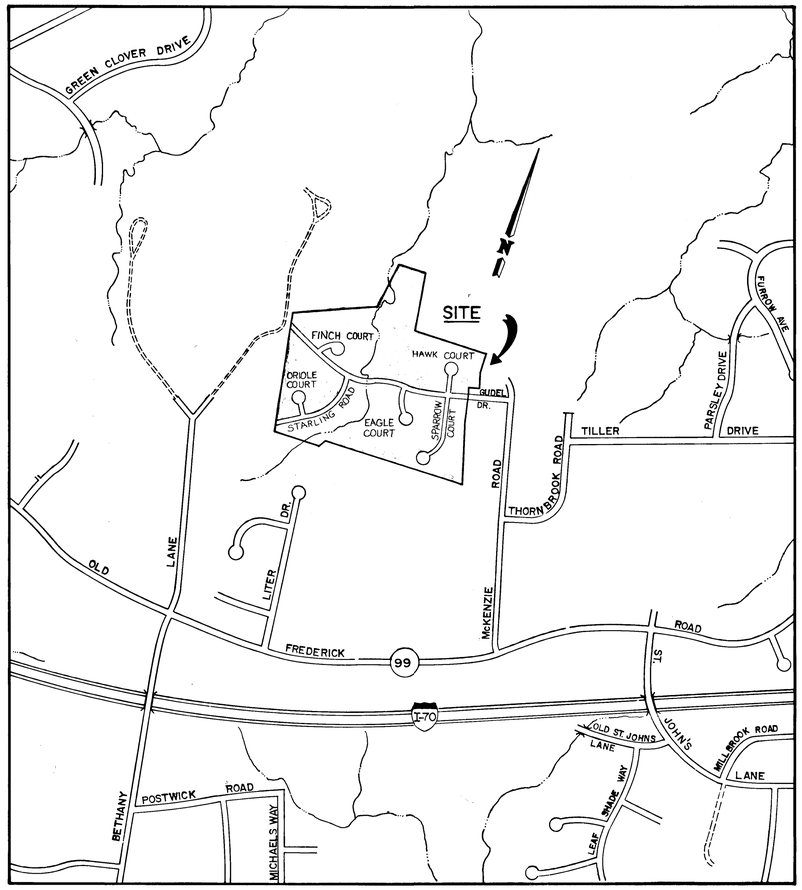
MANHOLE NO.	ELEV.	LOCATION
MH 24	404.58	INTX EAGLE & GUDEL
MH 23	406.94	EAGLE CT. @ END
EX 211	411.38	4+00 GUDEL DR.
MH 22	419.05	2+33 GUDEL DR.
MH 21	420.15	INTX GUDEL & HAWK
MH 20	429.56	HAWK CT. @ END
EX 212	420.34	1+85 GUDEL
EX 213	424.93	0+22 GUDEL
MH 19	418.37	1+22 SPARROW
MH 18	407.07	4+12 SPARROW
MH 17	405.50	4+80 SPARROW
MH 1	395.62	10+22 GUDEL
MH 45	400.06	11+52 GUDEL
MH 44	402.74	12+76 GUDEL
MH 41	402.22	14+01 GUDEL
MH 40	408.88	16+88 GUDEL
MH 2	400.63	1+55 STARLING
MH 3	405.85	2+53 STARLING
MH 4	409.99	3+19 STARLING
MH 5	415.11	4+01 STARLING
MH 6	421.65	5+81 STARLING
MH 8	425.49	7+35 STARLING
MH 9	432.17	8+79 STARLING
MH 7	432.16	2+03 ORIOLE
MH 43	406.06	1+20 FINCH
MH 42	407.87	FINCH @ END

Note:
All Sewer Manholes Within Right of Way
Top of Rim Elevation.

McKENZIE MEADOWS
SECTION TWO
HOWARD COUNTY, MARYLAND
FINAL ROAD CONSTRUCTION PLANS

INDEX

1. TITLE PAGE.
2.-8. ROADWAY PLANS AND PROFILES.
9.-10. STORM DRAIN PROFILES.
11. STREAM PROFILE. (REPLACED)
12. STORM DRAIN DETAILS.
~~13.-15. ARMCO/FOOTING-LOW PROFILE ARCH~~ (DELETED
16.-17. SEDIMENT & EROSION CONTROL
18. SEDIMENT & EROSION CONTROL DETAILS
18A. SEDIMENT & EROSION CONTROL NOTES & DETAILS
19. DRAINAGE AREA MAP
20. ROADWAY DETAILS



VICINITY MAP
SCALE: 1" = 600'

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH HOWARD COUNTY STANDARDS, SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
2. ALL UTILITY COMPANIES MUST BE NOTIFIED 24 HRS IN ADVANCE OF ANY CONSTRUCTION. CALL "MISS UTILITY" 48 HRS IN ADVANCE OF CONSTRUCTION - 1-800-257-7777.
3. STORM DRAINAGE TRENCHES WITHIN ROAD RIGHT-OF-WAYS SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH HOWARD STANDARD SPECIFICATIONS.
4. ANY DAMAGE TO PUBLIC RIGHT-OF-WAYS, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTORS EXPENSE.
5. CONTRACTOR TO NOTIFY THE HOWARD COUNTY INSPECTION DIVISION AT LEAST 3 DAYS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS. TELEPHONE 792-7272
6. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION, CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE.
7. ALL TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, 1978 EDITION.
8. NO STRUCTURE IS TO BE CONSTRUCTED ON OPEN SPACE LOTS 98, AND 99 AT A DISTANCE LESS THAN THE ZONING REGULATIONS ALLOW.
9. FOR LOCATION OF DRIVEWAY APRONS AND DEPRESSED CURBS, SEE SITE DEVELOPMENT PLANS.

VERTICAL & HORIZONTAL
CONTROL FOR AS-BUILTS
ARE BASED ON M.D. State Plane
AS PROJECTED BY HO. CO.
MONUMENT 3441003 & 3442003.

As-Built
sheets 1-12

STATE OF MARYLAND — ROBERT M. BRAUN — No. 21601 — PROFESSIONAL ENGINEER

A/B 2-4-93

FOR REVISIONS B ONLY

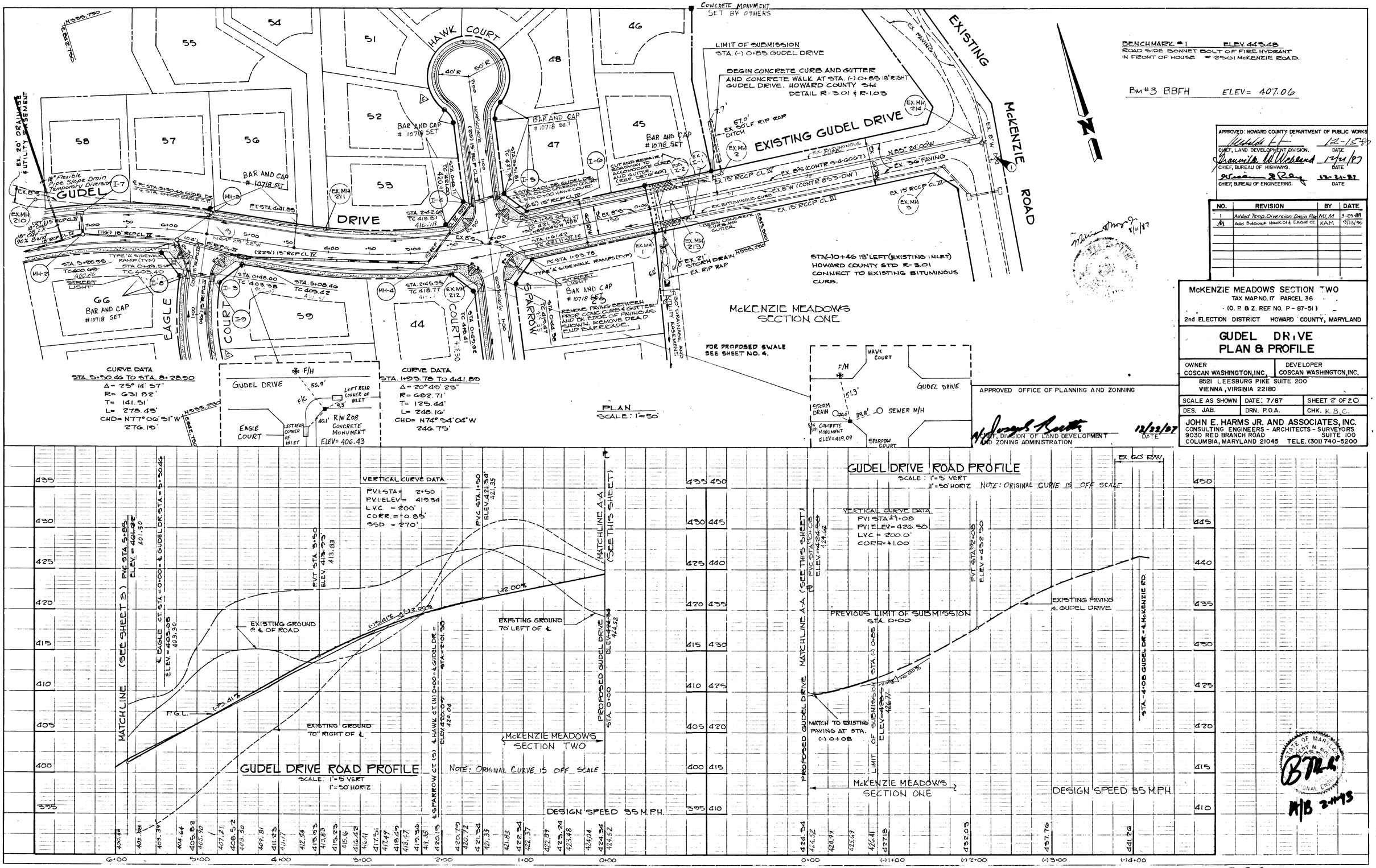
STATE OF MARYLAND — JOHN E. HARMS, JR. — No. 10010 — REGISTERED PROFESSIONAL ENGINEER

5/11/87

JOHN E. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA MARYLAND 21045 TELEPHONE (301) 740-5200

F-88-36 AS-BUILT

802



BENCHMARK #1 ELEV. 443.48
ROAD SIDE BONNET BOLT OF FIRE HYDRANT IN FRONT OF HOUSE # 2501 McKENZIE ROAD.

BM #3 BBFH ELEV= 407.06

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, LAND DEVELOPMENT DIVISION. DATE 12-15-87
CHIEF, BUREAU OF HIGHWAYS. DATE 12/21/87
CHIEF, BUREAU OF ENGINEERING. DATE 12-21-87

NO.	REVISION	BY	DATE
1	Added Temp. Diversion Drain Pipe	MLM	3-25-88
2	Add Sidewalk Hawk Ct & Eagle Ct.	KAM	9/13/90

McKENZIE MEADOWS SECTION TWO
TAX MAP NO. 17 PARCEL 36
(O. P. & Z. REF. NO. P-87-51)
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

GUDEL DRIVE PLAN & PROFILE

OWNER	DEVELOPER
COSCAN WASHINGTON, INC.	COSCAN WASHINGTON, INC.

8521 LEESBURG PIKE SUITE 200
VIENNA, VIRGINIA 22180

SCALE AS SHOWN	DATE: 7/87	SHEET 2 OF 20
DES. JAB.	DRN. P.O.A.	CHK. K.B.C.

JOHN E. HARMS JR. AND ASSOCIATES, INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELE. (301) 740-5200

APPROVED OFFICE OF PLANNING AND ZONNING
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE 12/22/87

802

F-88-36 AS-BUILT

EXTENTION COMPLETE - TIED INTO CONST BY OTHERS

NOTE:
NO OFFSITE GRADING PERMITTED.

GEORGE W CARR
816 / 48

HOWARD COUNTY DEAD END BARRICADE TYPE B Std. R-7.11

LIMIT OF SUBMISSION & STA. 16+96.00 FOR EXTENSION SEE SHEET 4 OF 20.

LIMITS OF PAVING STA. 16+66

HOWARD COUNTY TEMPORARY TEE TURN-AROUND Std. R-5.05

JOSEPH J. MILLER
562 / 286

UNPAVED ACCESS ROAD

SEE RIP-RAP CHANNEL SEE SCA DETAIL SHT NO 12 20F-I

WATER QUALITY POOLS (SEE SHEET 17 OF 20)

58 PROP GUARD RAIL

8" Flexible Pipe Slope Drain Temporary Diversion

OPEN SPACE LOT 98

OPEN SPACE LOT 99

FINCH COURT

GUDEL DRIVE

STARLING ROAD

TEMPORARY ACCESS ROAD CURVE DATA

CURVE #1	CURVE #2
Δ= 23°	Δ= 30.5°
R= 150'	R= 116.6'
T= 30'	T= 55°
L= 60.2'	L= 102.77'

BM # 4 BBFH ELEV. 397.11

BM #5 BBFH ELEV. 405.22

NOTE: THE TEMPORARY STORM DRAIN DIVERSION EMPTIES INTO STONE OUTLET TRAP #6. SEE SHEET 16-20 FOR TRAP. SEE SHEET 20-20 FOR PROFILE DETAIL.

FOR REVISION

GUDEL DR. — SPMH MARKED "A" — CONC. MON. ELEV. 395.44 RW 226 HSE #7705 — HSE #7702 — STARLING RD.

NOTE: BASELINE FOR LOW PROFILE ARCH LOCATION IS DEFINED AS EXISTING GRAVITY SEWER, FROM MANHOLE 209 (TRAV. STA.#6) TO MANHOLE 1935 (TRAV. STA.#7) TRAV. STA.#8 BASELINE STA. 0+00 FOR DETAILS OF CONSTRUCTION, SEE SHEET NOS. 11, 13, 14 & 15.

STA. 7+50 TO STA. 8+50 LT & RT PROVIDE W-BEAM GUARD RAIL, 150' L.F. @ RAIL END ANCHORAGES, SEE HOWARD COUNTY STANDARDS R.T.01 & R.T.03.

● = CAP + REBAR Md. Lic # 10718
■ = CONC. MON.

CURVE DATA
STA. 5+50.46 TO STA. 8+28.90
Δ = 25° 14' 57"
R = 631.82'
T = 141.51'
L = 278.43'
CHD = N 77° 06' 51" W 278.43'

CURVE DATA
STA. 9+28.90 TO STA. 15+34.50
Δ = 55° 15' 10"
R = 627.00'
T = 328.68'
L = 605.00'
CHD = N 62° 06' 44" W 582.41'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
CHIEF, LAND DEVELOPMENT DIVISION. — DATE 12-15-87
CHIEF, BUREAU OF HIGHWAYS. — DATE 12/21/87
CHIEF, BUREAU OF ENGINEERING. — DATE 12-21-87

APPROVED OFFICE OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 12/22/87

NOTE: SEE SHEET 1 OF 20 FOR GRADING.

PLAN — SCALE: 1"=50'

NO.	REVISION	BY	DATE
1	REV. TEE TURN-AROUND	JJT	12/15/87
2	REV TEMP. DIVERSION DRAIN	MLM	3-25-88
3	ADD 72" & 48" CMP SPECIFIED MULTI-PLATE SUMP SPAN	KAM	10/22/88
4	EXTEND 90 PIPE 10'	CAM	5/28/91
5	AS-BUILT WATER QUALITY POOLS		
6	GUARD RAIL	JLM	1/11/95

McKENZIE MEADOWS SECTION TWO
TAX MAP NO. 17 PARCEL 36
(O. P. & Z. REF NO. P#87-51)
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

GUDEL DRIVE
PLAN & PROFILE

OWNER	DEVELOPER
COSCAN WASHINGTON, INC.	COSCAN WASHINGTON, INC.
8521 LEESBURG PIKE SUITE 200 VIENNA, VIRGINIA 22180	

SCALE AS SHOWN | DATE: 7/87 | SHEET 3 OF 20
DES JAB | DRN. P.O.A | CHK. K.B.C.

JOHN E. HARMS JR. AND ASSOCIATES, INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELE. (301) 740-5200

PLAN: SURVEYED, PLOTTED, GRASS CHECKED, FIELD CHECKED, NOTE BOOK, NO., BY, DATE, STRUCTURE NOTATIONS CHECKED, ALL OF WAY CHECKED

GUDEL DRIVE ROAD PROFILES

MINOR COLLECTOR — SCALE: 1"=5' VERT, 1"=50' HORIZ — DESIGN SPEED 35 M.P.H.

MATCHLINE (SEE SHEET 8)

GUDEL DR. EXTENSION & STA. 16+82.00 LIMIT OF SUBMISSION

END OF PAVING STA. 16+66.00 ELEV.=403.19

EXISTING GROUND TO LEFT OF ℄

PGL (+)0.50% (-)1.00%

EXISTING GROUND TO RIGHT OF ℄

VERTICAL CURVE DATA
P.V.I. STA. = 15+70
P.V.I. ELEV= 400.99
L.V.C. = 400.00'
CORR = -3.75
S.S.D. = 250.00'

LOWEST STA. 14+23.33 ELEV. 402.73

PEAK STA. 13+19.47 ELEV = 403.25

℄ FINCH CT STA. 0+00 = ℄ GUDEL DR STA. 12+72.88 ELEV = 405.03

(-)1.00% Δ (+) 3.75%

PRC STA. 13+70 ELEV = 402.99 402.91

VERTICAL CURVE DATA
P.V.I. STA = 12+50
P.V.I. ELEV= 404.19'
L.V.C. = 240.00'
CORR. = 1.42'
S.S.D. = 260.00'

PVC STA. 11+30 ELEV = 397.69 397.33

PVT STA. 10+65 ELEV = 397.24 397.33

MATCHLINE (SEE THIS SHEET)

PVT STA 10+65 ELEV = 397.24 397.33

℄ STARLING RD. STA 10+29.36 = ℄ GUDEL DR STA. 10+29.36 ELEV = 396.64 397.33

STA. 9+55

SUMP STA. 8+68.50 ELEV. = 393.56

STA. 7+50

205 L.F GUARD RAIL @ EACH SIDE

3.5' MIN COVER ABOVE

PROP 8" W

(9.3.75% & (-)5.41%

EXISTING GROUND ℄ OF ROAD

COVER UNDER PROP 8" WATER EXCEEDS 3.5'

EXISTING GROUND TO RIGHT OF ℄

VERTICAL CURVE DATA
P.V.I. STA = 8+25
P.V.I. ELEV = 388.25
L.V.C. = 480.00'
CORR = -5.49
S.S.D. = 250'

PVC STA. 5+65 ELEV=401.50 MATCHLINE (SEE SHEET 2)

SEE SHEET 11 FOR CONSTRUCTION DETAILS

8" GRAVITY SEWER

DESIGN SPEED 35 M.P.H.

STATE OF MARYLAND — ROBERT W. MOORE — No. 21668 — PROFESSIONAL ENGINEER

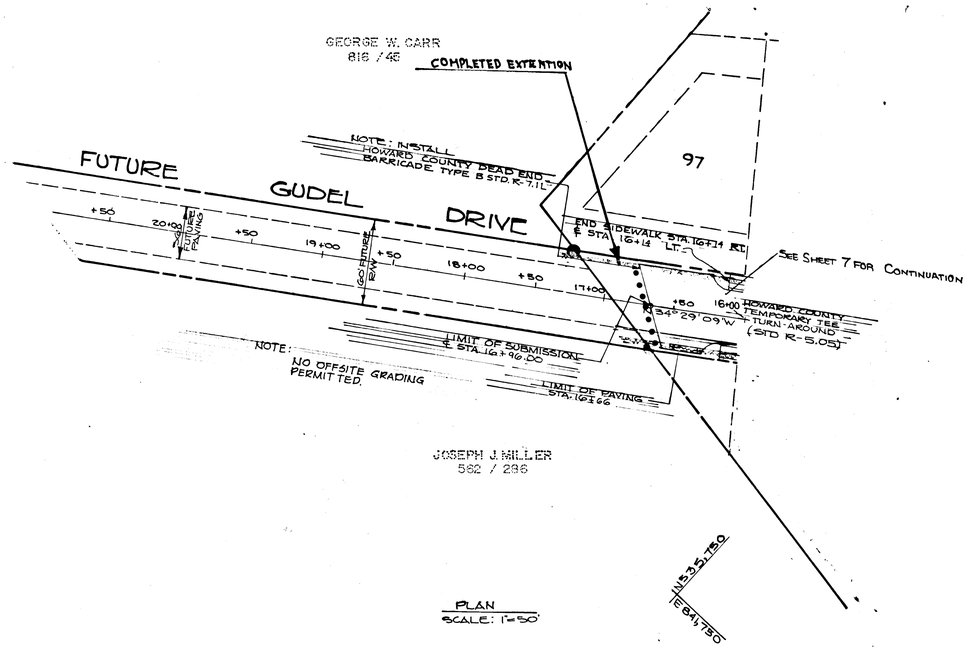
A/B 2-11-95

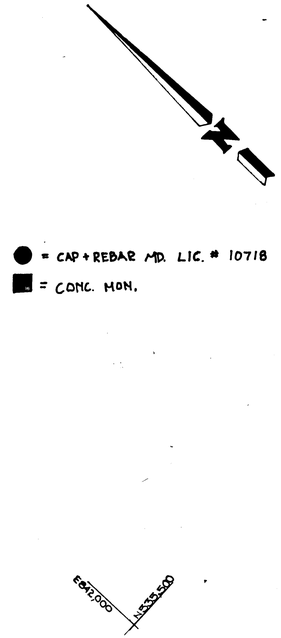
AS-BUILT 1-11-95

802

K&E PLATE 1, PLAN-PROFILE KEUFFEL & ESSER CO. 46 7024 HERCULENE DRAFTING FILM

F-88-36 BUILT





APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, LAND DEVELOPMENT DIVISION. DATE 12-15-87

CHIEF, BUREAU OF HIGHWAYS. DATE 12/21/87

CHIEF, BUREAU OF ENGINEERING DATE 12-21-87

NO.	REVISION	BY	DATE
1	REV. TEE TURN-AROUND	J.J.T.	12/15/87

McKENZIE MEADOWS SECTION TWO
TAX MAP NO. 17 PARCEL 36
(O. P. & Z. REF. NO. P - 87-51)
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

FUTURE GUDEL DRIVE PLAN & PROFILE

OWNER	DEVELOPER
COSCAN WASHINGTON, INC.	COSCAN WASHINGTON, INC.

8521 LEESBURG PIKE SUITE 200
VIENNA, VIRGINIA 22180

SCALE AS SHOWN	DATE: 8/87	SHEET 4 OF 20
DES. J.A.B.	DRN. P.O.A.	CHK. K.B.C.

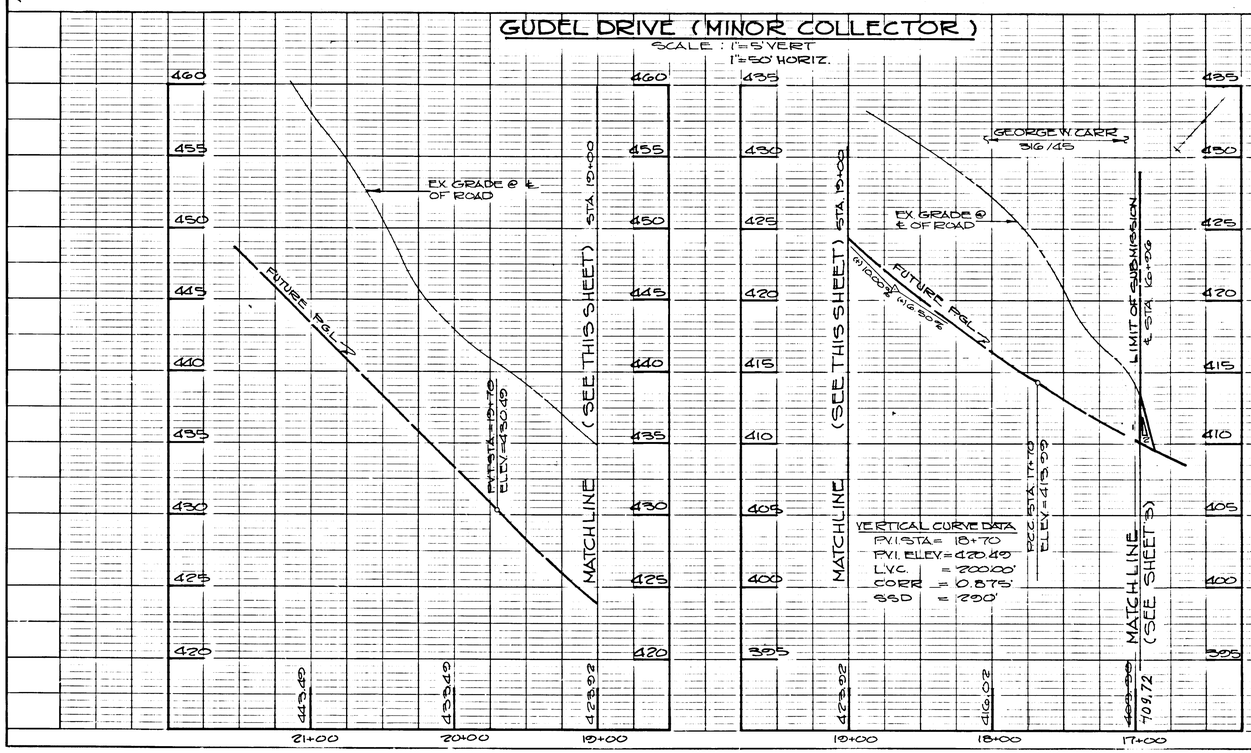
JOHN E. HARMS JR. AND ASSOCIATES, INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELE. (301) 740-5200

APPROVED OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE 12/22/87

PLAN: SURVEYED, PLOTTED, ALIGNMENT CHECKED, RT. OF WAY CHECKED — NOTE BOOK NO. — BY — DATE

PROFILE: SURVEYED, PLOTTED, GRADES CHECKED, B. M.'s NOTED, STRUCTURE NOTATNS CH'KD — NOTE BOOK NO. — BY — DATE



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A/B 2-11-93

K+E PLATE 1, PLAN-PROFILE KEUFFEL & ESSER CO.

F-88-36

ROBERT L. HARBIN ET AL
1129 / 732

CURVE DATA
STA 4+16.00 TO STA. 5+86.00
Δ=72°09'01"
R= 135.00'
L= 170.00'
T= 98.35'
CHD= S 45°45'10" W
158.99'

PERMANENT EARTH CHECK DAM (SEE STANDARDS AND SPECIFICATIONS FOR INFILTRATION PRACTICES, MD. DEPT. OF NATURAL RESOURCES) Pg 4-53
STORAGE DEPTH = 1.00' MEASURED VERTICALLY FROM BASE OF DAM TO TOP OF CHECK DAM.

BAR AND CAP #10718 SET

SPARROW COURT

HAWK COURT

GUDEL DRIVE

OPEN SPACE LOT 99

STRIP RAP. SEE DETAIL SHEET NO. 20 & STORM DRAIN PROFILE SHEET NO. 10

TYPE 'A' SIDEWALK RAMP (TYP)

STREET LIGHT

60' R/W

LIMIT OF SUBMISSION STA. 6+10.85 GUDEL DRIVE

DITCH 50 LF STONE

EX. RIPRAP

EX. 21" STORM DRAIN

EX. 15" RCP CL III

EX. 6'S (CONTR'S 24.60CT.)

EX. 6'W (CONTRESS-DW)

EX. MH 213

EX. I-2

EX. MH 1

EX. I-1

EX. MH 2

20' DRAINAGE & UTILITY EASEMENT

PERFORATED 6" CMP (UNDERDRAIN)

PERMANENT EARTH CHECK DAM. (SEE STANDARDS AND SPECIFICATIONS FOR INFILTRATION PRACTICES, MD. DEPT. OF NATURAL RESOURCES Pg 4-53)
STORAGE DEPTH = 0.75' MEASURED VERTICALLY FROM BASE OF DAM TO TOP OF CHECK DAM.

PLAN
SCALE: 1"=50'

DARRELL H. JOHNSON
309/0506

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, LAND DEVELOPMENT DIVISION. DATE 12-6-87

CHIEF, BUREAU OF HIGHWAYS. DATE 12-14-87

CHIEF, BUREAU OF ENGINEERING. DATE 12-21-87

APPROVED OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE 12/22/87

NO.	REVISION	BY	DATE
1	ADD 6" CMP & SIDEWALK HAWK CT.	KAM	9/13/90

McKENZIE MEADOWS SECTION TWO
TAX MAP NO. 17 PARCEL 36
(O. P. & Z. REF. NO. P-87-51)
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SPARROW COURT PLAN & PROFILE

OWNER:	DEVELOPER
COSCAN WASHINGTON, INC.	COSCAN WASHINGTON, INC.
8521 LEESBURG PIKE SUITE 200	
VIENNA, VIRGINIA 22180	

SCALE AS SHOWN	DATE: 7/87	SHEET 5 OF 20
DES. J.A.B	DRN. P.O.A.	CHK. K.B.C.

JOHN E. HARMS JR. AND ASSOCIATES, INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELE. (301) 740-5200

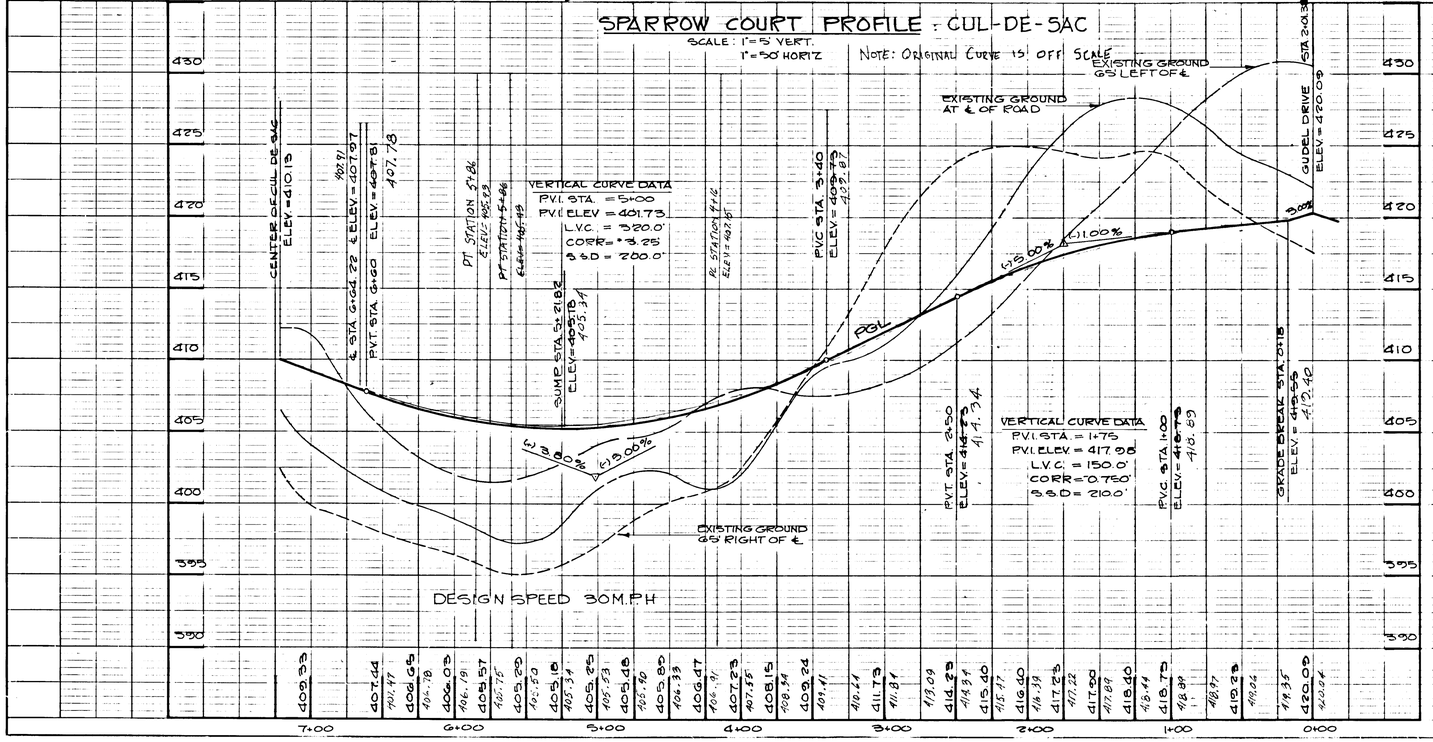
PLAN — SURVEYED | PLOTTED | NOTE BOOK | NO. | DATE | BY | ALIGNMENT CHECKED | GRADES CHECKED | R/W LIMITED | R/W NOTES & DATA ON CHK'D | R/W MONUMENTS & DATA ON CHK'D | R/W OF WAY CHECKED

PROFILE — SURVEYED | PLOTTED | NOTE BOOK | NO. | DATE | BY | GRADES CHECKED | R/W LIMITED | R/W NOTES & DATA ON CHK'D | R/W MONUMENTS & DATA ON CHK'D

SPARROW COURT PROFILE - CUL-DE-SAC

SCALE: 1"=5' VERT.
1"=50' HORIZ

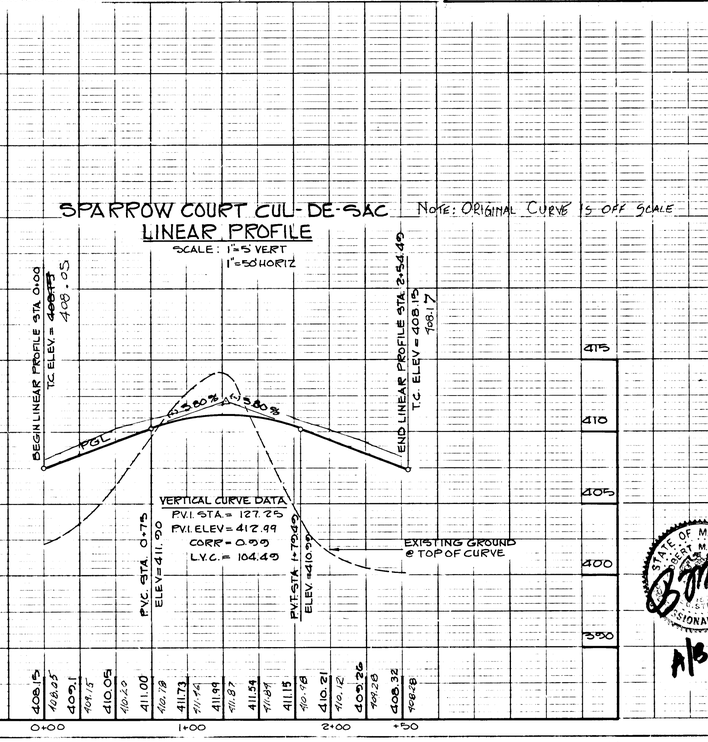
NOTE: ORIGINAL CURVE IS OFF SCALE



SPARROW COURT CUL-DE-SAC LINEAR PROFILE

NOTE: ORIGINAL CURVE IS OFF SCALE

SCALE: 1"=5' VERT
1"=50 HORIZ

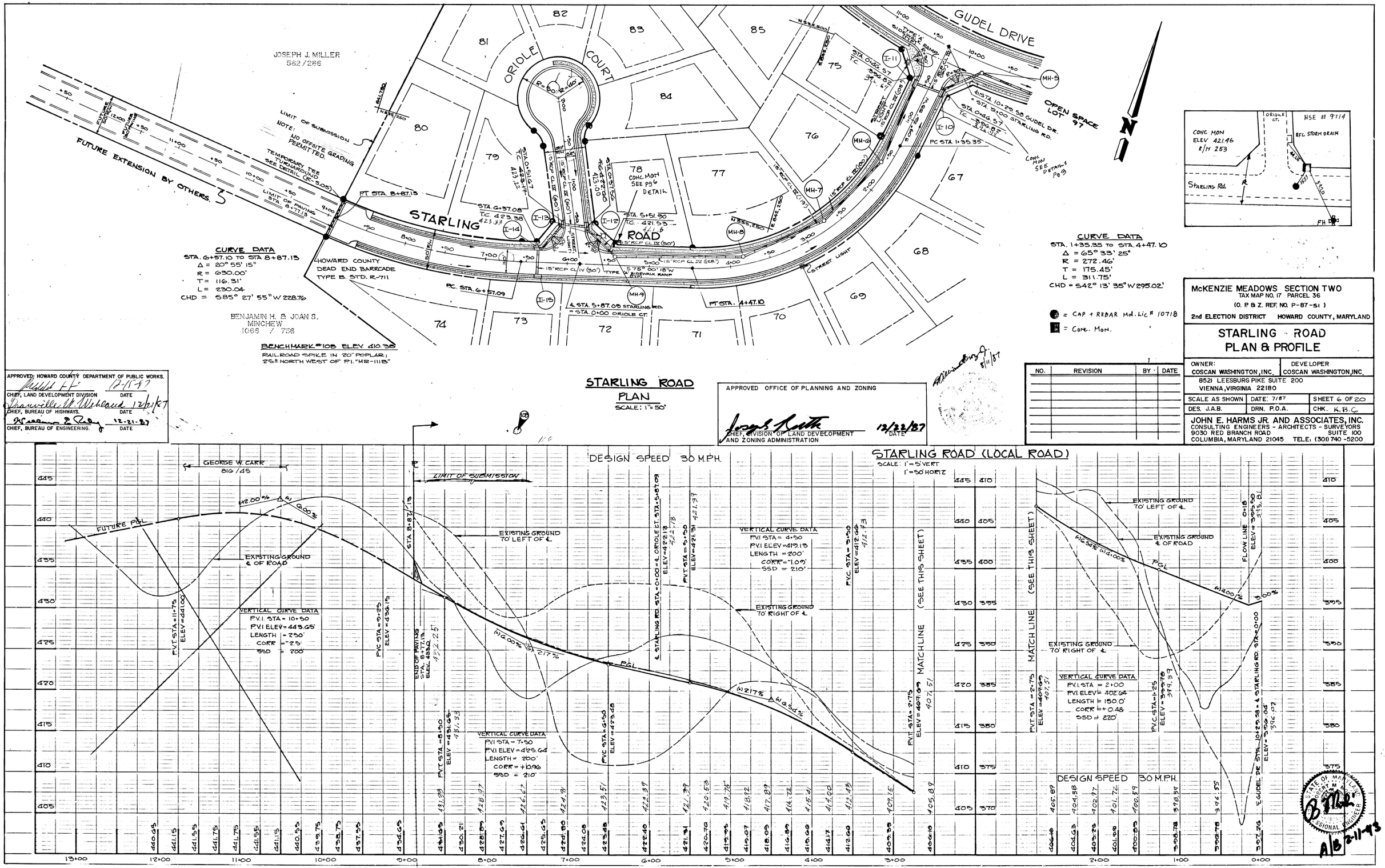


STATE OF MARYLAND — BRIAN K. BOWLING — REGISTERED PROFESSIONAL ENGINEER

8/11/93

F-88-36
AS BUILT

KE PLATE 1, PLAN-PROFILE KEUFFEL & ESSER CO.
48 7024 HERCULENE DRAFTING FILM



STARLING ROAD PLAN

SCALE: 1" = 50'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, LAND DEVELOPMENT DIVISION — DATE 12-15-87

CHIEF, BUREAU OF HIGHWAYS. — DATE 12/21/87

CHIEF, BUREAU OF ENGINEERING. — DATE 12-21-87

APPROVED OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 12/22/87

NO.	REVISION	BY	DATE

McKENZIE MEADOWS SECTION TWO
TAX MAP NO. 17 PARCEL 36
(O. P. & Z. REF. NO. P-87-51)
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

STARLING ROAD PLAN & PROFILE

OWNER: COSCAN WASHINGTON, INC.
DEVELOPER: COSCAN WASHINGTON, INC.
8521 LEESBURG PIKE SUITE 200
VIENNA, VIRGINIA 22180

SCALE AS SHOWN | DATE: 7/87 | SHEET 6 OF 20
DES. J.A.B. | DRN. P.O.A. | CHK. K.B.C.

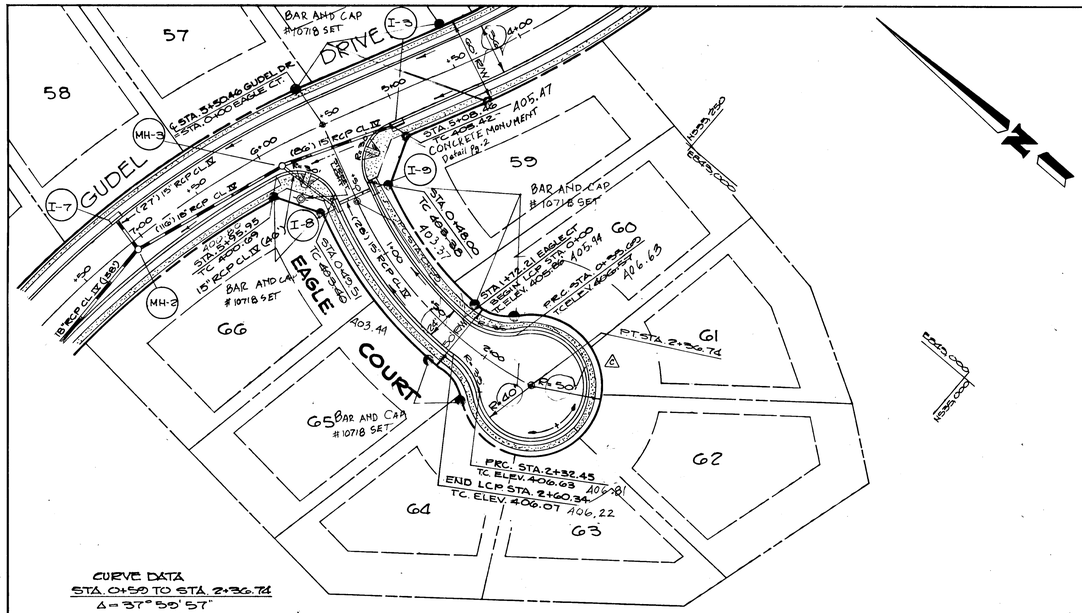
JOHN E. HARMS JR. AND ASSOCIATES, INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELE: (301) 740-5200

802

K+E PLATE 1, PLAN PROFILE KEUFFEL & ESSER CO.

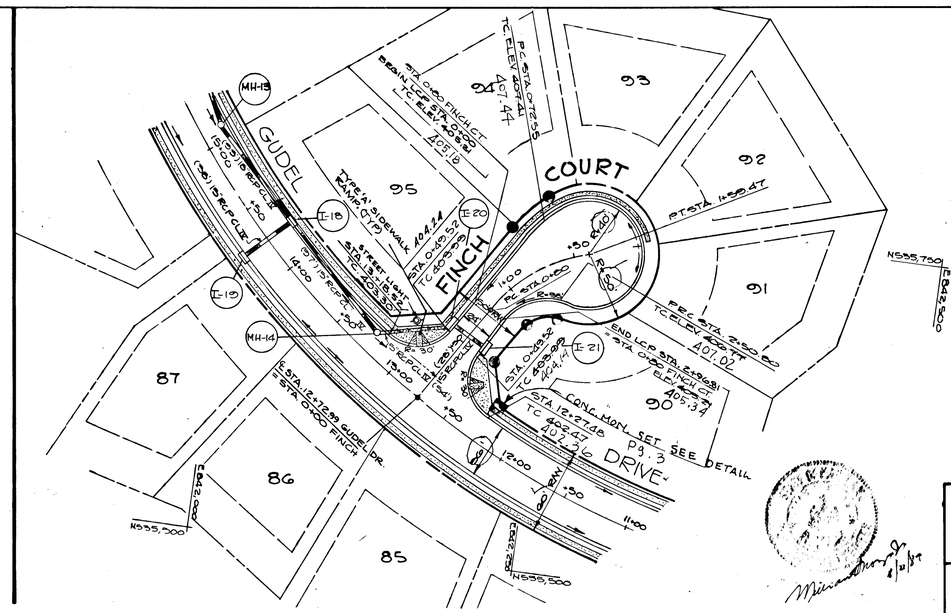
48 7024 HERCULENE DRAFTING FILM

F-88-36



CURVE DATA
STA. 0+90 TO STA. 2+36.74
Δ = 37° 55' 57"
R = 268.0'
L = 177.74'
T = 92.28'
CHD = S6° 30' 39.4" W
174.50'

EAGLE COURT
PLAN
SCALE: 1"=50'



FINCH COURT
PLAN
SCALE: 1"=50'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
CHIEF, LAND DEVELOPMENT DIVISION. DATE 12-15-87
CHIEF, BUREAU OF HIGHWAYS. DATE 12-21-87
CHIEF, BUREAU OF ENGINEERING. DATE

NO.	REVISION	BY	DATE
1	ADD SIDEWALK EAGLE CT.	KAM	9-13-90

APPROVED OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 12/22/87

McKENZIE MEADOWS SECTION TWO
TAX MAP NO. 17 PARCEL 36
(O.P. & Z. REF. NO. S-87-57)
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

EAGLE AND FINCH COURT PLAN & PROFILES

OWNER:	DEVELOPER
COSCAN WASHINGTON, INC.	COSCAN WASHINGTON, INC.
8521 LEESBURG PIKE SUITE 200 VIENNA, VIRGINIA 22180	

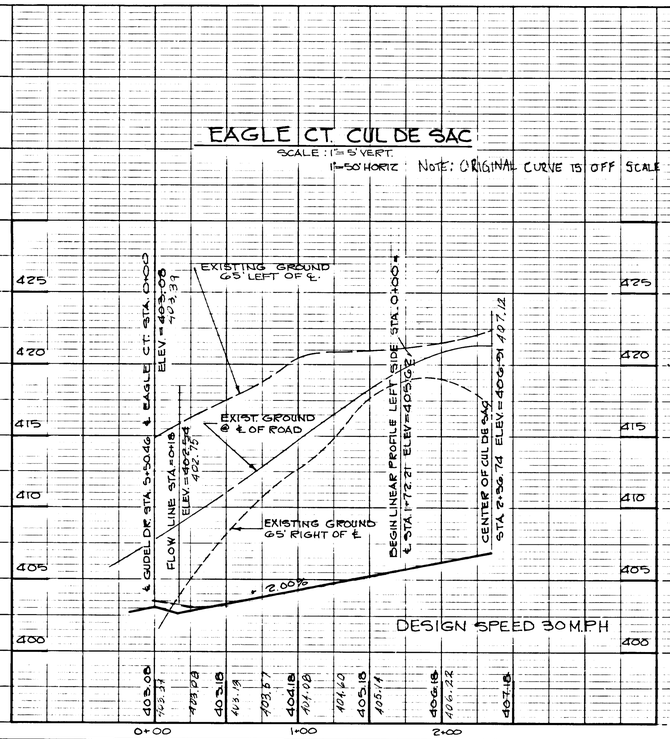
SCALE AS SHOWN	DATE: 7/87	SHEET 7 OF 20
DES. J.A.B.	DRN. P.O.A	CHK. J.K.B.C.

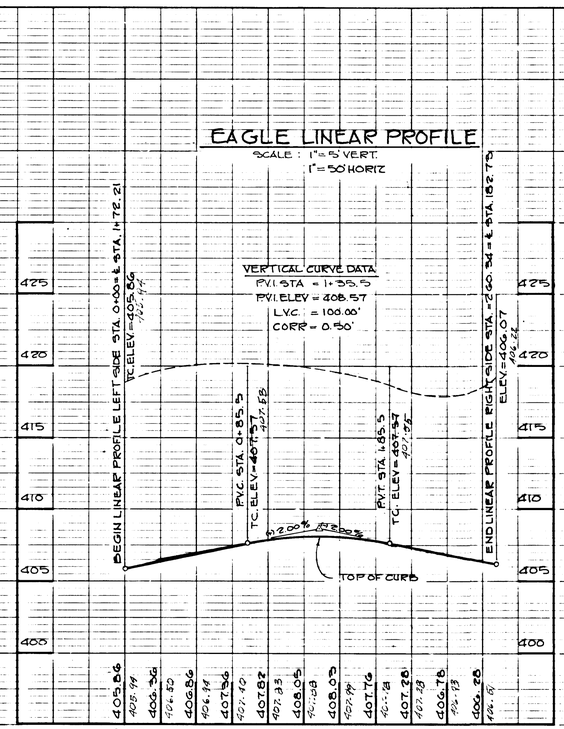
JOHN E. HARMS JR. AND ASSOCIATES, INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELE. (301) 740-5200

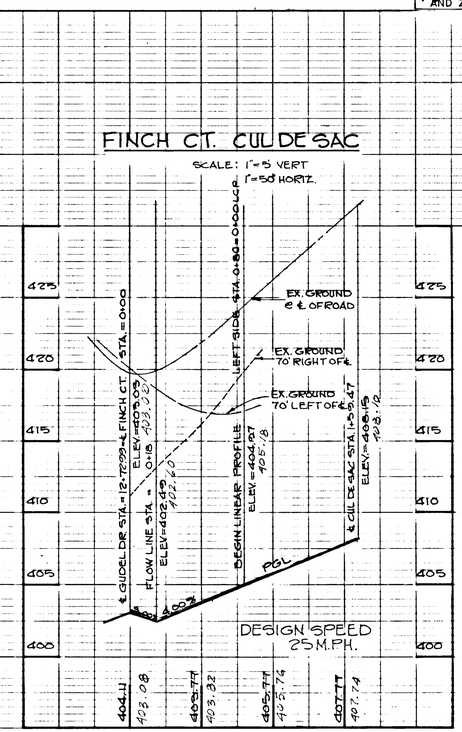
PLAN — SURVEYED, PLOTTED, GRADES CHECKED, ALIGNMENT CHECKED, R/W, LOT OR WAY CHECKED. NOTE BOOK ___ NO. ___ BY ___ DATE ___

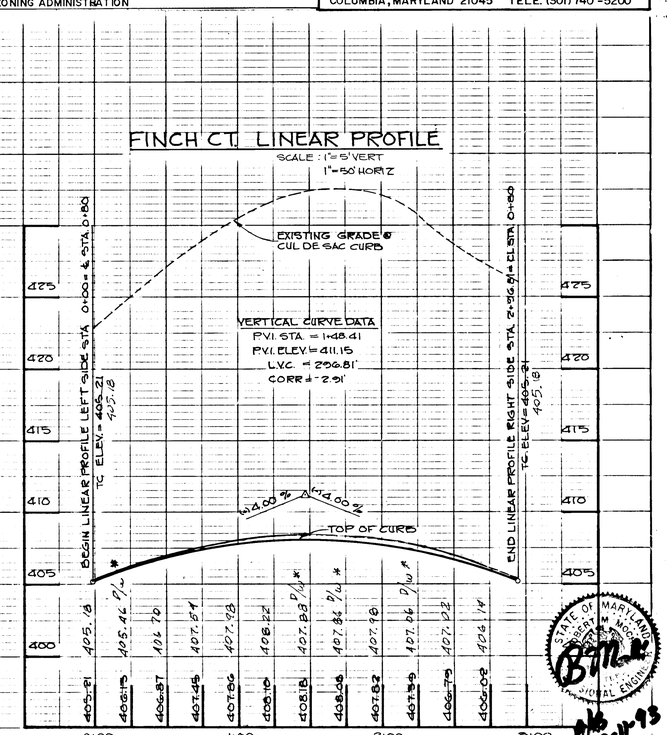
PROFILE — SURVEYED, PLOTTED, GRADES CHECKED, H & V SCALES CHECKED, JURISDICTIONAL NOTATIONS CHKD. NOTE BOOK ___ NO. ___ BY ___ DATE ___

802







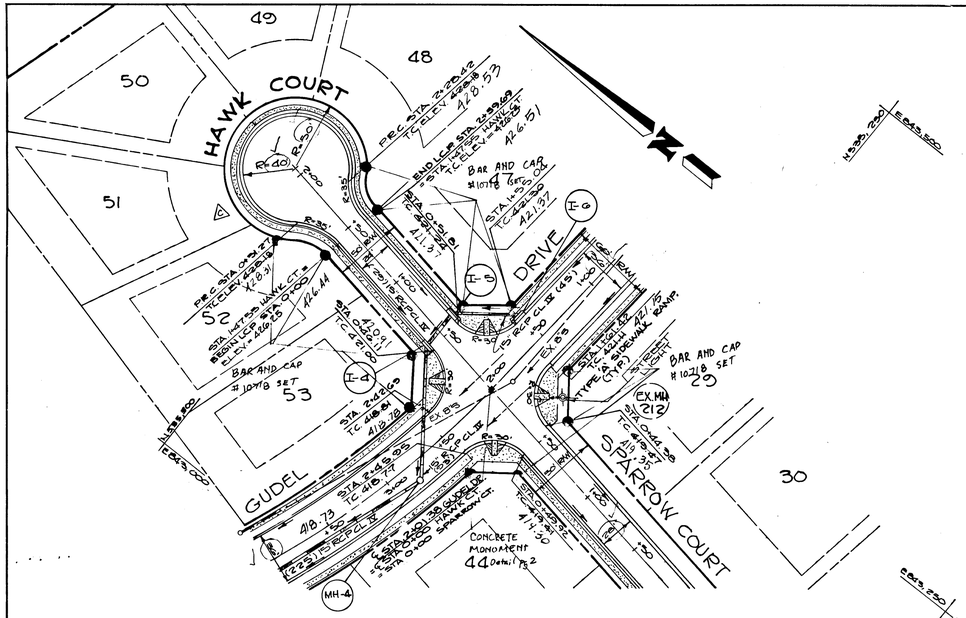


405.21	405.46	406.76	407.51	407.93	408.22	407.88	407.86	407.96	407.96	407.79	407.02	406.04
405.18	406.13	406.87	407.45	407.86	408.10	408.18	408.06	407.82	407.66	407.39	407.02	406.14

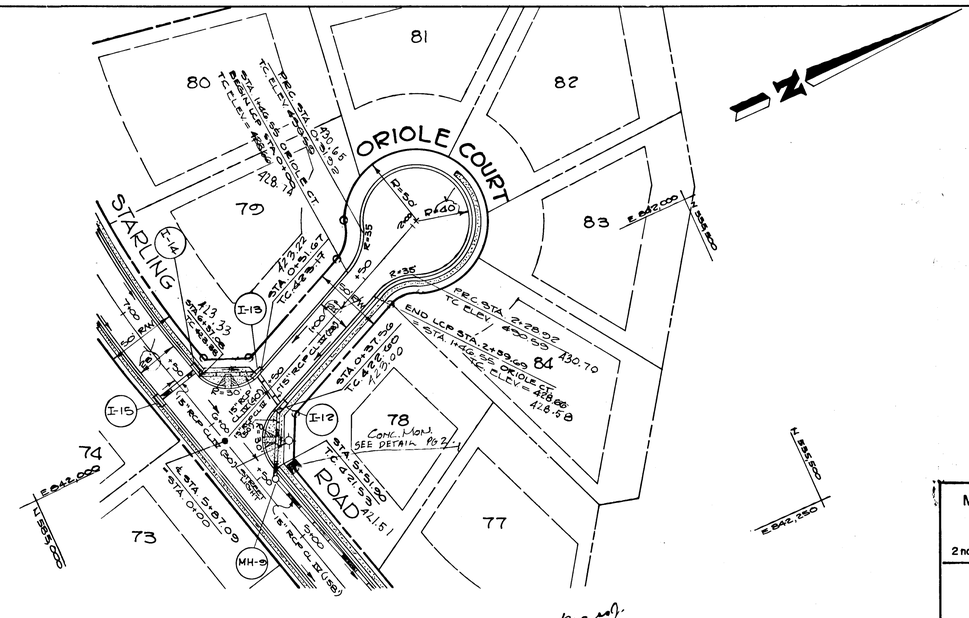
* D/W TC ELEV FALLS IN DRIVE.

K&E PLATE 1, PLAN-PROFILE KEUFFEL & ESSER CO.
46 7024 HERCULENE DRAFTING FILM

F-88-36 AS BUILT



HAWK CT
PLAN
SCALE: 1"=50'



ORIOLE CT
PLAN
SCALE: 1"=50'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, LAND DEVELOPMENT DIVISION. DATE 12/1/87

CHIEF, BUREAU OF HIGHWAYS. DATE 12/2/87

CHIEF, BUREAU OF ENGINEERING. DATE 12-31-87

APPROVED OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE 12/22/87

McKENZIE MEADOWS SECTION TWO

TAX MAP NO. 17 PARCEL 36

(O. P. & Z. REF NO. P-87-51)

2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

HAWK AND ORIOLE COURT PLAN & PROFILE

NO.	REVISION	BY	DATE
2	ADD SIDEWALK HAWK CT.	KAR.	9-13-90

OWNER: COSCAN WASHINGTON, INC.
8521 LEESBURG PIKE SUITE 200
VIENNA, VIRGINA 22180

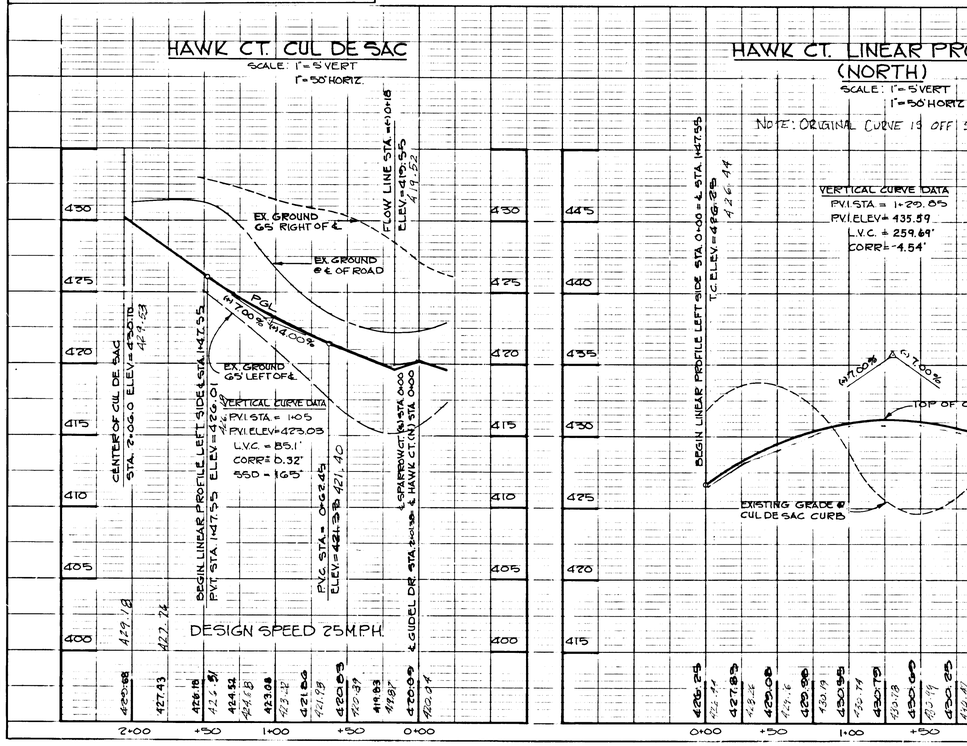
DEVELOPER: COSCAN WASHINGTON, INC.

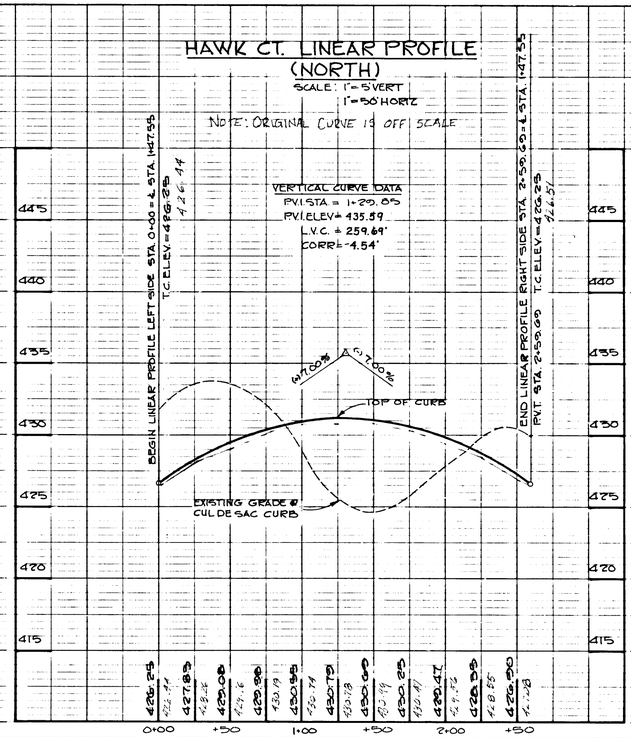
SCALE AS SHOWN | DATE: 7/87 | SHEET 8 OF 20

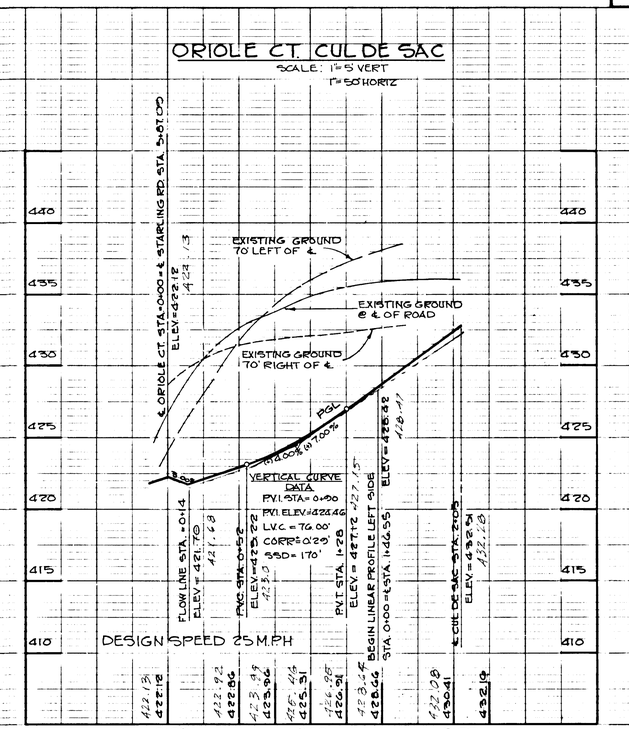
DES. J.A.B. | DRN. P.O.A. | CHK. H.B.C.

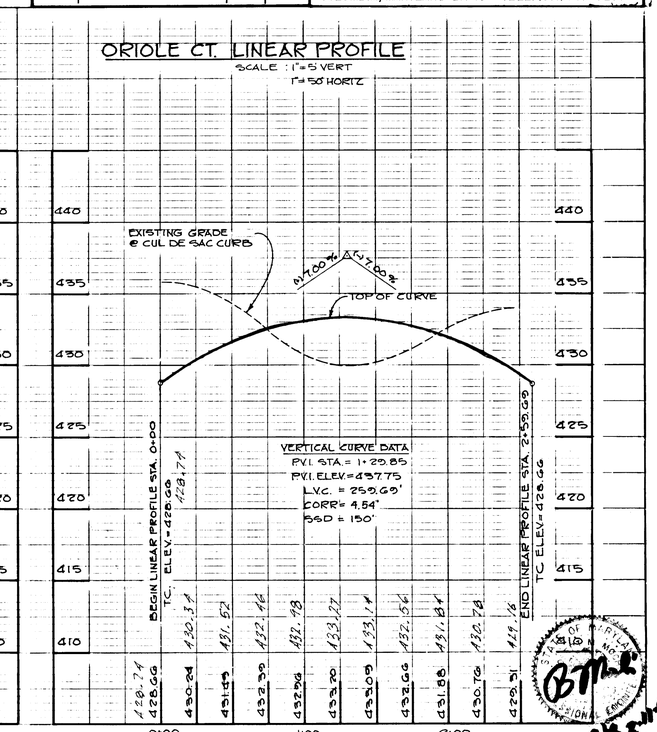
JOHN E. HARMS JR. AND ASSOCIATES, INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELE. (301) 740-5200

PLAN — SURVEYED | DRAWN | ALIGNMENT CHECKED | GRADES CHECKED | R/W NOTED | STRUCTURE NO'S & TYPES | RT. OF WAY CHECKED | NOTE BOOK | NO. | BY | DATE





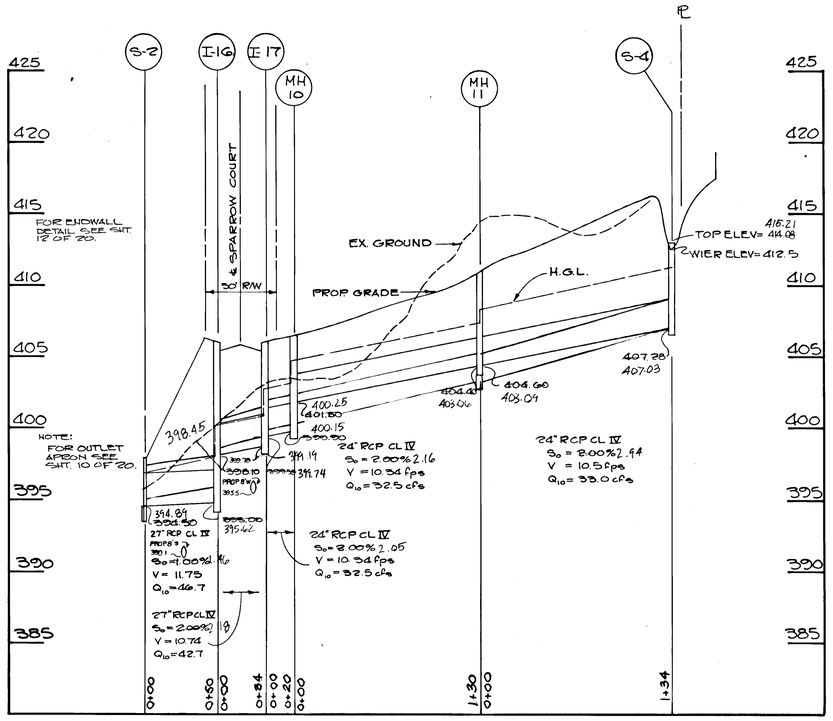




802

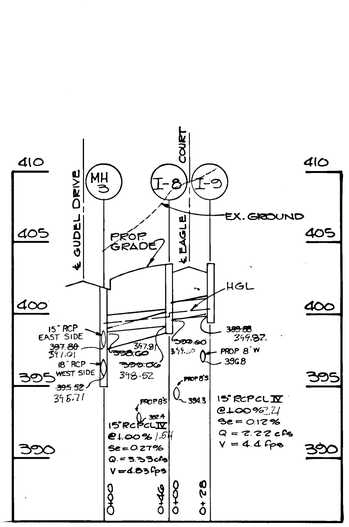
PLATE 1, PLAN PROFILE
KEUFFEL & ESSER CO.
48 7024 HERCULENE DRAFTING FILM

F-88-36



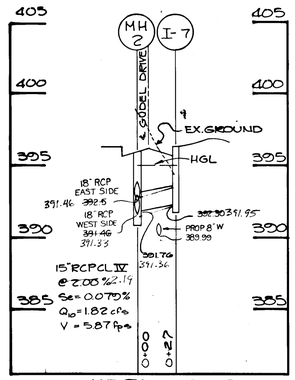
SPARROW COURT STORM DRAIN PROFILE

SCALE: 1"=5' VERT
1"=50' HORIZ



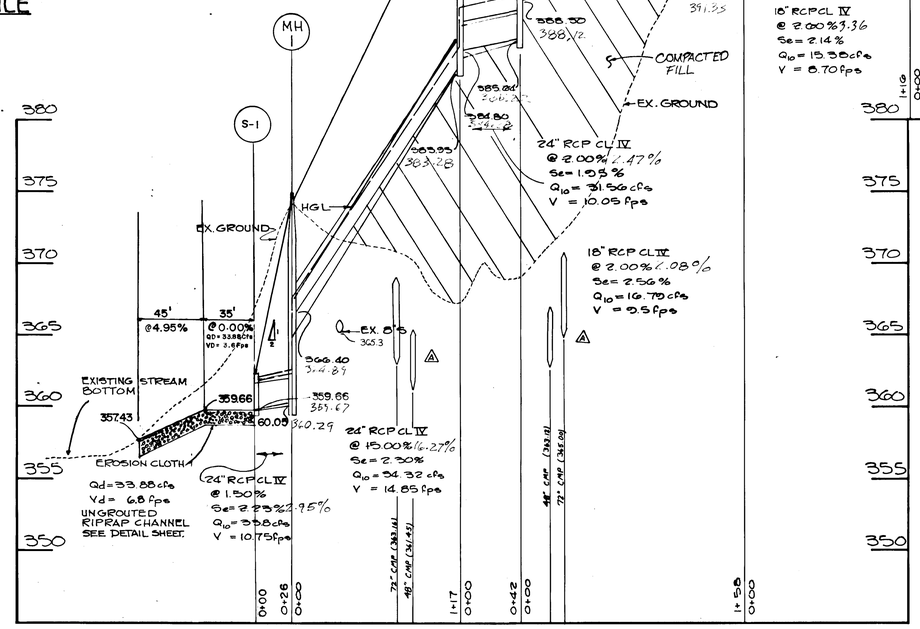
EAGLE COURT STORM DRAIN PROFILE

SCALE: 1"=5' VERT
1"=50' HORIZ



GUDEL DRIVE STORM DRAIN PROFILE

SCALE: 1"=5' VERT
1"=50' HORIZ



GUDEL DRIVE STORM DRAIN PROFILE

SCALE: 1"=5' VERT
1"=50' HORIZ

FOR REVISION ⚠ ONLY

APPROVED OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 12/22/87

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, LAND DEVELOPMENT DIVISION — DATE 12/1/87

CHIEF, BUREAU OF HIGHWAYS. — DATE 12/21/87

CHIEF, BUREAU OF ENGINEERING. — DATE

STORM DRAIN DETAILS
McKENZIE MEADOWS
SECTION TWO
TAX MAP NO. 17 PARCEL 36
(O. P. & Z. REF. NO. P - 87 - 51)
2nd ELECTION DISTRICT HOWARD COUNTY, MD.

JOHN E. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD COLUMBIA, MARYLAND 21045
SUITE 100 TELEPHONE (301) 740-5200

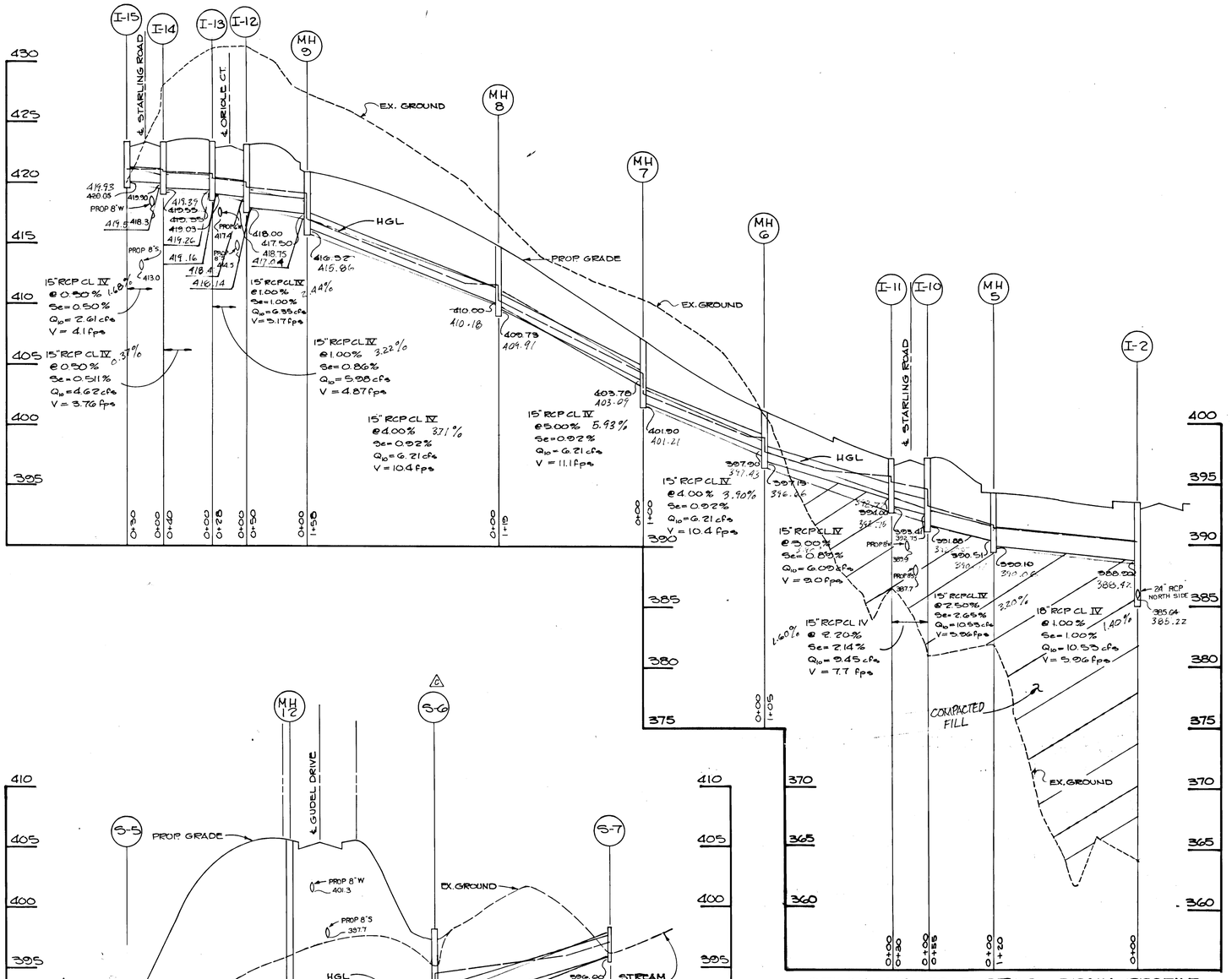
NO.	REVISION	BY	DATE
⚠	ADDED 72" & 48" CMP	KAM	10/29/88

DESIGNED BY: JAB
DRAWN BY: POA
CHECKED BY: K.B.C.
DATE: 7/87
SCALE: AS SHOWN
W. O. NO. 1186002

SHEET 9 OF 20

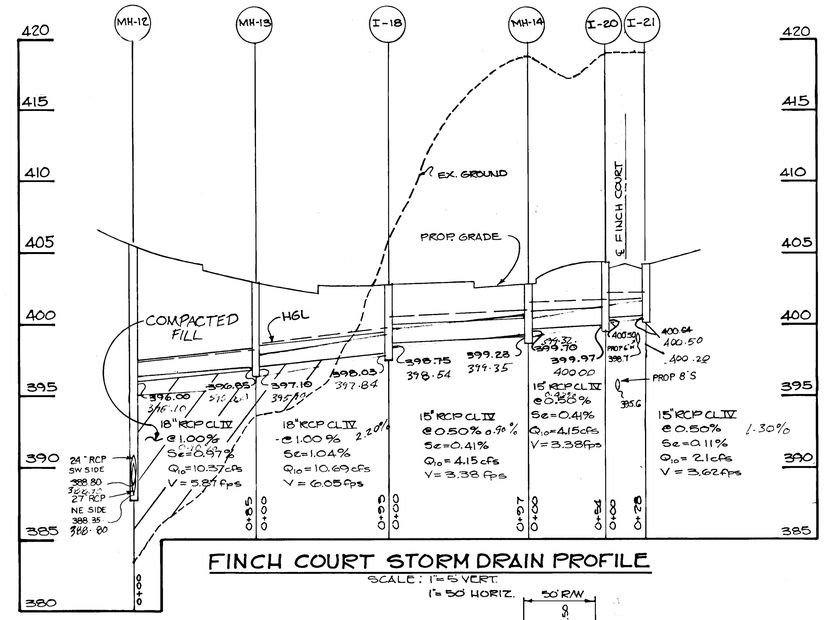
802

F-88-36



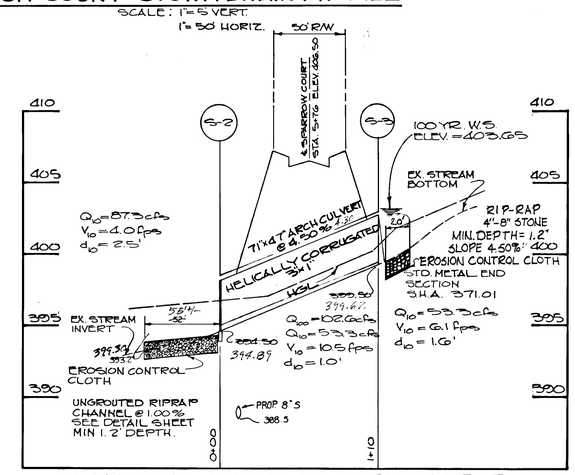
STARLING ROAD STORM DRAIN PROFILE

SCALE: 1"=5' VERT.
1"=50' HORIZ.



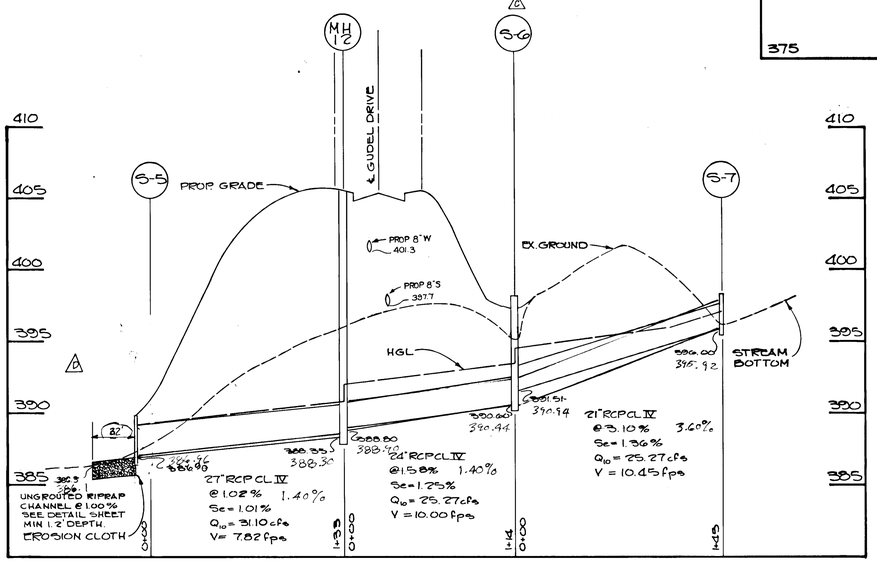
FINCH COURT STORM DRAIN PROFILE

SCALE: 1"=5' VERT.
1"=50' HORIZ.



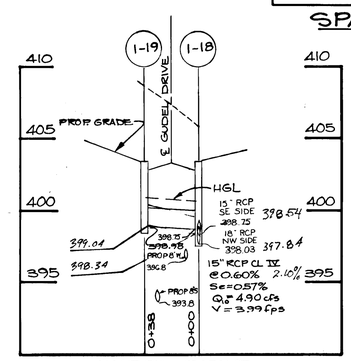
SPARROW COURT CULVERT PROFILE

SCALE: 1"=5' VERT.
1"=50' HORIZ.



GUDEL DRIVE STORM DRAIN PROFILE

SCALE: 1"=5' VERT.
1"=50' HORIZ.



GUDEL DRIVE STORM DRAIN PROFILE

SCALE: 1"=5' VERT.
1"=50' HORIZ.

STORM DRAIN DETAILS
McKENZIE MEADOWS
SECTION TWO
TAX MAP NO. 17 PARCEL 36
(O. P. & Z. REF. NO. P - 87 - 51)
2nd ELECTION DISTRICT HOWARD COUNTY, MD.

JOHN E. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELEPHONE (301) 740-5200

APPROVED OFFICE OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 12/22/87

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, LAND DEVELOPMENT DIVISION — DATE 12-15-87
CHIEF, BUREAU OF HIGHWAYS — DATE 12/21/87
CHIEF, BUREAU OF ENGINEERING — DATE 12-21-87

NO.	REVISION	BY	DATE
1	ADJUST S-6	KAM	9-13-90
2	ADD 10' S.D. LINE LOT 97	CAM	5-16-91

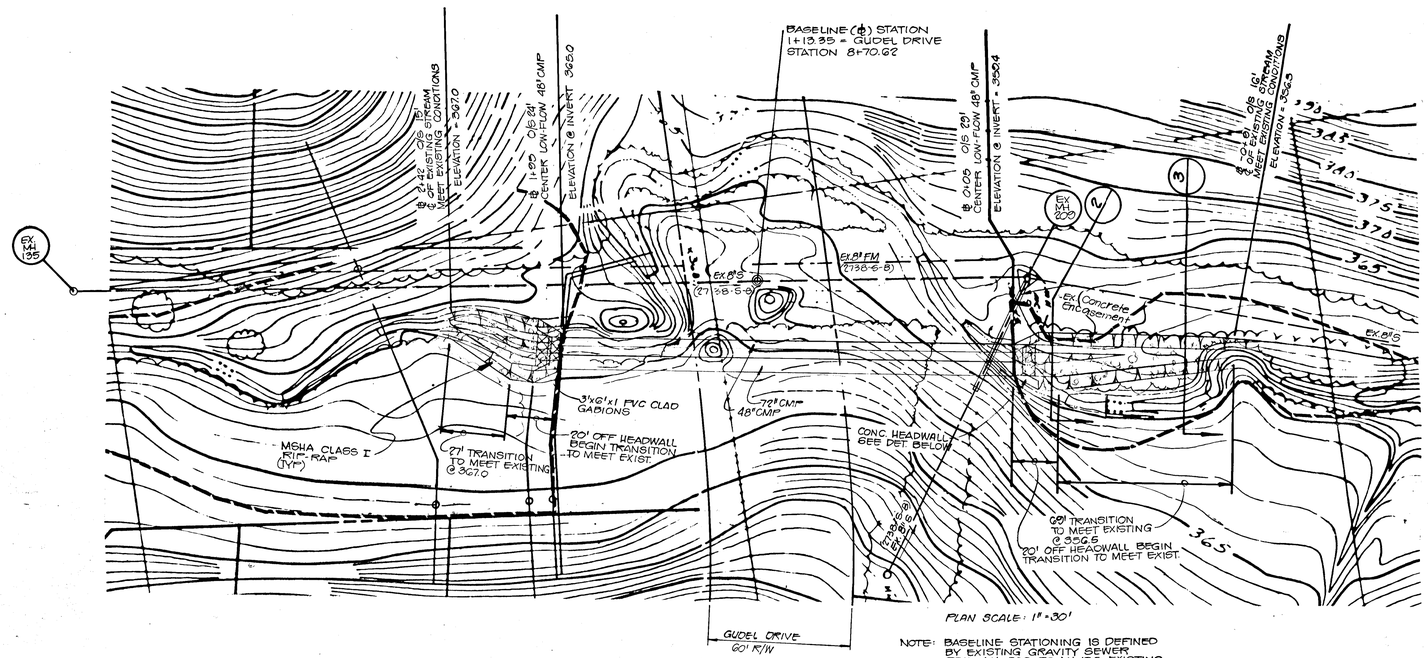
DESIGNED BY: JAB
DRAWN BY: POA
CHECKED BY: K.B.C.
DATE: 7/87
SCALE: AS SHOWN
W.O. NO. 4486002
SHEET 10 OF 20

STATE OF MARYLAND — ROBERT M. BELL — REGISTERED PROFESSIONAL ENGINEER

802

F-88-36

A&E INC-BALT

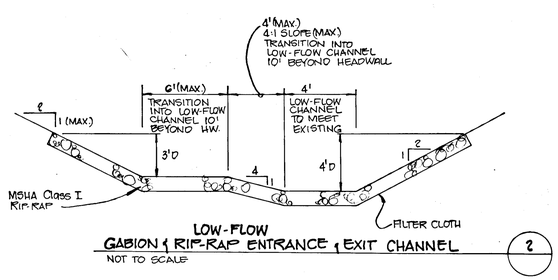


PLAN SCALE: 1" = 30'

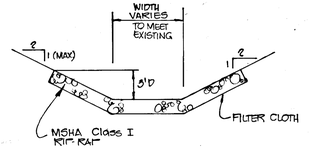
NOTE: BASELINE STATIONING IS DEFINED BY EXISTING GRAVITY SEWER FROM MH 200 TO MH 135 EXISTING MH 200 = BASELINE STATION 0+00.

FOR PROPOSED GRADING SEE STREET TREE, GRADING AND SEDIMENT CONTROL SHEET 17 OF 20 PREPARED BY JOHN E. HARMS, JR. & ASSOCIATES, INC. FOR McKENZIE MEADOWS SECTION 2, DATE 7/87.

STEEL CASING PIPE TO BE INSTALLED UNDER CONTRACT 24-1874-D TO REPLACE EXISTING 8" GRAVITY SEWER & 8" FORCE MAIN RUNNING PARALLEL TO PROPOSED CULVERT.



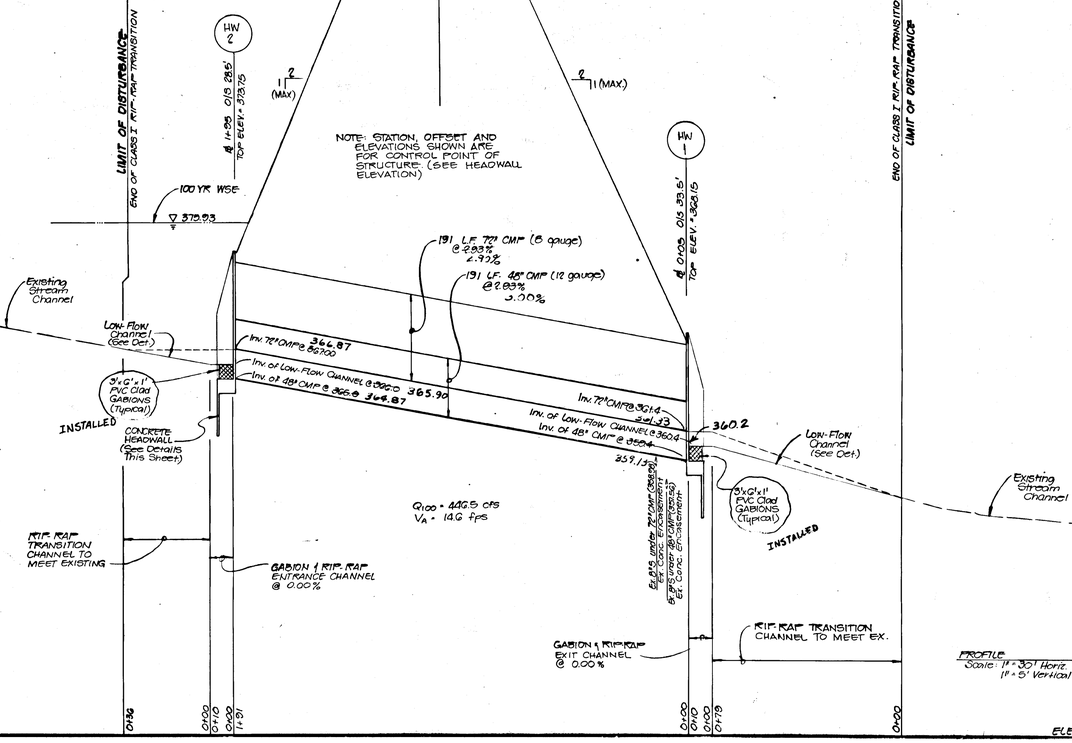
LOW-FLOW GABION & RIP-RAP ENTRANCE & EXIT CHANNEL (2)
NOT TO SCALE

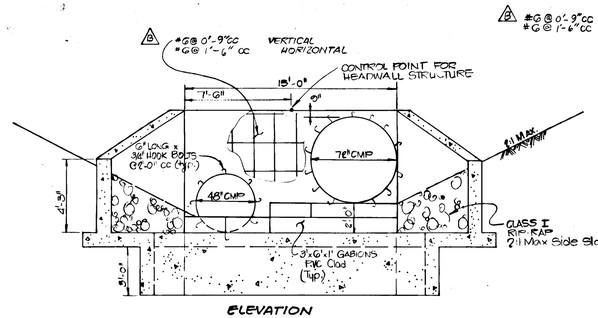


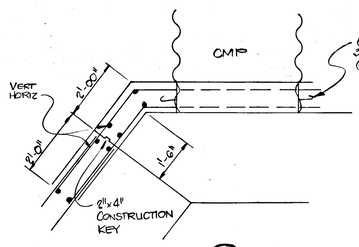
CHANNEL TRANSITION SECTION (3)
NOT TO SCALE

GENERAL NOTES

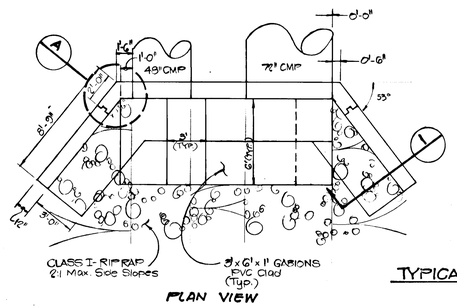
1. All construction shall conform to MSHA Department of Transportation Standard Specifications for Construction & Materials, 1988 and the Howard County Design Manual, Volume IV Standard Specifications and Details for Construction.
2. For Headwall Details and Dimensions not shown refer to the MSHA Standard Headwall B-64 (MO-352.02).
3. Riprap shall be MSHA Class I.
4. Concrete shall be MSHA, mix #3 (3500 psi).
5. Chamfer all exposed concrete edges 1" x 1".
6. Use #6 steel bars (3/4" ϕ) All reinforcement bars shall consist of deformed bars meeting the requirements of AASHTO M-31, Grade 60.

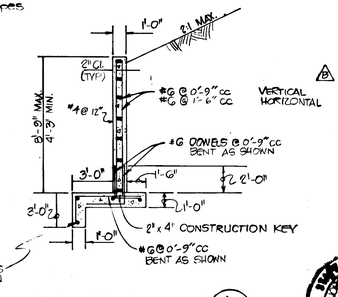






DETAIL (A)
NOT TO SCALE





SECTION (1)
NOT TO SCALE

TYPICAL SECTION FOR HEADWALL
NOT TO SCALE

project	date
86041.00	OCT 1988
illustration	engineering
KAM	KAM/JBM
scale	approval
AS SHOWN	JBM

no.	description	date
0	Submitted to Howard County	10/28/88
A	REVISED REINFORCING DETAIL	2/22/89
revisions		

McKENZIE MEADOWS

ELECTION DISTRICT No. 2 HOWARD COUNTY, MARYLAND

TAX MAP No. 17 PARCEL 36

GUDEL DRIVE CULVERT CROSSING

MILDENBERG, BOCHI & ASSOCIATES, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 North Ridge Road, Suite 235, Ellicott City, Maryland 21043-3390
(301) 461-0078 D.C. Metro (301) 621-5788

STATE OF MARYLAND — ROBERT M. BOCHI — No. 10028 — PROFESSIONAL ENGINEER

STATE OF MARYLAND — JOHN E. HARMS, JR. — No. 10028 — PROFESSIONAL ENGINEER

4/14/89

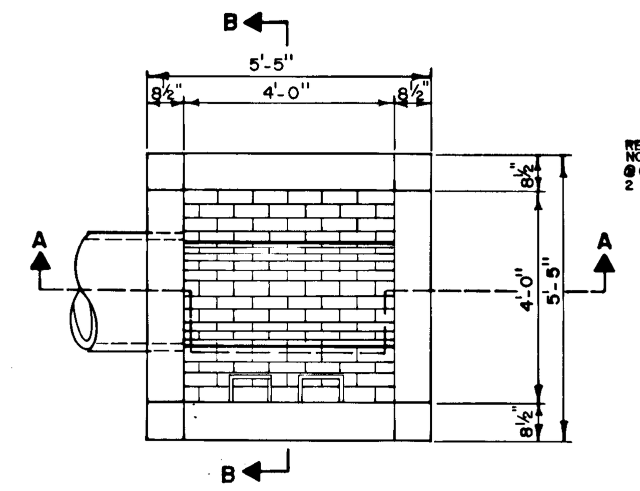
802

F88-36

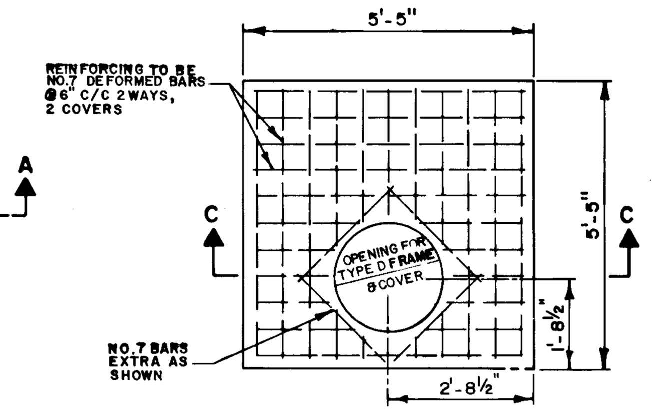
AS BUILT

STANDARD SHALLOW MANHOLE MODIFIED

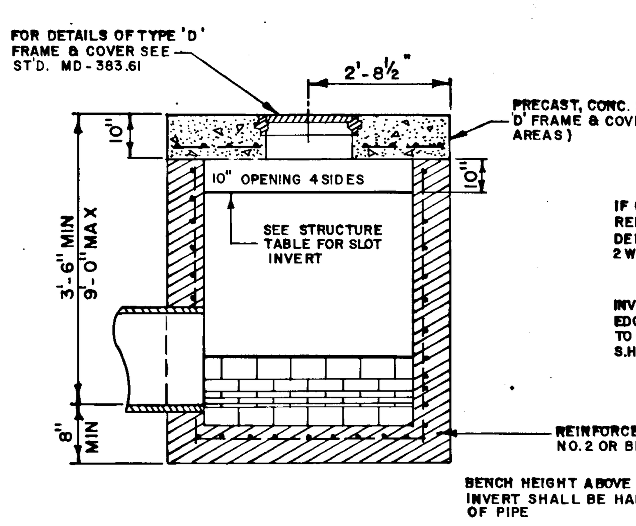
MD. S.H.A. STANDARD M.D. 383.00
(WITH TYPE 'D' FRAME AND COVER)

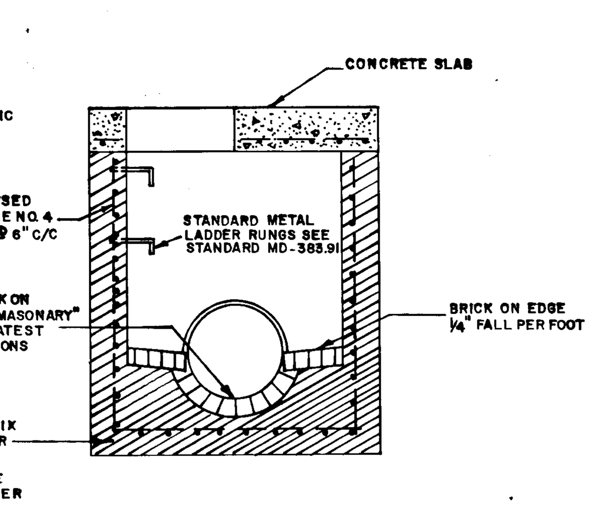


PLAN
(SHOWN WITHOUT CONC. SLAB)



CONCRETE SLAB
(CONCRETE MIX NO.2, 10" THICK)



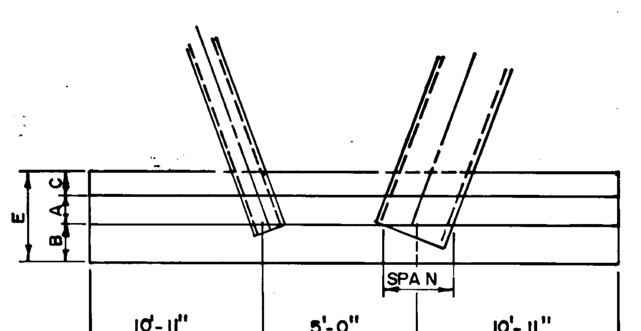


SECTION A-A

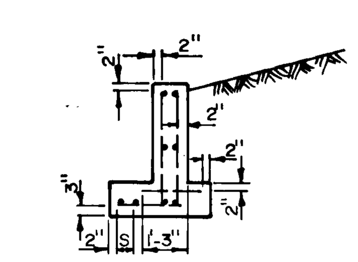
SECTION B-B

STANDARD TYPE C ENDWALL MODIFIED

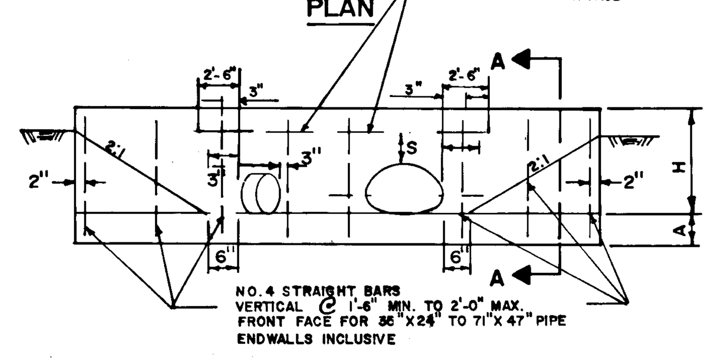
MD. S.H.A. STANDARD NO. MD-355.01



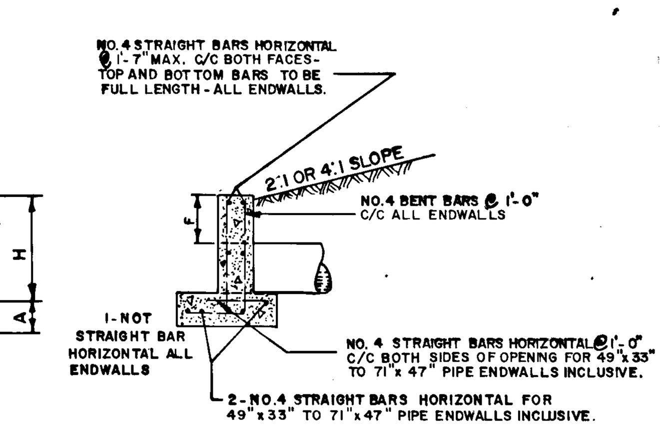
PLAN



DISPOSITION OF BARS DETAIL



ELEVATION



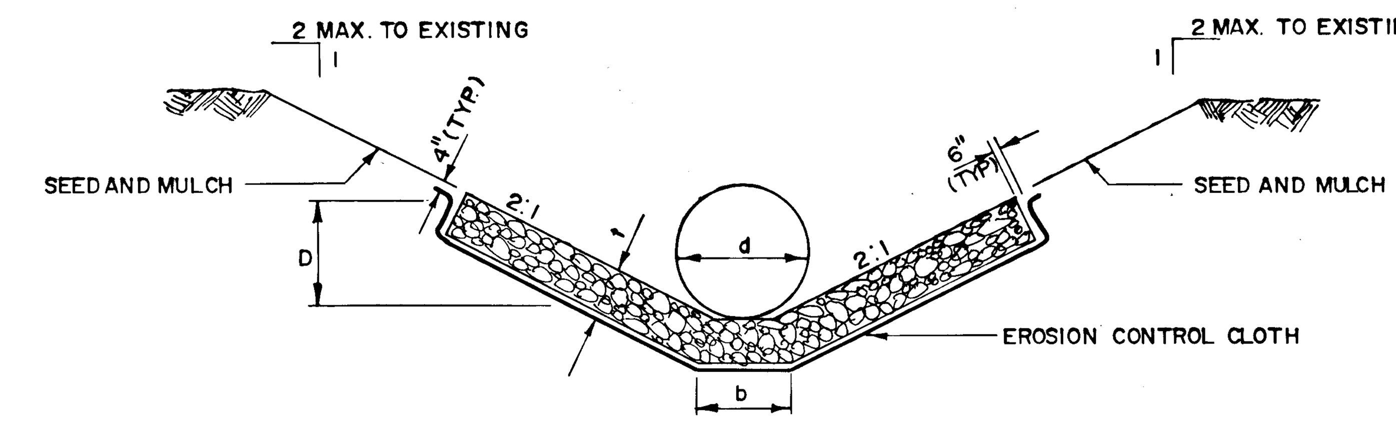
SECTION A-A

OPENING		DIMENSIONS							QUANTITIES	
D INCHES SxR	AREA SQ.FT.	A	B	C	E	F	H	L	CONC. C.Y.	STEEL LBS.
71x47	19.64	12"	20"	12"	3'-8"	10"	4'-9"	26'-10"	6.05	243

STRUCTURE SCHEDULE

STRUC.	TYPE	INVERT IN	INVERT OUT	TOP ELEV.	ROAD STA.	REMARKS
I-1	A-5	384.80'	383.95'	393.55'	℄ STA. 8+68.50 GUDEL DR.	HO. CO. Std. S.D. 4.01
I-2	A-10	388.30', 388.90'	385.64'	393.55'	℄ STA. 8+68.50 GUDEL DR.	HO. CO. Std. S.D. 4.01
I-3	A-5 W/DEFLECTORS	403.00'	401.67'	405.95'	℄ STA. 4+99.00 GUDEL DR.	HO. CO. Std. S.D. 4.01, S.D. 4.83
I-4	A-5 W/DEFLECTORS	416.40'	416.29'	421.21'	℄ STA. 0+51.00 HAWK CT.	HO. CO. Std. S.D. 4.01, S.D. 4.83
I-5	A-10 W/ DEFLECTORS	417.20'	416.98'	421.46'	℄ STA. 0+57.00 HAWK CT.	HO. CO. Std. S.D. 4.02, S.D. 4.83
I-6	A-10	——	417.65'	421.40'	℄ STA. 1+50.00 GUDEL DR.	HO. CO. Std. S.D. 4.02
I-7	A-5 W/ DEFLECTORS	——	392.30'	396.23'	℄ STA. 7+03.00 GUDEL DR.	HO. CO. Std. S.D. 4.01, S.D. 4.83
I-8	A-5 W/ DEFLECTORS	399.60'	399.06'	403.48'	℄ STA. 0 53.00 EAGLE CT.	HO. CO. Std. S.D. 4.01, S.D. 4.83
I-9	A-5 W/ DEFLECTORS	——	399.88'	403.48'	℄ STA. 0 53.00 EAGLE CT.	HO. CO. Std. S.D. 4.01, S.D. 4.83
I-10	A-5 W/ DEFLECTORS	392.75'	391.88'	392.01'	℄ STA. 0+52.00 STARLING RD.	HO. CO. Std. S.D. 4.01, S.D. 4.83
I-11	A-10 W/ DEFLECTORS	394.00'	393.41'	397.28'	℄ STA. 0+57.00 STARLING RD.	HO. CO. Std. S.D. 4.02, S.D. 4.83
I-12	A-5 W/DEFLECTORS	418.75'	418.00'	422.86'	℄ STA. 0+44.00 ORIOLE CT.	HO. CO. Std. S.D. 4.01, S.D. 4.83
I-13	A-5 W/DEFLECTORS	419.35'	418.75'	422.86'	℄ STA. 0+50.00 ORIOLE CT.	HO. CO. Std. S.D. 4.01, S.D. 4.83
I-14	A-10	419.90'	419.55'	423.28'	℄ STA. 6+38.00 STARLING RD.	HO. CO. Std. S.D. 4.02
I-15	A-10	——	420.05'	423.28'	℄ STA. 6+38.00 STARLING RD.	HO. CO. Std. S.D. 4.02
I-16	A-5	398.10'	395.00'	405.36'	℄ STA. 5+21.82 SPARROW CT.	HO. CO. Std. S.D. 4.01
I-17	A-10	399.50'	398.78'	405.36'	℄ STA. 5+21.82 SPARROW CT.	HO. CO. Std. S.D. 4.02
I-18	A-5	398.75'	398.03'	402.79'	℄ STA. 14+23.33 GUDEL DR.	HO. CO. Std. S.D. 4.01
I-19	A-5	——	398.98'	402.79'	℄ STA. 14+23.33 GUDEL DR.	HO. CO. Std. S.D. 4.01
I-20	A-5 W/ DEFLECTORS	400.50'	399.97'	404.29'	℄ STA. 0+57.00 FINCH CT.	HO. CO. Std. S.D. 4.01, S.D. 4.83
I-21	A-5 W/ DEFLECTORS	——	400.64'	404.29'	℄ STA. 0+57.00 FINCH CT.	HO. CO. Std. S.D. 4.01, S.D. 4.83
MH-1	STANDARD MANHOLE	366.40'	360.05'	375.00'	SEE PLAN & PROFILE	HO. CO. Std. G 5.01
MH-2	STANDARD MANHOLE	392.50'	391.46'	395.96'	℄ STA. 7+03.00 GUDEL DR.	HO. CO. Std. G 5.01
MH-3	STANDARD MANHOLE	397.80'	395.52'	401.83'	℄ STA. 5+85.00 GUDEL DR.	HO. CO. Std. G 5.01
MH-4	STANDARD MANHOLE	413.50'	413.12'	416.88'	℄ STA. 2+80.00 GUDEL DR.	HO. CO. Std. G 5.01
MH-5	STANDARD MANHOLE	390.50'	390.10'	394.38'	℄ STA. 9+80.00 GUDEL DR.	HO. CO. Std. G 5.01
MH-6	STANDARD MANHOLE	397.90'	397.15'	401.22'	℄ STA. 1+65 STARLING RD.	HO. CO. Std. G 5.01
MH-7	STANDARD MANHOLE	403.78'	401.90'	407.07'	℄ STA. 2+70.00 STARLING RD.	HO. CO. Std. G 5.01
MH-8	STANDARD MANHOLE	410.00'	409.73'	414.34'	℄ STA. 3+83.00 STARLING RD.	HO. CO. Std. G 5.01
MH-9	STANDARD MANHOLE	417.50'	416.32'	420.88'	℄ STA. 5+44.00 STARLING RD.	HO. CO. Std. G 5.01
MH-10	STANDARD MANHOLE	401.80'	399.90'	405.43	℄ STA. 5+03.00 SPARROW CT.	HO. CO. Std. G 5.01
MH-11	STANDARD MANHOLE	404.60'	404.40'	412.00'	SEE PLAN & PROFILE	HO. CO. Std. G 5.01
MH-12	STANDARD MANHOLE	396.00', 388.80'	388.35'	405.70'	℄ STA. 15+91.00' GUDEL DR.	HO. CO. Std. G 5.01
MH-13	STANDARD MANHOLE	397.10'	396.85'	402.94'	℄ STA. 15+08.00' GUDEL DR.	HO. CO. Std. G 5.01
MH-14	STANDARD MANHOLE	399.70'	399.23'	402.79'	℄ STA. 13+25.00' GUDEL DR.	HO. CO. Std. G 5.01
S-1	C-ENDWALL	——	359.00'	——	SEE PLAN AND PROFILE	HO. CO. Std. S.D. 5.21
S-2	C-ENDWALL MODIFIED METAL PIPE ARCH	——	394.50'	——	SEE PLAN, PROFILE AND DETAIL SHEET	S.H.A. Std. S.D. 355.01
S-3	Std. METAL END SECTION FOR 71X47 ARCH METAL PIPE	399.5'	——	——	SEE PLAN AND PROFILE	S.H.A. MD- 371.01
S-4	Std. SHALLOW MANHOLE MODIFIED WITH 10" SLOTS OPENING 4 SIDES	SLOT ELEV = 412.5'	407.28'	414.08'	SEE PLAN, PROFILE AND DETAIL SHEET	S.H.A. MD- 383.00
S-5	A- HEADWALL	——	387.00'	——	SEE PLAN AND PROFILE	HO. CO. MD- S.D. 5.11
S-6 (C)	D-INLET (OPEN 4 SIDES)	SLOT ELEV =387.50	390.60'	398.33'	SEE PLAN AND PROFILE	* S.H.A. MD-383.00 (MODIFIED)
S-7	C-ENDWALL	396.00'	396.00'	——	SEE PLAN AND PROFILE	HO. CO. Std. S.D. 5.21

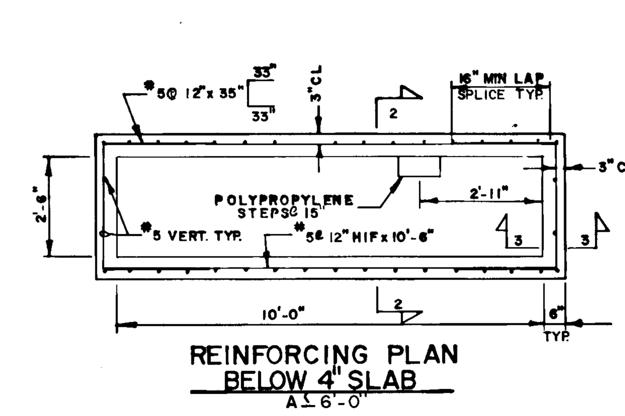
* PROVIDE 6" SLOTS, ALL FOUR SIDES. USE TYPE D FRAME & COVER M.D. 383.61



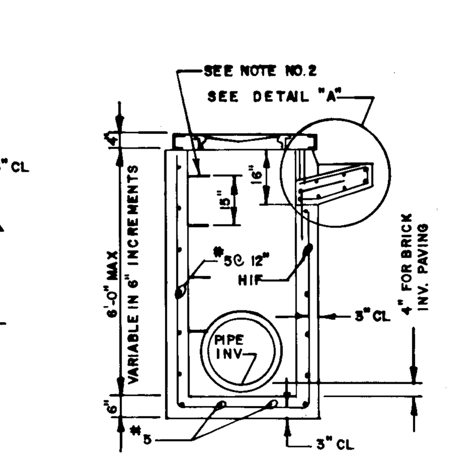
RIPRAP CHANNEL DETAIL
NOT TO SCALE

RIPRAP CHANNEL DESIGN DESIGN DATA (n=0.04)

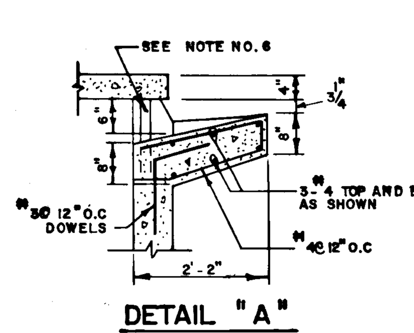
STRUC	A Ø	W_P	R_H	$R_H^{2/3}$	S	$S^{1/2}$	Q	V	d	D	b	t	d_{50}	d MAX
S-1A	9.2	9.6	0.96	0.97	0.010	0.10	33.8cfs	3.6	24"	1.7'	2.0	1.2'	9"	14"
S-2	31.3	1.79	1.74	1.45	0.010	0.10	1.65cfs	5.39	—	2.9'	5.0	1.2'	9"	14"
S-5	9.18	9.6	0.96	0.98	0.010	0.10	31.10	3.6	27"	1.7'	2.0	1.2'	6"	9"
S-1B	4.7	6.9	0.68	0.77	0.049	.222	30.0	6.4fps	——	1.2	2.0	1.2'	6"	9"



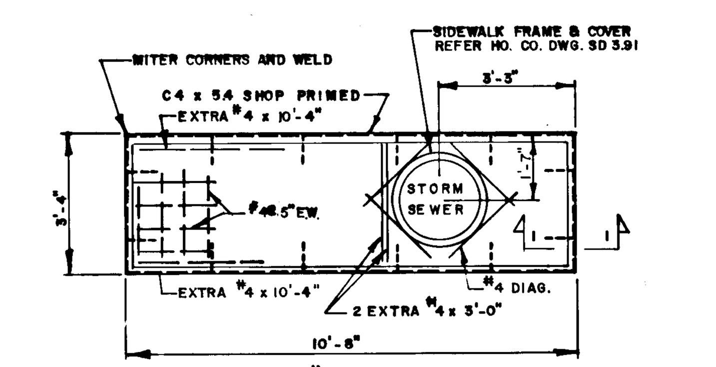
REINFORCING PLAN BELOW 4" SLAB
A ≤ 6'-0"



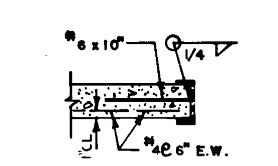
SECTION 2-2



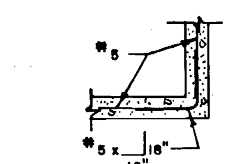
DETAIL "A"



PLAN 4" TOP SLAB



SECTION 1-1



SECTION 3-3

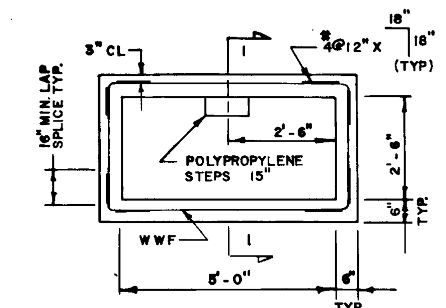
PRECAST STANDARD TYPE A-10 INLET

HOWARD COUNTY STANDARD NO. SD 4.41

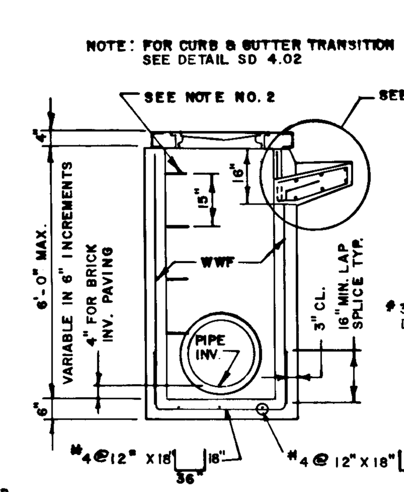
NOTES:

1. CONCRETE SHALL CONFORM TO MARYLAND DOT STANDARD SPECIFICATION FOR CONSTRUCTION & MATERIALS 1982, MIX NO. 6 IN ADDITION, f'c= 4500 PSI @ 28 DAYS, CEMENT SHALL BE TYPE III, AND 8 COARSE AGGREGATE SHALL BE USED.
2. POLYPROPYLENE STEPS SHALL BE TYPE PS4 OR PS5 AS MANUFACTURED BY M.A. INDUSTRIES, INC. STEP SHALL BE INSTALLED IN LINE WHERE A > 3'-6" (SEE G.5.21).
3. REFERENCE DRAWING FOR TYPE A-10 INLET IS HOWARD COUNTY STANDARD DRAWING NO. SD 4.02
4. REINFORCING SCHEDULE IS BASED ON USD METHOD AND DESIGN LOADS AS SPECIFIED IN AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, 13th EDITION, 1983 AND INTERIM SPECIFICATIONS.
5. WEIGHTS: 4" TOP SLAB WT.= 2,000#
   MAX. INLET BOX WT.= 24,000# (10' HEIGHT, I.D.)
   RISER WT/VF = 2,000#/VF
6. PROVIDE 3"Ø RUST PROOF STEEL PIPE, PAINTED GRAY AT MID POINT OF THROAT, FILL WITH CONCRETE.

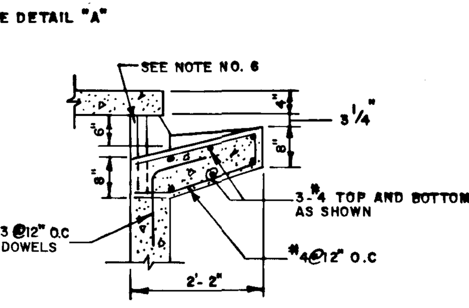
NOTE: FOR CURB & GUTTER TRANSITION SEE DETAIL SD 4.02



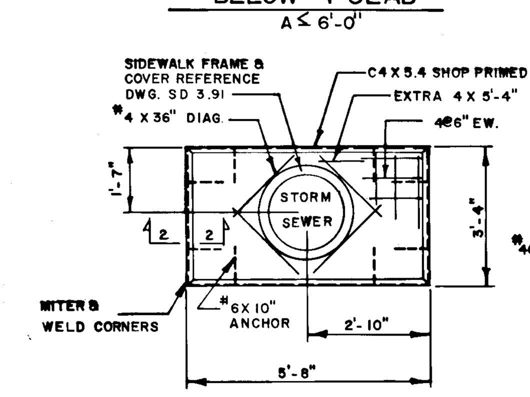
REINFORCING PLAN BELOW 4" SLAB
A ≤ 6'-0"



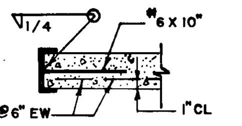
SECTION 1-1



DETAIL "A"

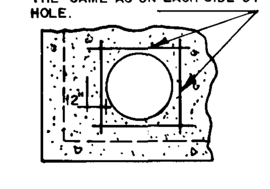


PLAN- 4" TOP SLAB



SECTION 2-2

REPLACE REINFORCING CUT OUT FOR PIPE PENETRATIONS PROVIDE THE SAME AS ON EACH SIDE OF HOLE.



PIPE PENETRATION DETAIL

NOTES:

1. CONCRETE SHALL CONFORM TO MARYLAND DOT STANDARD SPECIFICATION FOR CONSTRUCTION & MATERIALS 1982, MIX NO.6 IN ADDITION, fc=4500 PSI @ 28 DAYS, CEMENT SHALL BE TYPE VI AND #8 COARSE AGGREGATE SHALL BE USED. WWF 4x4 - W4 x W4 (0.24 SQ. IN / FT.)
2. POLYPROPYLENE STEP SHALL BE TYPE PS 4 OR PS 5 AS MANUFACTURED BY M.A INDUSTRIES, INC. STEP SHALL BE INSTALLED INLINE WHERE A > 3'-6" (SEE G 5.21)
3. REFERENCE DRAWING FOR TYPE A-5 INLET IS HOWARD COUNTY STANDARD DWG. NO. SD 4.01
4. REINFORCING SCHEDULE IS BASED ON USD METHOD AND DESIGN LOADS AS SPECIFIED IN AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, 13th EDITION, 1983 AND INTERIM SPECIFICATIONS.
5. WEIGHTS: 4" TOP SLAB = 950#
   MAX. INLET BOX WT. = 7,200#
   RISER WT. / VF = 1,300#/ VF
6. PROVIDE 3" Ø RUST PROOF STEEL PIPE, PAINTED GRAY AT MID POINT OF THROAT, FILL WITH CONCRETE.

PRECAST STANDARD TYPE A-5 INLET

HOWARD COUNTY STANDARD NO. SD. 4.40

APPROVED OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — 12/22/87 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, LAND DEVELOPMENT DIVISION. — 12/18/87 DATE

CHIEF, BUREAU OF HIGHWAYS. — 12/21/87 DATE

CHIEF BUREAU OF ENGINEERING — 12.21.87 DATE

STATE OF MARYLAND ROBERT M. MOCH REGISTERED PROFESSIONAL ENGINEER
RMB 8-11-93

NO.	REVISION	BY	DATE
(C)	ADJUST S-6	KAM	9-13-90

STORM DRAIN DETAILS
McKENZIE MEADOWS
SECTION 2
TAX MAP NO. 17 PARCEL 36
(O.P.& Z. REF. NO. P.-87-51)
2nd ELECTION DISTRICT HOWARD COUNTY, MD

JOHN E. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELEPHONE (301) 740-5200

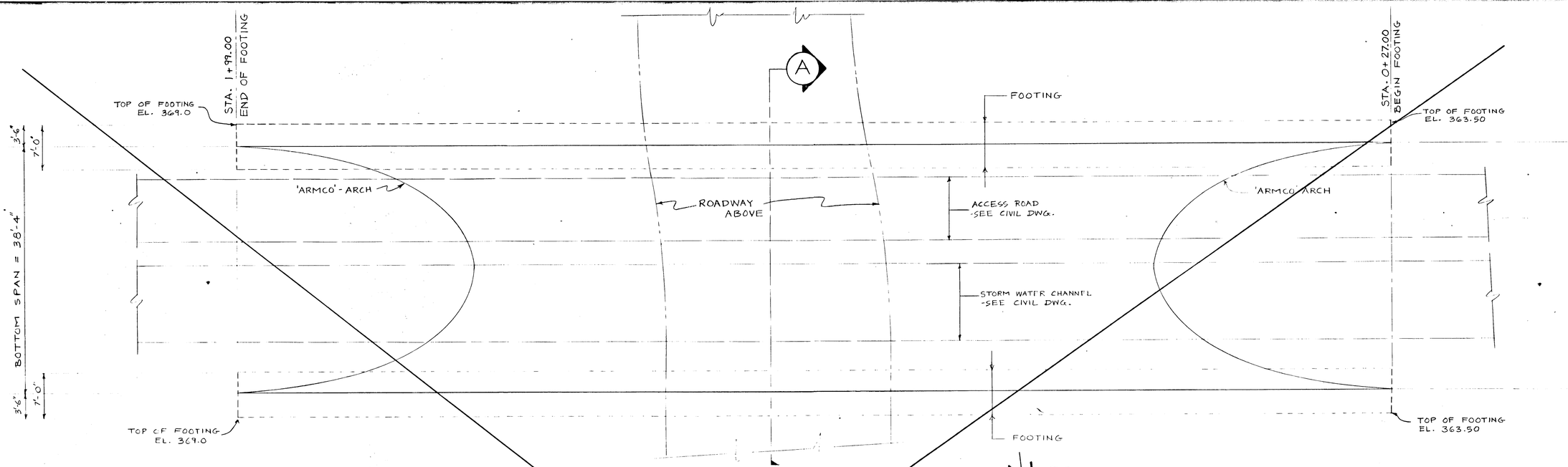
DESIGNED BY: J.A.B.
DRAWN BY: P.O.A.
CHECKED BY: K.B.C.
DATE: 7-87
SCALE: N.T.S.
W.O. NO. 4486002

12 SHEET OF 20

F-88-36

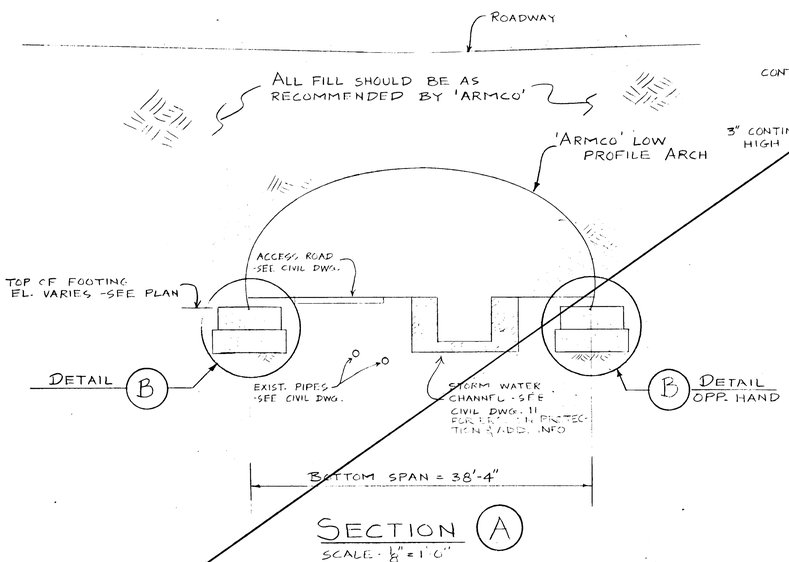
802

A&E INC-BALT



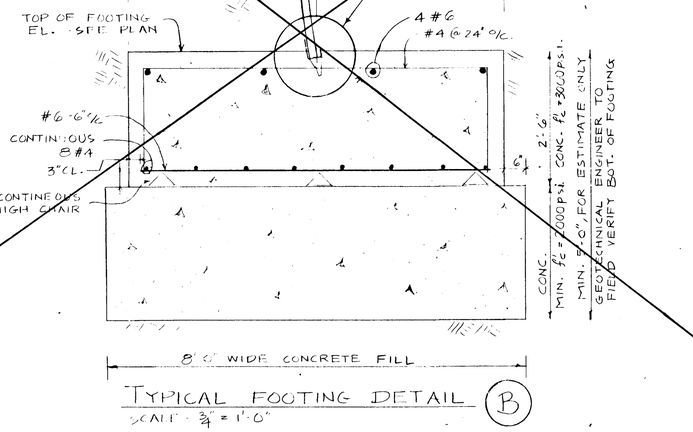
FOUNDATION PLAN

SCALE - 1/8" = 1'-0"



SECTION A

SCALE: 1/8" = 1'-0"



TYPICAL FOOTING DETAIL B

SCALE - 3/4" = 1'-0"

GENERAL NOTES

1. DESIGN LIVE LOADS:
   A. ARCH BASE:
      REACTIONS - HORIZONTAL, RH = ~~45,434~~ 7,497 #/FT.
      VERTICAL, RV = ~~27,497~~ 45,434 #/FT.
2. STANDARDS & DESIGN STRESSES:
   A. CONCRETE - SPECIFICATION - ACI 318 & ACI 301
      USAGE: CLASS 3000 P.S.I. FOR ALL WORK UNLESS NOTED.
   B. REINFORCING BARS - A615, GRADE 60.
3. DIMENSION: GENERAL CONTRACTOR TO VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH THE WORK
4. FOUNDATION:
   A. ELEVATIONS OF TOP OF FOOTINGS HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION
   B. SHOULD IT BE FOUND NECESSARY TO VARY THE ELEVATIONS GIVEN TO SATISFY THE FOREGOING REQUIREMENTS, THE ENGINEER SHALL BE NOTIFIED BEFORE PROCEEDING WITH THE WORK.
   C. ALL NEW FOOTINGS SHALL BE ON NATIVE UNDISTURBED SOIL AND ARE DESIGNED FOR AN ASSUMED SOIL BEARING CAPACITY OF 6500 P.S.F. WHICH MUST BE VERIFIED IN THE FIELD BY A QUALIFIED GEOTECHNICAL ENGINEER.
   D. REFER TO GEOTECHNICAL REPORT BY ATEC ASSOCIATES, INC. FOR ADDITIONAL FOUNDATION AND INSPECTION INFORMATION.
   E. ALL FILL SHOULD BE AS RECOMMENDED BY 'ARMCO' AND GEOTECHNICAL ENGINEER.
5. CONCRETE:
   A. CHAMFER ALL EXPOSED CORNERS OF FORMED CONCRETE -3/4".
   B. SHOP DRAWINGS SHALL SHOW ALL NECESSARY SECTIONS AND DETAILS FOR PROPER POSITIONING OF REINFORCEMENT. PROVIDE APPROVED ACCESSORIES AS REQUIRED.
6. TESTING AND INSPECTION:
   A. CONCRETE SHALL BE SAMPLED AND TESTED ACCORDING TO ACI 301-84 AND THE RESULTS OF THE TESTS SHALL BE FORWARDED TO THE ENGINEER.
   B. NOTIFY ENGINEER FOR REVIEW OF FOUNDATIONS REINFORCEMENT IN PLACE PRIOR TO POURING ANY CONCRETE.

McKENZIE MEADOWS
FOUNDATION FOR ROAD ARCH

TAX MAP 17 PARCEL 36

2nd ELECTION DISTRICT HOWARD COUNTY, MD.

JOHN E. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELEPHONE (301) 740-5200

APPROVED OFFICE OF PLANNING AND ZONING

Howard Austin 12/22/87
DIRECTOR, OFFICE OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, LAND DEVELOPMENT DIVISION. — DATE
CHIEF, BUREAU OF HIGHWAYS. — DATE
CHIEF, BUREAU OF ENGINEERING. — DATE

FAISANT ASSOCIATES, INC.
CONSULTING ENGINEERS
14 WEST 25TH ST.
BALTIMORE, MD. 21218

NO.	REVISION	BY	DATE

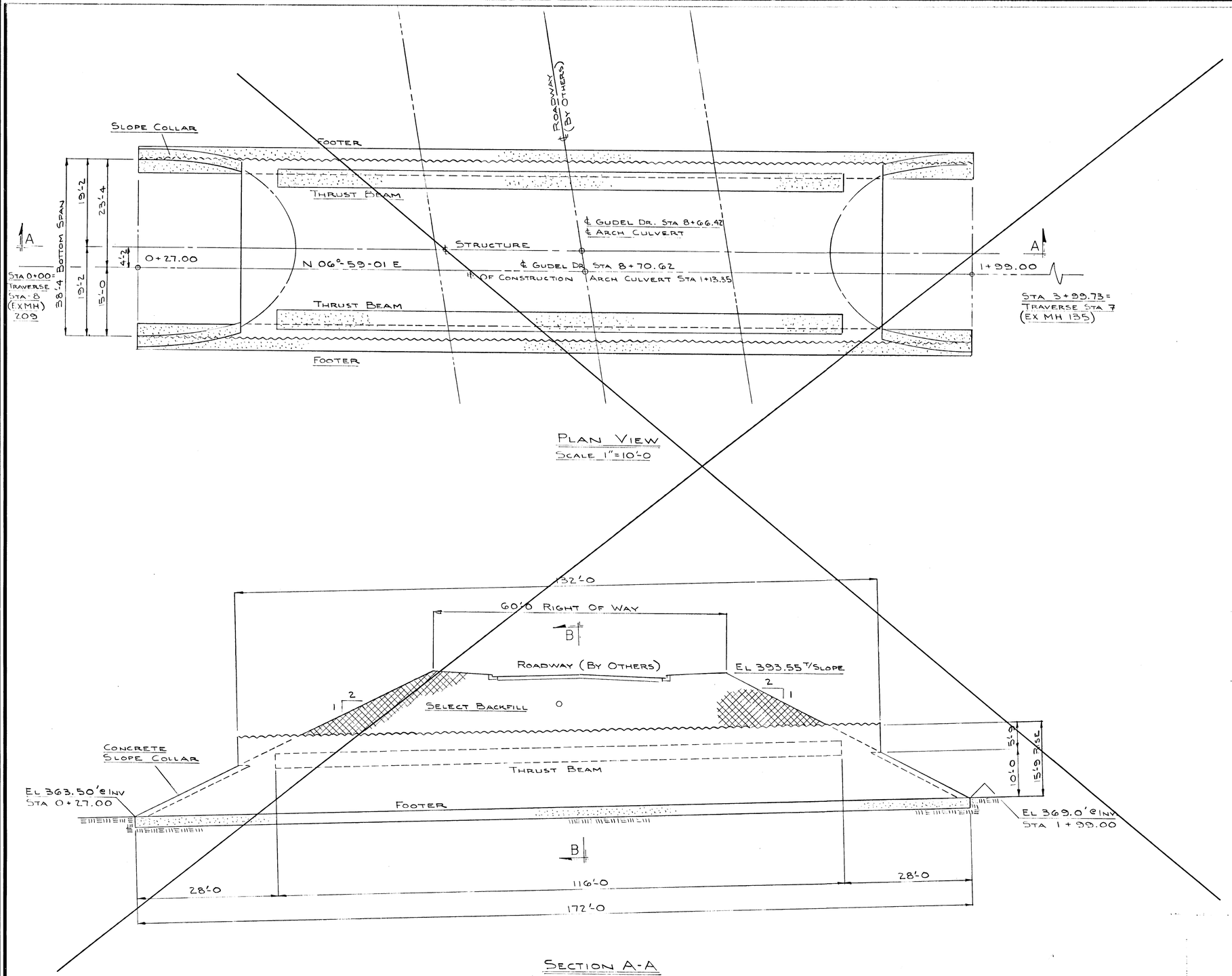
DESIGNED BY: ACP/EF
DRAWN BY: ACP
CHECKED BY: SJR
DATE: 7-28-87
SCALE: AS SHOWN
W.O. NO. 44-86-0002D

SHEET 13 OF 20

F-88-36

2202

A&E INC-SALT



BACKFILL

1. Select borrow, A-1 type material from AASHTO specification M-145 placed in 8-inch loose lifts and compacted to 90% of maximum density. Optimum moisture and maximum density shall be determined by ASSHTO Test T-180, Method D. The top foot at subgrade elevation shall be compacted to 95% of maximum density as determined by the above test.

2. Each layer of backfill shall be compacted to a relative compaction of not less than 90%, per AASHTO Test Method No. T-180. Complete and regular monitoring of the pipe arch culvert shape shall be performed during the backfilling operation. Compaction equipment or methods which cause changes in pipe arch culvert shape in excess of 2%, or which cause damage to the structure shall not be used. Initial lifts over the crown of the pipe arch culvert are to be compacted to required density with hand operated equipment until the height of cover over the crown of the culvert reaches a minimum of 3 feet. Heavy construction equipment shall not be operated within 2 feet of the side plates of the pipe arch culvert and shall not pass over the pipe arch culvert until a minimum of 3 feet of compacted cover has been placed over the structure.

   The manufacturer of the structural plate pipe arch shall provide inspection of all structural backfilling to 3 feet over the structure. This inspector shall approve all backfill materials and the placement and compaction thereof. The inspector shall have full authority to stop such work. The Owner shall have field density tests made of the compacted backfill at the request and direction of the manufacturer's inspector.

3. The material used in the fill at the time of compaction shall have a moisture content that is within 3% above or below the optimum moisture content as determined by the above described test. The material removed from the excavation for this structure may be used in the backfill if it meets the above criteria.

NOTES

All Multi-Plate material to be galvanized and in accordance with AASHTO M-167.

Erection of Low Profile Arch is in accordance with Section-9 of the AASHTO bridge specifications.

Reinforced Concrete Thrust Beams are to be cast on assembled structure during backfilling with the reinforcing steel connected to the corrugated plates.

Monitoring of structures shape and alignment along with the inspection and compaction testing of the backfill to be performed by a manufactures represenative or approved engineer.

All concrete to have a minimum 28 day compressive strength of 3000 P.S.I. with cold weather provisions being taken if required as stipulated in the A.C.I. Code.

APPROVED OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 12/23/87

(O.P. & Z. REF. NO. P-87-51)

McKENZIE MEADOWS
SECTION TWO
FOUNDATION FOR ROAD ARCH

TAX MAP 17 PARCEL 36

2nd ELECTION DISTRICT HOWARD COUNTY, MD.

JOHN E. HARMS JR. AND ASSOCIATES INC.

CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS

9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELEPHONE (301) 740-5200

NORWOOD OF MARYLAND INC.

CONTECH CONSTRUCTION PRODUCTS INC.

1450 Grimm Road
Severn, MD 21144
(301) 551-8880

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, LAND DEVELOPMENT DIVISION — DATE 12-15-87

CHIEF, BUREAU OF HIGHWAYS — DATE 12/21/87

CHIEF, BUREAU OF ENGINEERING — DATE 12-21-87

NO.	REVISION	BY	DATE

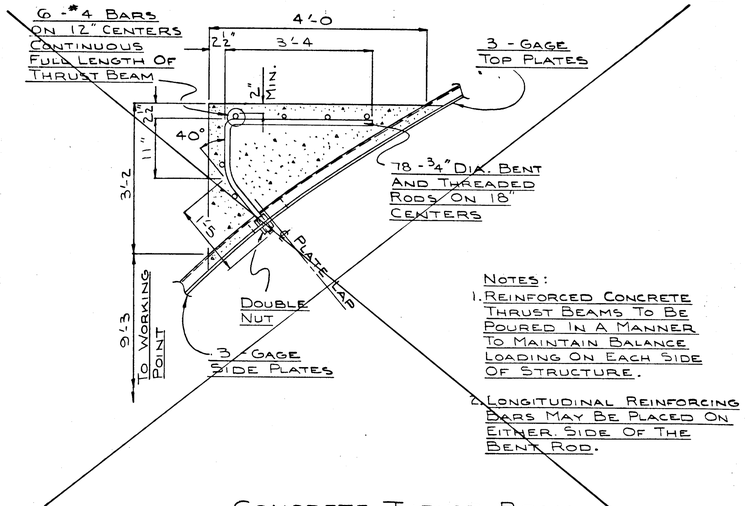
DESIGNED BY :
DRAWN BY :
CHECKED BY :
DATE : 7/87
SCALE : AS SHOWN
W.O. NO. 44-86-002

SHEET 14 OF 20

CONTECH (ARMCO) 38'-4 SPAN x 15'-9 RISE, 3-GAGE, MULTI-PLATE, LOW PROFILE, SUPER SPAN STREAM ENCLOSURE

802

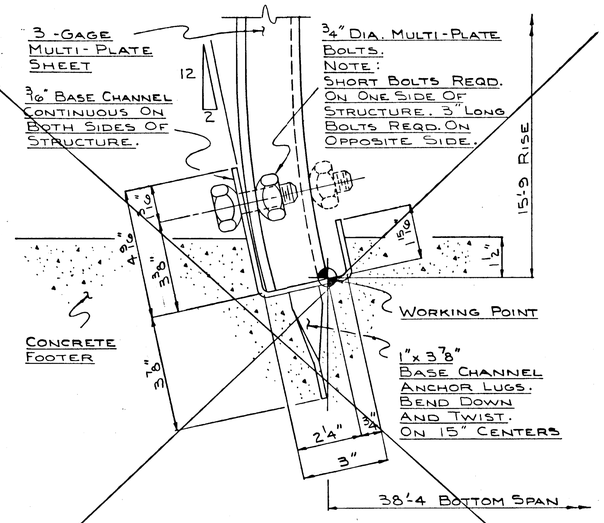
F-88-36



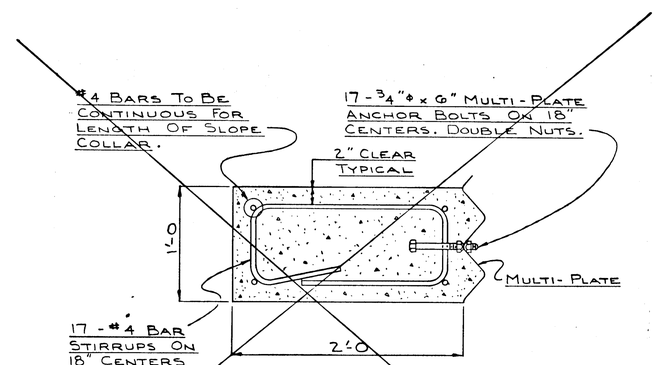
NOTES:

1. REINFORCED CONCRETE THRUST BEAMS TO BE POURED IN A MANNER TO MAINTAIN BALANCE LOADING ON EACH SIDE OF STRUCTURE.
2. LONGITUDINAL REINFORCING BARS MAY BE PLACED ON EITHER SIDE OF THE BENT ROD.

CONCRETE THRUST BEAM
DETAIL-A
NOT TO SCALE

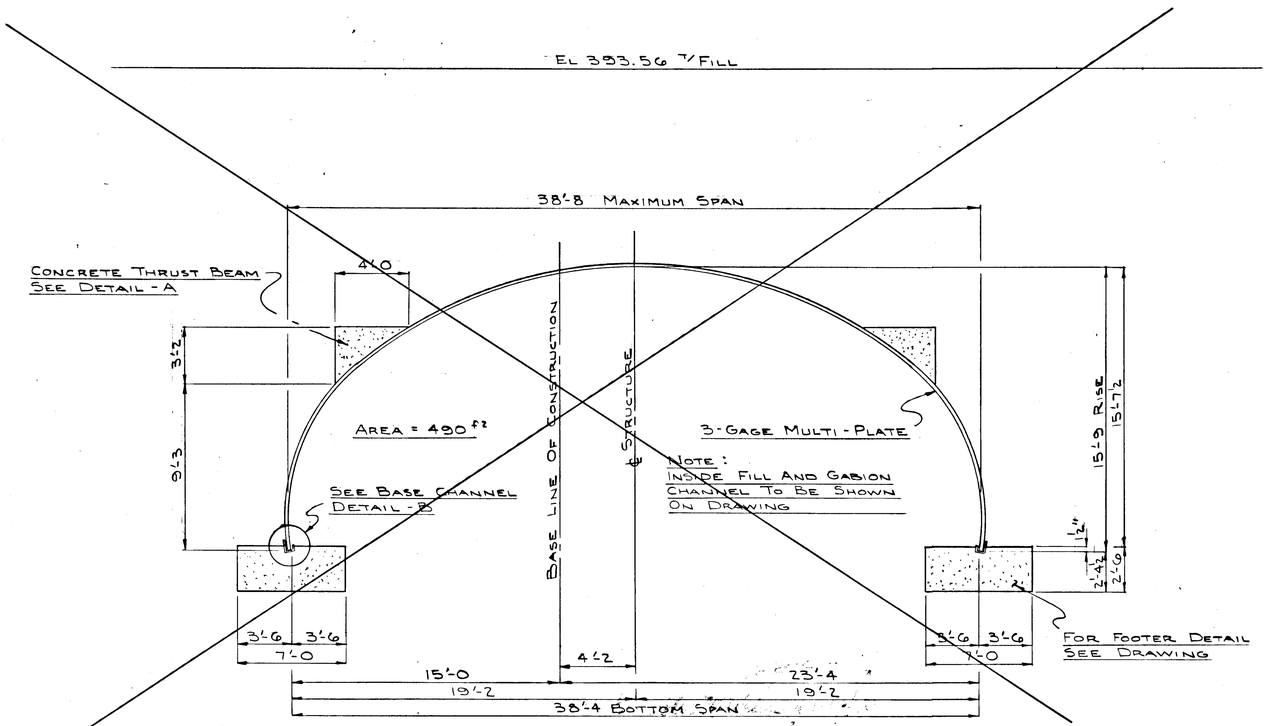


BASE CHANNEL
DETAIL-B
SCALE ⅜"=1"



SECTION THROUGH
CONCRETE SLOPE COLLAR
SCALE 1½"=1'-0

EL 393.56 T/FILL



SECTION A-A
SCALE 1"=4'-0

STRUCTURAL ANALYSIS

ARMCO (CONTECH) LOW PROFILE ARCH

SPAN = 38'-8"
RISE = 15'-9"
TOP RADIUS Rt = 24'-0"= 288"
CORNER RADIUS Rc = 10'-11"= 131"
STRUCTURE REFERENCE NO. = 126A42
AREA = 495 SQ. FT.
HEIGHT OF COVER = 16.5 FT.
LIVE LOAD = H-20 HIGHWAY

COMPUTE RING COMPRESSION

1. PRESSURE ON CROWN Pt = DL + LL
   DL = 16.5 x 120 = 1980 psf
   LL = AISI T 3-1 = 100 psf
   Pt = 2080 psf
2. RING COMPRESSION C = Pt x Rt
   = 2080 x 24
   = 49920 lb/ft of structure
3. EFFECTIVE WALL STRESS fc = C/A for 3 gage (AISI T 1-10)
   = 49920 lf.ft./3.658 in.sq.ft.
   = 13647 psi
4. ULTIMATE WALL STRESS D = 2 x Rt = 576" r=.692 (1-10)
   D/r = 833
   fb = 4.93 x 10\9th / (D/r)sq
   = 7116 psi
5. DESIGN STRESS fd = fb/2 = 3558 psi
   fc'= 5fd = 17790 psi> 13647 psi,as req'd.
   Max. Allowable Wall Stress fy/2=33000/2
   = 16500 psi > fc > 13647 psi, as req'd.
6. SEAM STRENGTH SS > C SS= ULTIMATE SEAM STR./2 (1-12)
   132000/2=66000 psi> 49920 psi as req'd.
7. FLEXIBILITY FACTOR FF= DXD / EI E= 30 X 10\6TH PSI
   = .07564
   adjust SS arc = .07564/5
   = .015 < .020 allowable

MOTT ASSOCIATES, INC.
CONSULTING ENGINEERS
SUITE 200
1001 CROMWELL BRIDGE RD.
TOWSON, MD. 21204

STATE OF MARYLAND — CHARLES WING BRADLEY — No. 10981 — REGISTERED PROFESSIONAL ENGINEER

Charles W Bradley

(O.P.& Z. REF. NO. P-87-51)

McKENZIE MEADOWS
SECTION TWO
FOUNDATION FOR ROAD ARCH

TAX MAP 17 PARCEL 36

2nd ELECTION DISTRICT HOWARD COUNTY, MD.

NORWOOD of MARYLAND INC.

CONTECH CONSTRUCTION PRODUCTS, INC.

1450 Grimm Road
Severn, MD 21144
(301) 551-8880

JOHN E. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELEPHONE (301) 740-5200

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, LAND DEVELOPMENT DIVISION — DATE 12-15-87

Granville W. Wiehland (retired)
CHIEF, BUREAU OF HIGHWAYS — DATE

CHIEF, BUREAU OF ENGINEERING — DATE 12-21-87

APPROVED OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 12/22/87

NO.	REVISION	BY	DATE

DESIGNED BY:
DRAWN BY:
CHECKED BY:
DATE: 7/87
SCALE: AS SHOWN
W. O. NO. 44-86-002

SHEET 15 OF 20

802

A&E INC-BALT

F-88-36

100 YEAR FLOOD PLAIN

MATCH LINE SEE SHEET 17

DRAINAGE DIVIDE

LIMIT OF DISTURBANCE

A-2 ED

A-3 ED

A-1 ED

EAGLE COURT

GUDEL DRIVE

SPARROW COURT

HAWK COURT

EAST SIDE OF SITE

EXISTING STONE OUTLET TRAP #5

BOTTOM ELEV. 368.0

SAFETY FENCE

STABILIZE DIKE WITH SEED & MULCH

MOUNTABLE BERM TO BE REMOVED DURING CONSTRUCTION

STONE OUTLET TRAP #6

BOTTOM ELEV. 384.0

STONE OUTLET TRAP #4

BOTTOM ELEV. 402.0

STONE OUTLET TRAP #3

BOTTOM ELEV. 408.0

EXISTING STONE OUTLET TRAP #2

DIVERT STORM DRAIN INTO TRAP

PROVIDE INLET PROTECTION

PERMANENT EARTH CHECK DAM (SEE STANDARDS AND SPECIFICATIONS FOR INFILTRATION PRACTICES, MD. DEPT. OF NATURAL RESOURCES) Pg. 4-53 STORAGE DEPTH = 0.75' MEASURED VERTICALLY FROM BASE OF DAM TO TOP OF CHECK DAM.

PERMANANT EARTH CHECK DAM (SEE STANDARDS AND SPECIFICATIONS FOR INFILTRATION PRACTICES, MD. DEPT. OF NATURAL RESOURCES) Pg. 4-53 STORAGE DEPTH 0.75' MEASURED VERTICALLY FROM BASE OF DAM TO TOP OF CHECK DAM.

STABILIZE SWALE WITH SOIL STABILIZATION MATTING.

DIVERSION (PROVIDE 1% SLOPE FOR SWALE LEADING TO INLET S-4)

30' DRAINAGE & UTILITY EASEMENT

STORAGE LENGTH=75'

S11° 28' 27"W 211.50

S11° 54' 22"N 496.93'

S25° 47' 24"E 225.40'

S16° 18' 15"W 165.98'

S66° 41' 15"W 116.07'

N72° 06' 19"W 533.61'

N10° 01' 06"E 600.03'

SULIN ENTERPRISES LTD. 1582/603

ROBERT L. HARBIN ET. AL. 1128/732

DARRELL B JOHNSON 309/0506

Stabilized Construction Entrance

VICINITY MAP SCALE 1"= 2,000'

SITE, SUNSET FARM RD., 99, OLD FREDERICK RD., LITER CT., LITER DR., GUDEL DR., MCKENZIE RD., TILLER DR., 70

NOTE:
1. TOPOGRAPHY FROM POTOMAC AERIAL SURVEY.

LEGEND

SYMBOL	DISCRIPTION
	WETLAND
	EARTH DIKE
S S	SILT FENCE
	DRAINAGE DIVIDE
	STABILIZE CONSTRUCTION ENTRANCE
	FLOW DIRECTION
	LIMIT OF DISTURBANCE
	DIVERISON

WEST SIDE SHEET 2

EAST SIDE SHEET 1

GUDEL DR.

INDEX MAP
SCALE 1"=400'

FOR REVISION (B) ONLY

STATE OF MARYLAND — JOHN B. MILDENBERG — NO. 10,000 — REGISTERED PROFESSIONAL ENGINEER — 8/6/87

(O.P. 87-RET. NO. P-87-51)

OWNER:
COSCAN WASHINGTON INC.
8521 LEESBURG PIKE
SUITE 200
VIENNA, VIRGINIA 22180
PHONE (703) 356-9090

DEVELOPER:
COSCAN WASHINGTON INC.
8521 LEESBURG PIKE
SUITE 200
VIENNA, VIRGINIA 22180
PHONE: (703) 356-9090

DEVELOPERS CERTIFICATE:

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES 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."

Stephen [illegible] — SIGNATURE OF DEVELOPER — 8/6/87 DATE

ENGINEERING CERTIFICATE:

"I 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 COUNTY SOIL CONSERVATION DISTRICT."

William [illegible] Jr. — SIGNATURE OF ENGINEER — 8/6/87 DATE

McKENZIE MEADOWS SECTION 1

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[illegible] — CHIEF, LAND DEVELOPMENT DIVISION — 12-16-87 DATE

Lawrence M. Gaines — CHIEF, BUREAU OF HIGHWAYS — 11-20-87 DATE

[illegible] — CHIEF, BUREAU OF ENGINEERING — 11-20-87 DATE

APPROVED OFFICE OF PLANNING AND ZONING

[illegible] — CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — 12/22/87 DATE

N/A — U.S. SOIL CONSERVATION SERVICE — N/A DATE

THIS DEVELOPMENT IS APPROVED FOR EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
APPROVED: [illegible] — DISTRICT — 11/20/87 DATE
HOWARD SOIL CONSERVATION DISTRICT

REVIEWED FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.
[illegible] — U.S. SOIL CONSERVATION SERVICE — 11-20-87 DATE

NO.	REVISION	BY	DATE
1	Added the Temp. Diversion Pipe	MLM	3-25-88
(B)	REVISED SEDIMENT CONTROL LOTS 67-97	KAM	2/22/88

STREET TREE, GRADING AND SEDIMENT CONTROL

McKENZIE MEADOWS
SECTION 2

TAX MAP 17 PARCEL 35

2nd ELECTION DISTRICT HOWARD COUNTY, MD.

JOHN L. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS — ARCHITECTS — SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELEPHONE (301) 740-4200

8/6/87

DESIGNED BY JAB
DRAWN BY JJT/POA
CHECKED BY K.B.C.
DATE MAR. 1987
SCALE 1"=50'
W.O. NO. 11-86-0020

SHEET 16 OF 20

F-88-36

802

JOSEPH J. MILLER
562/286

GEORGE W. CARR
916/45

EXISTING 20' R/W. INGRESS & EGRESS TO AND FROM RTE 99 WITH USE IN COMMON WITH OTHERS

LIMIT OF DISTURBANCE

N 10°0'06"E

A-3 ED.

EXISTING STONE OUTLET TRAP # 5

STABILIZE DIKE WITH MULCH & SEED

EX A-1 ED

A-2 ED

PROP SCE

GUDEL DRIVE

MOUNTABLE BERM

NEW HEADWALL

EXISTING STONE OUTLET TRAP #6

PROP. VEGETATED WATER QUALITY SETTLEMENT BASIN (1' DEEP) 920 Ft.²

PLACE RIP-RAP OUTLET

BASE, 000 E N 556,100

N 86° 07' 26" E

ORIOLE COURT

DRAINAGE DIVIDE

LIMIT OF DISTURBANCE

N 70° 40' 57" W

STARLING ROAD

WEST SIDE OF SITE

STONE OUTLET TRAP #4

STABILIZE DIKE WITH MULCH & SEED

SAFETY FENCE

EX TRAP #7

AREA <100 cfs <30 acres

BENJAMIN H. & JOAN S. MINCHEW
1006/754

EXISTING STOCK PILE

PROVIDE INLET PROTECTION

FINCH COURT

A-4 ED

A-3 ED

EXISTING PIPE OUTLET TRAP # 8

MOUNTABLE BERM TO BE REMOVED DURING CONSTRUCTION (DURING BLACKTOPPING)

EXISTING STONE OUTLET TRAP # 10

STABILIZE WITH SEED & MULCH - SAFETY FENCE.

EXISTING STOCK PILE (TEMP)

EX TRAP #11A

SAFETY FENCE

STABILIZE WITH SEED & MULCH

STONE OUTLET TRAP #11

EX TRAP #11

STONE OUTLET TRAP #2 EXISTING

REVISED FLOODPLAIN LIMITS

100 YEAR FLOOD PLAIN

LIMIT OF DISTURBANCE

EAST SIDE OF SITE

ROBERT L. HARBIN ET AL
1128/732

N 72° 06' 19" W

DIVERT STORM DRAIN TO TRAP

STABILIZE SLOPE WITH MULCH & SEED

WATER QUALITY POND (SEE DETAIL THIS SHEET)

PROP. WRA IN-STREAM STONE DIKE AREA OF EXCAVATION BEHIND STONE DIKE 20' WIDE 40' LONG 2' DEEP

MATCH LINE SEE SHEET 16

MATCH LINE SEE SHEET 16

842,500 E

FOR REVISION (A) AND (B) ONLY

OWNER:
COSCAN WASHINGTON INC.
8521 LEESBURG PIKE
SUITE 200
VIENNA, VIRGINIA 22180
PHONE: (703) 356-9090

DEVELOPER:
COSCAN WASHINGTON INC.
8521 LEESBURG PIKE
SUITE 200
VIENNA, VIRGINIA 22180
PHONE: (703) 356-9090

(O.P. & Z. REF. NO. P-87-51)

DETAIL - WATER QUALITY POOL

SCALE: 1" = 20'

48" CMP

72" CMP

BOTTOM OF SLOPE

TOP OF SLOPE

INV. = 350.00

OUTFALL

SOS 9TO
ROP - 1
L = 10'
W = 10'
d50 = 6"
t = 14"

SECTION (A)

SMALLWOOD PROPERTY
PLAT OMP 4251

TOP = 363.0

5'

2:1 MAX.

2:1 MAX.

EXISTING GROUND

BOTTOM = 350.0

CARWOOD FARMS SUBDIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, LAND DEVELOPMENT DIVISION — DATE

CHIEF, BUREAU OF HIGHWAYS. — DATE

CHIEF, BUREAU OF ENGINEERING. — 12-21-87 DATE

APPROVED OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — 12/22/87 DATE

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

U.S. SOIL CONSERVATION SERVICE — 11-20-87 DATE

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

DISTRICT HOWARD SOIL CONSERVATION DISTRICT. — 11/24/87 DATE

DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES 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."

SIGNATURE OF DEVELOPER — 8/6/87 DATE

ENGINEERING CERTIFICATE

"I 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 COUNTY SOIL CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER — 8/11/87 DATE

EXISTING CONTOURS 11/30/89
PROPOSED CONTOURS 11/30/89

NO.	REVISIONS	BY	DATE
A	RELOCATE WATER QUALITY POND	JDM	2/24/94

NO.	REVISION	BY	DATE
1	REV. TEE TURN-AROUND	J.J.T.	12/15/87
A	ADDED 72" & 48" CMP	KAM	10/29/88
B	AND DELETED MULTI-PLATE REVISED SEDIMENT CONTROL LOTS 67-97	KAM	2/22/89
C	INCORPORATE WATER QUALITY BASINS	R.H.V.	1/23/90
D	ADD 10' S.D. LINE LOT 97	CAM	5-15-91

8/11/87

DESIGNED BY J.A.B.
DRAWN BY J.J.T.
CHECKED BY K.B.C.
DATE 7/87
SCALE 1"=50'
W.O. NO. 44-86-002D
SHEET 17 OF 20

STREET TREE, GRADING AND SEDIMENT CONTROL

McKENZIE MEADOWS

SECTION 2

TAX MAP 17 PARCEL 36

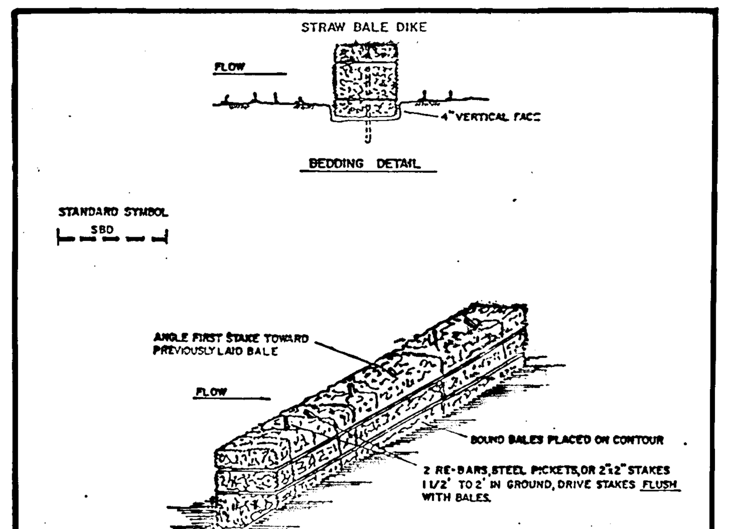
2nd ELECTION DISTRICT HOWARD COUNTY, MD.

JOHN L. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS ARCHITECTS SURVEYORS
9030 N.O. BRIDGE ROAD SUITE 100
COLUMBIA MARYLAND 21045 TELEPHONE (301) 740-5200

As-built F-88-36

F-88-36

STRAW BALE DIKE

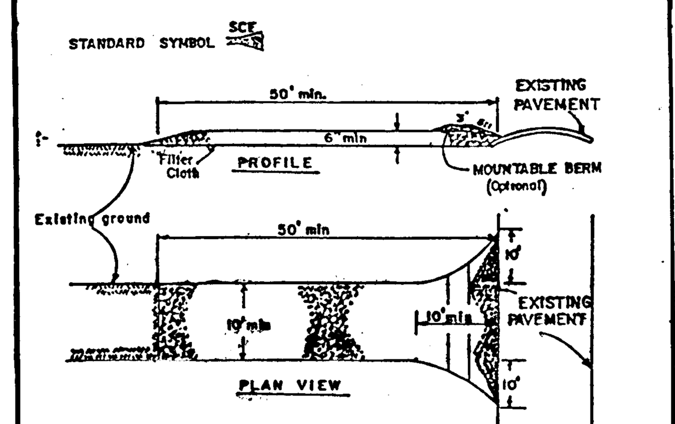


CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	STRAW BALE DIKE	STANDARD DRAWING SBD-1

STABILIZED CONSTRUCTION ENTRANCE
not to scale

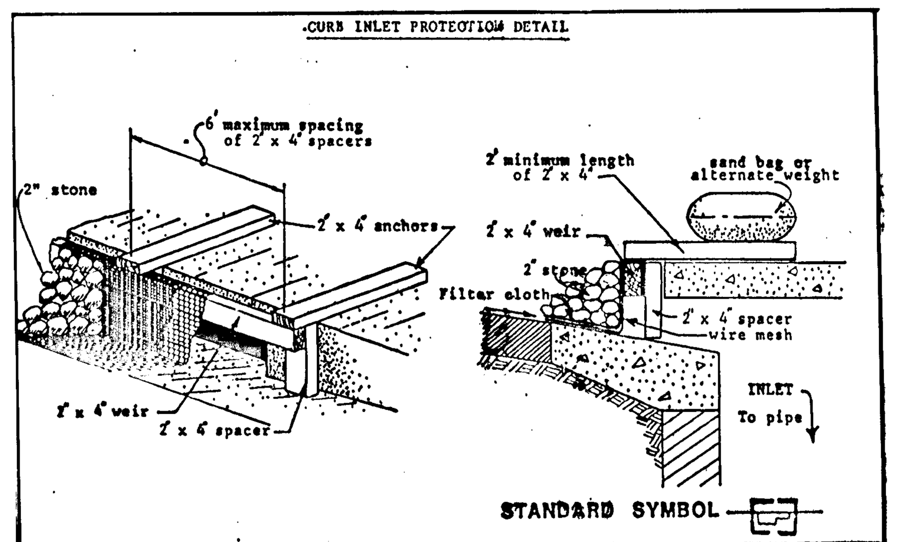


CONSTRUCTION SPECIFICATIONS

1. Stone Size – Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length – As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness – Not less than six (6) inches.
4. Width – Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Filter Cloth – Will be placed over the entire area prior to placing of stone. Filter will not be required on a single family residence lot.
6. Surface Water – All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance – The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing – Wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

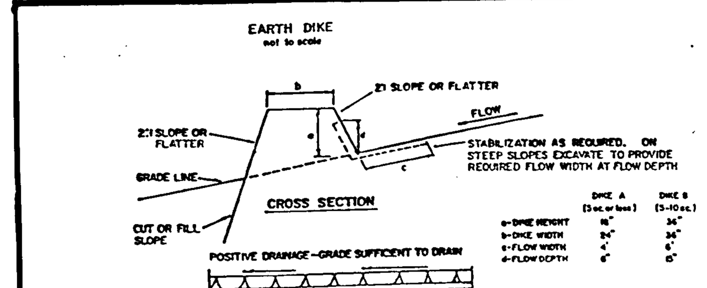
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE College Park, MD	STABILIZED CONSTRUCTION ENTRANCE	Standard Drawing

CURB INLET PROTECTION DETAIL



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	INLET PROTECTION DETAIL	STANDARD DRAWING IPD-1

EARTH DIKE
not to scale



CONSTRUCTION SPECIFICATIONS

1. ALL DIKES SHALL BE COMPACTED BY EARTH-MOVING EQUIPMENT.
2. ALL DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER IF DESIRED TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
4. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED SAFE OUTLET.
5. EARTH DIKES SHALL HAVE AN OUTLET THAT FUNCTIONS WITH A MINIMUM OF EROSION. RUNOFF SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE SUCH AS A SEDIMENT TRAP OR SEDIMENT BASIN WHERE EITHER THE DIKE CHANNEL OR THE DRAINAGE AREA ABOVE THE DIKE ARE NOT ADEQUATELY STABILIZED.
6. STABILIZATION SHALL BE: (A) IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR SEED AND STRAW MULCH OR STRAW MULCH IF NOT IN SEEDING SEASON, (B) FLOW CHANNEL AS PER THE CHART BELOW.

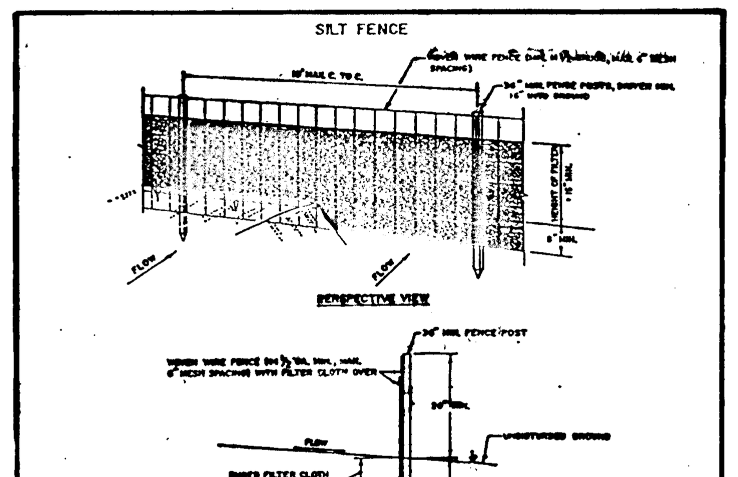
FLOW CHANNEL STABILIZATION

TYPE OF TREATMENT	CHANNEL GRADE	DIKE A	DIKE B
1	.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED USING JUTE, OR EXCELSIOR; SOD; 2" STONE
3	5.1-8.0%	SEED WITH JUTE, OR SOD; 2" STONE	LINED RIP-RAP 4-8"
4	8.1-20%	LINED RIP-RAP 4-8"	ENGINEERING DESIGN

A. STONE TO BE 2 INCH STONE, OR RECYCLED CONCRETE EQUIVALENT, IN A LAYER AT LEAST 3 INCHES IN THICKNESS AND BE PRESSED INTO THE SOIL WITH CONSTRUCTION EQUIPMENT.
B. RIP-RAP TO BE 4-8 INCHES IN A LAYER AT LEAST 8 INCHES THICKNESS AND PRESSED INTO THE SOIL.
C. APPROVED EQUIVALENTS CAN BE SUBSTITUTED FOR ANY OF THE ABOVE MATERIALS.
7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	EARTH DIKE	STANDARD DRAWING ED-1

SILT FENCE



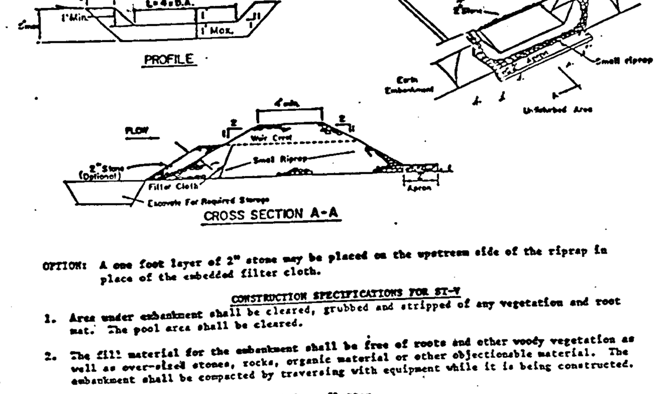
CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD
FENCE: WOVEN WIRE, 14½ GA. 6" MAX. MESH OPENING
FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	SILT FENCE	STANDARD DRAWING SF-1

STONE OUTLET SEDIMENT TRAP V



OPTION: A one foot layer of 2" stone may be placed on the upstream side of the riprap in place of the embedded filter cloth.

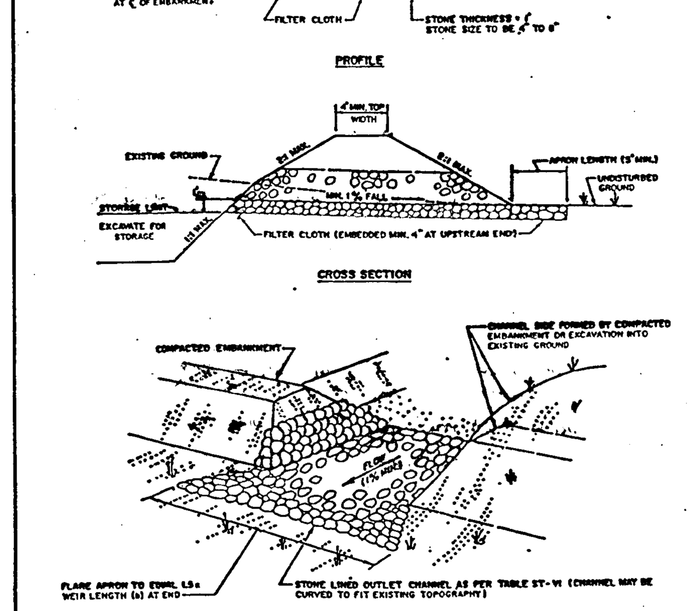
CONSTRUCTION SPECIFICATIONS FOR ST-V

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots and other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. All cut and fill slopes shall be 2:1 or flatter.
4. The stone used in the outlet shall be small riprap 4"-8" along with a 1' thickness of 2" aggregate placed on the up-grade side on the small riprap or embedded filter cloth in the riprap.
5. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap.
6. The structure shall be inspected after each rain and repairs made as needed.
7. Construction operations shall be carried out in such a manner that erosion and water pollution is minimized.
8. The structure shall be removed and the area stabilized when the drainage area has been properly stabilized.

Maximum Drainage Area: 5 Acres

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	STONE OUTLET SEDIMENT TRAP	STANDARD DRAWING ST-V

RIPRAP OUTLET SEDIMENT TRAP ST-VI



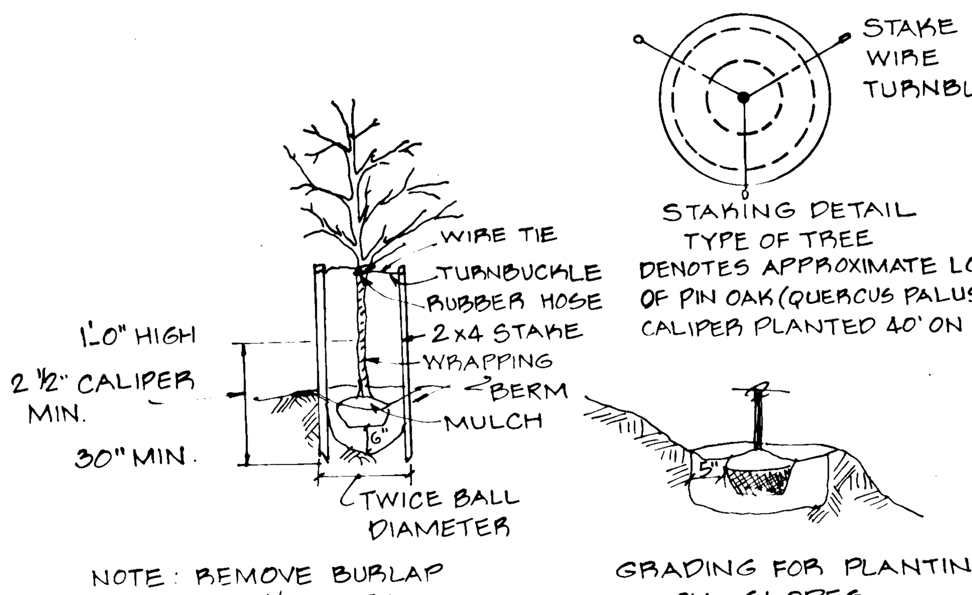
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	RIPRAP OUTLET SEDIMENT TRAP	STANDARD DRAWING ST-VI

SEQUENCE OF CONSTRUCTION

[B] FOR ALL CONSTRUCTION EXCEPT CULVERTS AND AREAS OF LOTS 67 THROUGH 97. SEE SHEET 18A OF 20 FOR THIS INFORMATION

1. OBTAIN GRADING PERMIT.
2. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS, LICENSE AND PERMITS (992-2437) AT LEAST 24 HOURS BEFORE STARTING WORK.
3. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.
4. INSTALL PERIMETER CONTROLS. INSTALL SILT FENCE AROUND SECTION 1 OF THE PROPOSED STREAM CHANNEL RELOCATION.
5. BEGIN CONSTRUCTION OF SECTION 1 OF THE PROPOSED CHANNEL. CONSTRUCT THE CHANNEL WITHOUT DISTURBING THE EXISTING CHANNEL. UPON COMPLETION AND STABILIZATION OF THE CHANNEL, DIVERT THE EXISTING STREAM INTO SECTION 1.
6. [A] CONSTRUCT CULVERT AND HEADWALLS OF PROPOSED CROSSING AS SECTION 2 OF PROPOSED STREAM CHANNEL.
7. BEGIN CONSTRUCTION OF SECTION 3 OF THE PROPOSED STREAM CHANNEL. FOLLOW THE SAME PROCEDURE AS OUTLINED IN STEP 5 FOR SECTION 1. UPON COMPLETION AND STABILIZATION OF THE CHANNEL, DIVERT THE EXISTING STREAM INTO SECTION 3.
8. [A] ~~INSTALL SILT FENCE AROUND SECTION 3 OF THE PROPOSED STREAM CHANNEL.~~
9. ~~BEGIN CONSTRUCTION OF SECTION 3 OF THE PROPOSED STREAM CHANNEL. FOLLOW THE SAME PROCEDURE AS OUTLINED IN STEP 5 FOR SECTION 1. UPON COMPLETION AND STABILIZATION OF THE CHANNEL, DIVERT THE EXISTING STREAM INTO SECTION 3.~~
10. INSTALL TRAP NO.'S 2, 6, 11, and 12.
11. [A] ~~BEGIN CONSTRUCTION OF LOW PROFILE ARCH, STA. 8+70.62 GUDEL DRIVE.~~
12. INSTALL TRAPS NO.'S 3 & 4.
13. BEGIN CONSTRUCTION OF STORM DRAIN SYSTEM FROM S-4 TO S-2 UNDER SPARROW COURT.
14. BEGIN CONSTRUCTION OF 71" X 47" PIPE CULVERT UNDER SPARROW COURT.
15. CONSTRUCT AND STABILIZE SWALE FROM GUDEL DRIVE TO S-4.
16. INSTALL ALL REMAINING SEDIMENT CONTROL MEASURES ON SPARROW COURT AS NECESSARY.
17. INSTALL WATER AND SEWER. PLACE SILT FENCE AROUND PROP. 8" SEWER AS SHOWN ON THE PLANS.
18. [A] ~~UPON COMPLETION OF LOW PROFILE ARCH,~~ BEGIN INSTALLATION OF TRAP NO.'S 9 & 10 AND ALL OTHER SEDIMENT CONTROL MEASURES AROUND THE STORM DRAIN SYSTEM FROM S-7 TO S-5 AND FROM I-21 to MH-12.
19. CONSTRUCT STORM DRAIN SYSTEM FROM S-7 TO S-5 AND FROM I-21 TO MH-12.
20. INSTALL TRAP NO. 5 AND ANY REMAINING SEDIMENT CONTROL MEASURES ON THE EAST SIDE.
21. BEGIN REMAINING GRADING ON EAST SIDE.
22. INSTALL REMAINING WATER AND SEWER ON EAST SIDE. PLACE SILT FENCE AROUND PROP. 8" SEWER AS SHOWN ON THE PLAN.
23. INSTALL REMAINING STORM DRAIN SYSTEM ON THE EAST SIDE.
24. INSTALL TRAP NO.'S 7 & 8 AND ANY REMAINING SEDIMENT CONTROL MEASURES ON WEST SIDE.
25. BEGIN REMAINING GRADING ON WEST SIDE.
26. INSTALL WATER AND SEWER ON THE WEST SIDE. PLACE SILT FENCE AROUND PROP. 8" SEWER.
27. INSTALL REMAINING STORM DRAIN SYSTEM.
28. DIVERT MAIN STORM DRAIN SYSTEM TO RIP RAP OUTLET TRAP #6.
29. DURING GRADING AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL STRUCTURES SHOWN HEREON.
30. CONSTRUCT CONCRETE CURB AND GUTTER AND LAY ALL BASE COURSE.
31. UPON STABILIZATION OF GRADED AREAS, INLETS SHALL BE OPEN AND ALL ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE STORM DRAIN SYSTEMS.
32. INSTALL REMAINDER OF STORM DRAIN SYSTEM AND OUTLET.
33. REMOVE SEDIMENT TRAPS AND ALL OTHER SEDIMENT CONTROL DEVICES ONCE ALL DISTURBED AREAS HAVE BEEN STABILIZED AND AFTER INSPECTION BY THE SEDIMENT CONTROL INSPECTOR.

TREE PLANTING DETAIL
NOT TO SCALE



NOTE: CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO DIGGING. FINAL LOCATIONS OF TREES MAY BE ADJUSTED SLIGHTLY TO ACCOMMODATE FIELD CONDITIONS. PLANTING PROCEDURES SHALL COMPLY WITH "LANDSCAPE SPECIFICATIONS FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS". SUBSTITUTIONS TO THE ABOVE SPECIES MAY BE PERMITTED, PROVIDED THAT THE PLANTING IS IN ACCORDANCE WITH THE STREET TREE AND LANDSCAPE REQUIREMENTS AS SPECIFIED IN SECTION 16.131 OF THE HOWARD COUNTY SUBDIVISION REGULATIONS.

FOR REVISION [A] ONLY [B] ONLY — STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER

SEDIMENT TRAP SCHEDULE

SEDIMENT TRAP NO	1	2	3	4	7	8 [B]	9 [B]	5	6	10	11	12 [B]	1/A [B]
TYPE OF TRAP	EX.SO	EX.SO	S.O.	S.O.	S.O.	P.O.	S.O.	EX.SO.	R.O.	S.O.	S.O.	S.O.	S.O.
DRAINAGE AREA (AC)	1.3 Ac	3.6 Ac	3.2 Ac	1.9 Ac	3.1 AC	2.5 AC	2.4 AC	4.8 Ac	13.0 Ac	1.95 Ac	1.3 Ac	1.7 AC	1.1
STORAGE REQUIRED (C.Y.)	87.0	242.0	215.0	127.3	207.0	167.0	160.0	322.0	871.0	130.6	88	113	73
STORAGE PROVIDED (C.Y.)	130.0	244.0	237.0	132.7	215.0	171.0	162.4	324.0	900.0	134.0	89	124	77
STORAGE ELEVATION (FT)	396.0	372.0	406.0	396.0	399.0	398.0	398.0	372.0	362.0	388.0	376	363	383
STORAGE DEPTH (FT)	3.0'	4.0	4.0	4.0	5	4	4	5	8	3	2.0	3.0	3.0
WEIR LENGTH (FT)	7.0	15.0	13.0	8.0	13.0	–	10.0	20.0	16.0	8.0	7.0	7.0	5.0
BOTTOM ELEVATION (FT)	393.0	368.0	402.0	392.0	394.0	394.0	394.0	367.0	354.0	385.0	374	360	380
CLEANOUT ELEVATION (FT)	394.5	370.0	404.0	394.0	396.5	396.0	396.0	369.0	358.0	386.5	375	361.5	381.6
CREST ELEVATION (FT)	397.0	373.0	407.0	397.0	400.0	–	399.0	373.0	363.0	389.0	377	364	384
TOP OF DIKE ELEV.	398.0	374.0	408.0	398.0	401.0	400.0	400.0	374.0	366.0	390.0	378	365	385
BOTTOM TRAP DIMENSION	40'x15'	61'x12'	45'x17'	42'x10'	32'x12'*	45'x15'	50'x12'	52'x25'*	15'x35'x18'†	47'x13'	54'x14	26'x30'	7'x50'

P.O. - PIPE OUTLET TRAP
S.O. - STONE OUTLET TRAP.
EX. SO - EXISTING STONE OUTLET TRAP.
R.O. - RIP RAP OUTLET TRAP.
* - THESE TRAPS ARE TRIANGULAR IN SHAPE THE DIMENSIONS ARE APPROXIMATELY THE LARGEST BOTTOM WIDTH AND THE LENGTH.
† - TRAP #6 HAS TWO DIFFERENT WIDTHS.

SEDIMENT CONTROL NOTES

1) A minimum of 24 hours notice must be given to the Howard County Office of Inspection and Permits prior to the start of any construction. (992-2437)
2) All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
3) Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
4) All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chaper 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 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seedings (Sec. 51) sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52.) Temporary stabilization with mulch alone 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: 44.25 Acres
   - Area Disturbed: 28.0 Acres
   - Area to be roofed or paved: 3.2 Acres
   - Area to be vegetatively stabilized: 24.8 Acres
   - Total Cut: 168,201.00 Cu. yds
   - Total Fill: 126,581.00 Cu. yds
   - Offsite waste/borrow area location ______
8) Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9) Additional sediment controls must be provided, if deemed necessary by the Howard County DPW 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 earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previous loosened

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:

1) Preferred — Apply 2 tons per acre dolomitic limestone (92 lbs/1000 square ft) and 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft) before seeding. Harrow or disc into upper three inches of soil. At time of seeding, apply 400 lbs per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq ft).
2) Acceptable — Apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq ft) and 1000 lbs per acre 10-10-10 fertilizer (23 lbs/1000 sq ft) before seeding. Harrow or disc into upper three inches of soil.

Seeding – For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs per acre (1.4 lbs/1000 sq ft) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs per acre (.05 lbs/1000 sq ft) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring. Option (2) Use sod. Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

Mulching — Apply 1½ to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq ft) for anchoring.

Maintenance — Inspect all seeded areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redisturbed where a short-term vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened

Soil Amendments: Apply 60 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft).

Seeding: For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2½ bushel per acre of annual rye (3.2 lbs/1000 sq ft). For the period May 1 thru August 14, seed with 3 lbs per acre of weeping lovegrass (.07 lbs/1000 sq ft). For the period November 16 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 sod.

Mulching: Apply 1½ to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 ft or higher, use 348 gal per acre (8 gal/1000 sq ft) for anchoring.

Refer to the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.

OWNER:
COSCAN WASHINGTON INC.
8521 LEESBURG PIKE
SUITE 200
VIENNA, VIRGINIA 22180
PHONE: (703) 356-9090

DEVELOPER:
COSCAN WASHINGTON INC
8521 LEESBURG PIKE
SUITE 200
VIENNA, VIRGINIA 22180
PHONE: (703) 356-9090

SEDIMENT EROSION CONTROL DETAIL
McKENZIE MEADOWS
SECTION 2

TAX MAP 17 PARCEL 36
2nd ELECTION DISTRICT HOWARD COUNTY, MD.

JOHN E. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD, COLUMBIA, MARYLAND 21045
SUITE 100 TELEPHONE (301) 740-5200

NO.	REVISION	BY	DATE
[A]	ADDED 72" & 48" CMP BY REVISION OF SEQ. OF OPERATIONS	KAM	10/29/88
[B]	REVISED SEDIMENT CONTROL SEQUENCE & TRAP SCHEDULE	KAM	2/22/89

DESIGNED BY: J.A.B.
DRAWN BY: R.W.K.
CHECKED BY: K.B.C.
DATE: 7/87
SCALE: N/A.
W.O. NO. 44-86-002D
18 SHEET OF 20

APPROVED OFFICE OF PLANNING AND ZONING
[signature] 12/22/87
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 12-16-87 CHIEF, LAND DEVELOPMENT DIVISION. DATE
[signature] 12/21/87 CHIEF, BUREAU OF HIGHWAYS. DATE
[signature] 12-21-87 CHIEF, BUREAU OF ENGINEERING. DATE

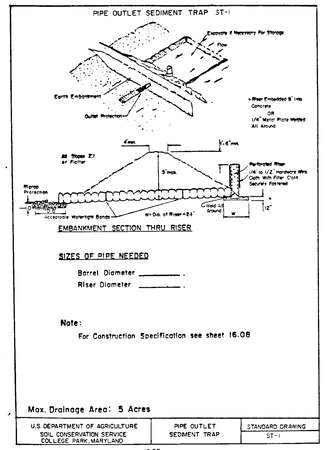
DEVELOPER'S CERTIFICATE
"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."
[signature] Signature of Developer — 8/6/87 Date

ENGINEERING CERTIFICATE
"I 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 County Soil Conservation District."
[signature] Signature of Engineer — 8/11/87 Date

REVIEWED FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.
[signature] U.S. SOIL CONSERVATION SERVICE — 11-20-87 DATE
THIS DEVELOPMENT IS APPROVED FOR EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
APPROVED: [signature] DISTRICT HOWARD SOIL CONSERVATION DISTRICT. — 11/20/87 DATE

802

F-88-36



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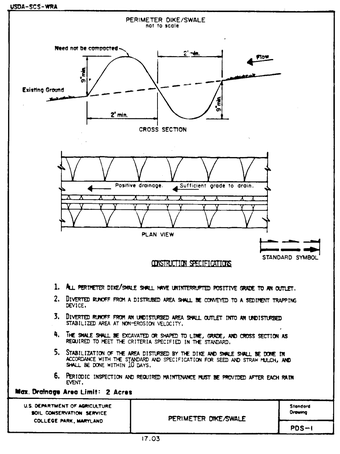

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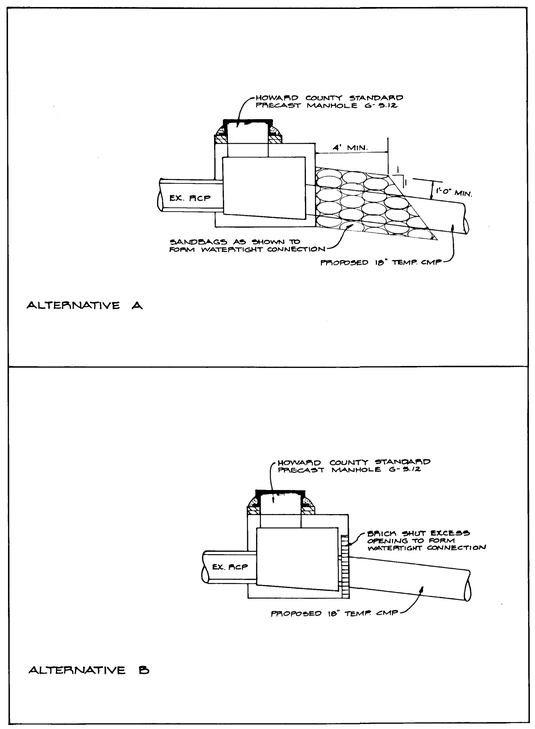
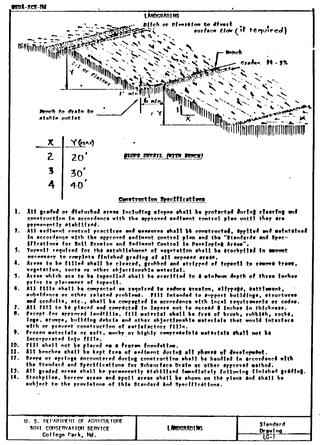


TEMPORARY CONNECTION TO BRICK MANHOLE
NOT TO SCALE



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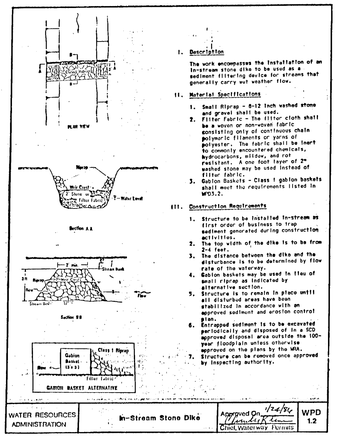
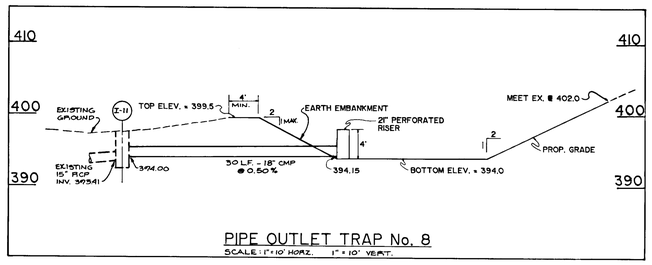
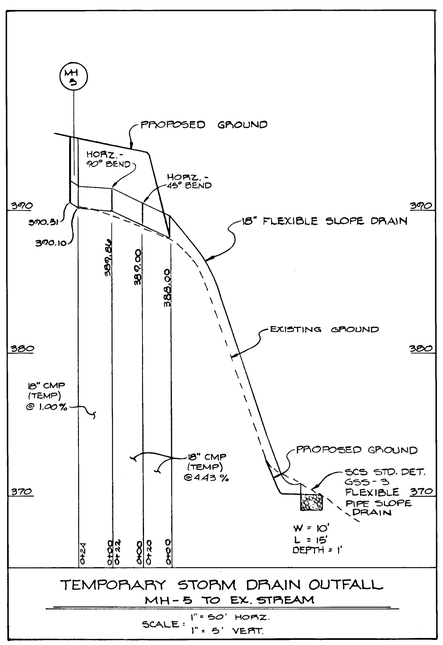
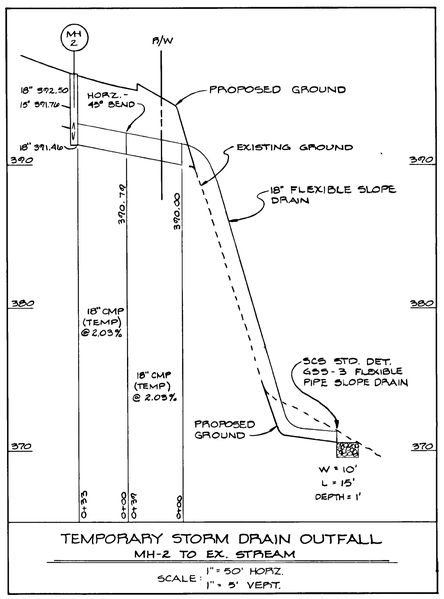




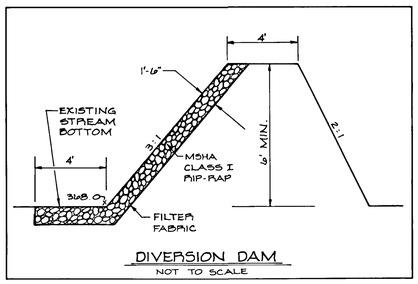
PIPE OUTLET TRAP No. 8
SCALE: 1" = 10' HORZ. 1" = 10' VERT.



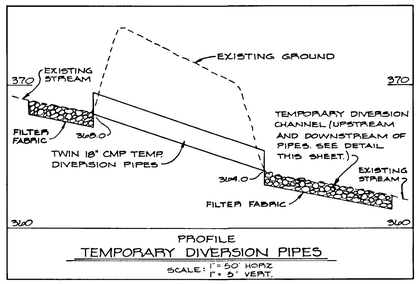
TEMPORARY STORM DRAIN OUTFALL
MH-5 TO EX. STREAM
SCALE: 1" = 50' HORZ. 1" = 5' VERT.



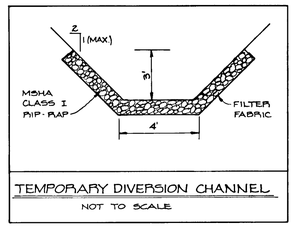
TEMPORARY STORM DRAIN OUTFALL
MH-2 TO EX. STREAM
SCALE: 1" = 50' HORZ. 1" = 5' VERT.



DIVERSION DAM
NOT TO SCALE



PROFILE
TEMPORARY DIVERSION PIPES
SCALE: 1" = 50' HORZ. 1" = 5' VERT.



TEMPORARY DIVERSION CHANNEL
NOT TO SCALE

DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES 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."

SIGNATURE OF DEVELOPER — DATE: 8/6/87

ENGINEERING CERTIFICATE:

I 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 County Soil Conservatoin District.

Signature of Engineer — Date 7 DEC 87

STATE OF MARYLAND JOHN E. MILDENBERG No. 10,920 REGISTERED PROFESSIONAL ENGINEER

Sequence of Operations for Lots 67 through 97 and Culvert Construction

1. All existing sediment control devices are to remain in place unless indicated otherwise below.
2. Construct stabilized construction entrance as indicated on the plan.
3. Enlarge sediment traps numbered 7, 8, 9 and 12 to the sizes indicated on the plan.
4. Revise outfall location of existing trap number 11A as shown.
5. Revise trap number 8 from a stone outlet trap to a pipe outlet trap. Outlet trap into Inlet I-11. See detail Sheet 18A of 20.
6. Construct earth dikes and perimeter dike swales as indicated on plan.
7. Construct mountable berms in four (4) places as indicated on plan.
8. Construct a Water Resources Administration In-Stream Stone Dike downstream of all disturbance as indicated on plan.
9. Install temporary 18" CMP at Manhole 2 and 5. Attach flexible pipe conduit to temporary CMP and construct rip-rap outlet protection at both outlets of the flexible pipe conduit. See detail sheet 18A of 20.
10. If existing twin 18" CM diversion pipes interfere with culvert construction, remove and relocate. Relocation shall be from existing stream, upstream of disturbance to existing stream, downstream of disturbance.
11. Construct temporary outfall between downstream end of diversion pipe and existing stream. Temporary outfall channel to extend beyond location of proposed headwall. Line with rip-rap per detail. See detail Sheet 18A of 20.
12. Construct temporary channel at upstream end of diversion pipe to existing stream. Do not break through to existing channel until rip-rap channel protection is in place for all diversion channels.
13. Construct temporary diversion dam per detail on Sheet 18A of 20 to divert stream through new diversion pipes, if necessary.
14. Construct proposed headwalls and culverts as shown on plan.
15. Construct permanent rip-rap and gabion channel between downstream headwall and existing stream. Allow flow from the diversion pipes to enter downstream rip-rap and gabion channel.
16. Construct permanent rip-rap and gabion channel between upstream headwall and existing stream. Do not break through to existing channel until rip-rap and gabion channel is in place.
17. Break through to existing stream at upstream end of relocated channel.
18. Divert stream through permanent culvert.
19. Remove temporary diversion devices.
20. Backfill culverts.
21. Bring site to grade.
22. During grading and after each rainfall, the contractor shall inspect and provide necessary maintenance on the sediment and erosion control measures shown hereon.
23. Install remainder of storm drain system and outlets.
24. Construct concrete curb and gutter and lay all base course.
25. Upon stabilization of graded areas, inlets shall be open and all accumulated sediment shall be removed from the storm drain systems.
26. Once all distrubed areas have been stabilized, and after inspection by the Sediment Control Inspector, remove sediment traps and all other sediment control devices, remove temporary 18" CMP from pipe outlet trap 8 and brick shut inlet I-11.

project	date JAN. 1989
illustration	engineering KAM
LSM	
scale AS SHOWN	approval RMM

SHEET INSERTED - REVISIONS TO SEDIMENT CONTROL - LOTS 67-97 — 2-1-90

no.	description	date
	revisions	

McKENZIE MEADOWS

ELECTION DISTRICT No. 2 HOWARD COUNTY, MARYLAND

TAX MAP No. 17 PARCEL 36

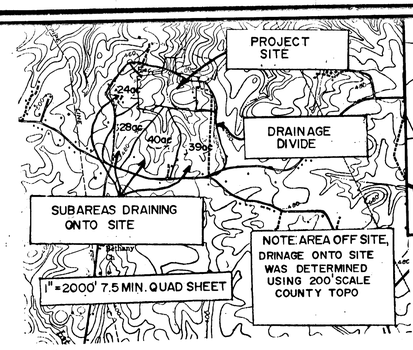
SEDIMENT CONTROL NOTES & DETAILS

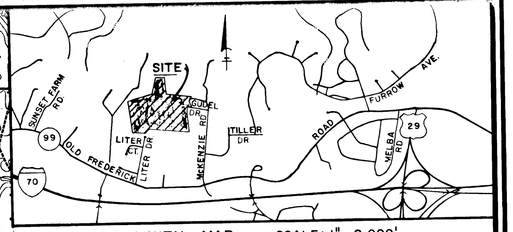
MILDENBERG, BOCHI & ASSOCIATES, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 North Ridge Road, Suite 235, Ellicott City, Maryland 21043-3350
(301) 461-0078 D.C. Metro (301) 621-5788

138209

COORDINATE TABLE		
NO.	NORTH	EAST
1	535091.15	843330.08
2	534559.21	843287.95
3	534931.34	842135.45
4	534887.53	842083.06
5	535018.39	841709.76
6	536003.17	841883.73
7	536026.72	842602.60
8	536372.48	842795.63
9	536296.61	843022.01
10	535810.37	842919.49
11	535625.34	843516.89
12	535466.03	843470.29
13	535351.35	843460.89
14	535358.22	843377.05
15	535298.42	843372.15

PLAN
Scale: 1" = 100'





VICINITY MAP SCALE: 1" = 2,000'

GENERAL NOTES

1. Existing Zoning: R-20
2. Gross Area of Site: 44.3 AC
3. Area of Proposed Lots: 26.8 AC
4. Area of Proposed Road Right of Way: 5.0 AC.
5. Number of Buildable Lots: 69
6. Water and Sewer to be Public.
7. Boundary Survey by John E. Harms, Jr. and Associates. OCT. 29, 1986
8. Topography from Potomac Aerial Surveys. JUNE 16, 1986
9. Gudel Drive and McKenzie Road are existing county roads.
10. Pursuant to Howard County Design Manual, Volume 1, Storm Drainage, Sect. 10.3.1-4, documentation and a letter is being presented to the Director of Public Works for a Storm Water Management Waiver.

LEGEND
- STREET LIGHT
- STREET TREES
- EXISTING TREE LINE

DRAINAGE AREA TABLE (C FACTOR BASED ON 25 YEAR STORM)				
SUB AREA	INLET	AREA	C FACTOR	% IMPERVIOUS
A	I-5	1.86	38	5%
B	I-6	1.83	38	5%
C	I-7	0.34	63	47%
E	I-3	0.71	49	23%
F	I-16	1.68	42	18%
G	I-17	4.44	35	7%
J	I-1	0.88	62	45%
K	I-9	0.69	46	17%
L	I-8	0.25	66	52%
M	I-10	0.32	71	58%
N	I-12	0.11	63	47%
O	I-13	0.62	45	16%
P	I-14	1.00	29	11%
Q	I-4	0.16	67	57%
R	I-2	1.45	48	22%
S	I-18	0.40	73	63 %
T	I-19	1.80	40	9%
U	I-11	1.62	44	14%
V	I-15	1.80	29	5%
Y	I-20	0.51	59	40%
Z	I-21	0.55	57	36%

(O.P. & Z. REF. NO. P-87-51)

DEVELOPER:
COSCAN WASHINGTON INC.
8521 LEESBURG PIKE
SUITE 200
VIENNA, VIRGINIA 22180
PHONE: (703) 356-9090

OWNER:
COSCAN WASHINGTON INC.
8521 LEESBURG PIKE
SUITE 200
VIENNA, VIRGINIA 22180
PHONE: (703) 356-9090

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, LAND DEVELOPMENT DIVISION — DATE 12/16/87
CHIEF, BUREAU OF HIGHWAYS — DATE 12/21/87
CHIEF, BUREAU OF ENGINEERING — DATE 12-21-87

APPROVED OFFICE OF PLANNING AND ZONNING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 12/22/87

DRAINAGE AREA MAP
McKENZIE MEADOWS
SECTION 2
TAX MAP 17 PARCEL 36
2nd ELECTION DISTRICT HOWARD COUNTY, MD.

JOHN E. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELEPHONE (301) 740-5200

NO.	REVISION	BY	DATE
A	ADDED 72" x 48" CMP	KAM	10/29/88

FOR REVISIONS ONLY
STATE OF MARYLAND WILLIAM E. HARMS No. 10170 REGISTERED PROFESSIONAL ENGINEER 4/25/88 8/1/88

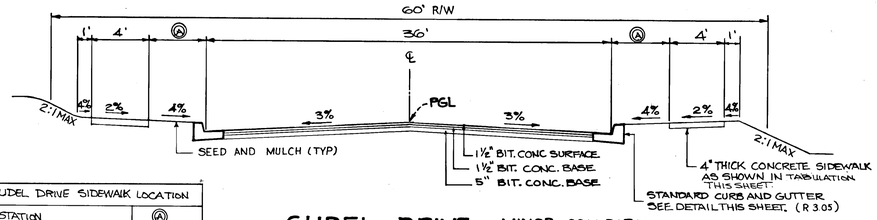
STATE OF MARYLAND WILLIAM E. HARMS No. 10170 REGISTERED PROFESSIONAL ENGINEER 12/15/87

DESIGNED BY: J.A.B.
DRAWN BY: J.M.M.
CHECKED BY: W.H.N.
DATE: AUG. 1987
SCALE: 1" = 100'
W.O. NO. 44-86-002B

SHEET 19 OF 20

302

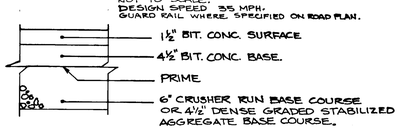
F-88-3



GUDEL DRIVE SIDEWALK LOCATION		
STATION		Ⓐ
0+00 TO 9+88.69	LEFT	4'
10+76.50 TO END	LEFT	7'
0+85 TO 12+27.48	RIGHT	4'
13+18 .52 TO END	RIGHT	7'

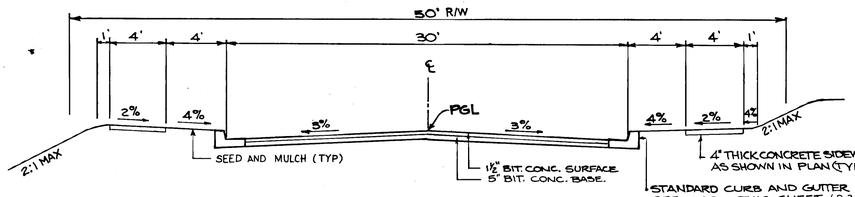
GUDEL DRIVE - MINOR COLLECTOR
TYPICAL PAVING SECTION

NOT TO SCALE:
DESIGN SPEED 35 MPH.
GUARD RAIL WHERE SPECIFIED ON ROAD PLAN.



ALTERNATE PAVING SECTION P-3

NOT TO SCALE:

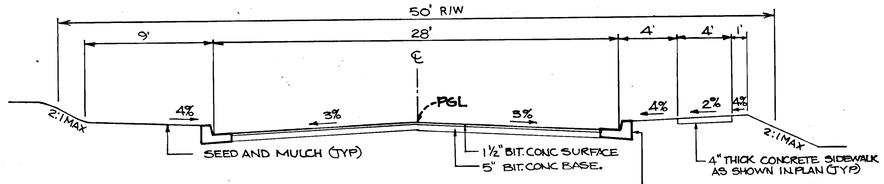


STARLING ROAD - LOCAL ROAD
TYPICAL PAVING SECTION

NOT TO SCALE:
DESIGN SPEED 30 MPH

ALTERNATE PAVING SECTION P-2

SEE DETAIL 1 ON THIS SHEET

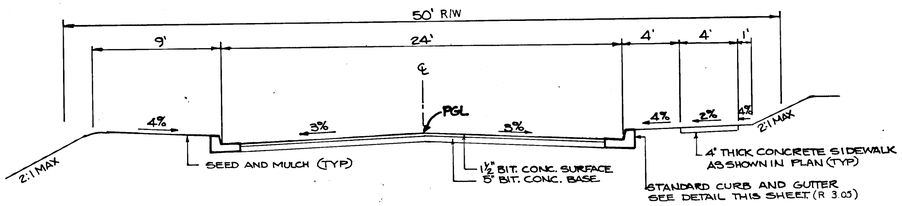


SPARROW COURT - CUL-DE-SAC STREET
TYPICAL PAVING SECTION

NOT TO SCALE:
DESIGN SPEED 30 MPH

ALTERNATE PAVING SECTION P-2

SEE DETAIL 1 ON THIS SHEET

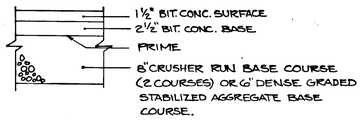


EAGLE, FINCH, HAWK & ORIOLE COURTS - CUL-DE-SAC STREETS
TYPICAL PAVING SECTION

NOT TO SCALE:
DESIGN SPEED 25 MPH

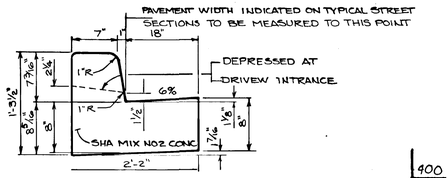
ALTERNATE PAVING SECTION P-2

SEE DETAIL 1 ON THIS SHEET



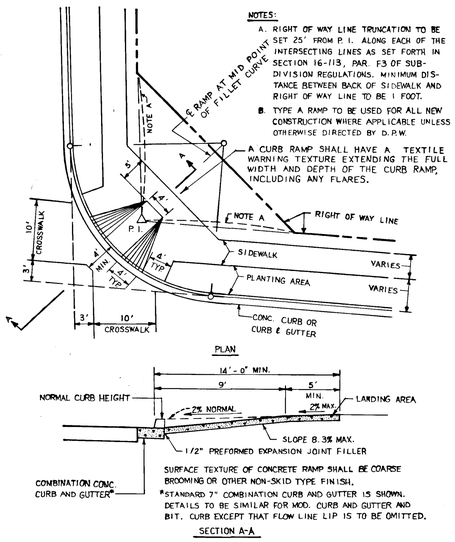
DETAIL 1
ALTERNATE PAVING SECTION P-2

NOT TO SCALE:



STANDARD CURB AND GUTTER DETAIL

NOT TO SCALE:



SURFACE TEXTURE OF CONCRETE RAMP SHALL BE COARSE BROOMING OR OTHER NON-SKID TYPE FINISH.
*STANDARD 7" COMBINATION CURB AND GUTTER IS SHOWN. DETAILS TO BE SIMILAR FOR MOD. CURB AND GUTTER AND BIT. CURB EXCEPT THAT FLOW LINE LIP IS TO BE OMITTED.

HANDICAPPED RAMP DETAIL

NOT TO SCALE

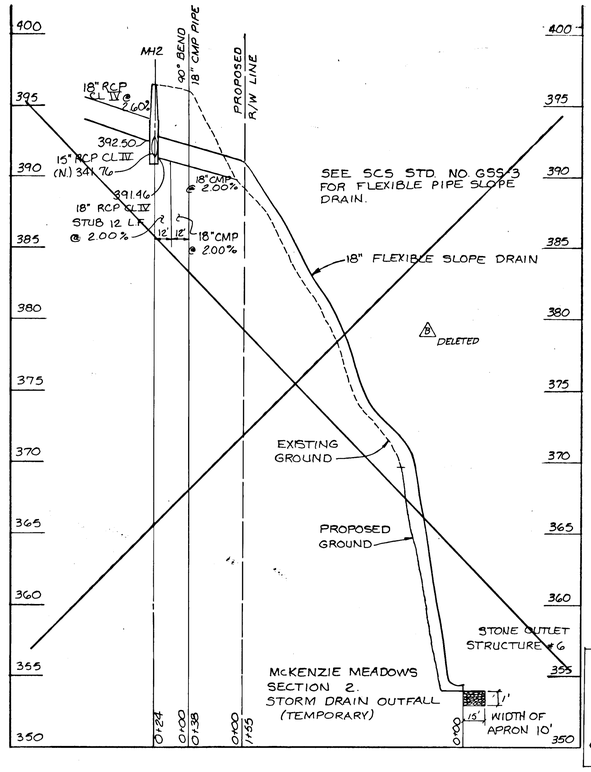
STREET LIGHT SCHEDULE

250-WATT MERCURY VAPOR LAMP PENDANT MOUNTED FIXTURES ON A 25 FOOT GALVANIZED POLE LOCATED NO LESS THAN 6' FROM EDGE OF PAVEMENT.

1). LOCATED AT SOUTHEAST SIDE OF GUDEL DRIVE AND SPARROW COURT INTERSECTION.
2). LOCATED AT SOUTHWEST SIDE OF GUDEL DRIVE AND EAGLE COURT INTERSECTION.
3) LOCATED AT NORTHWEST SIDE OF GUDEL DRIVE AND FINCH COURT INTERSECTION.
4). LOCATED SOUTHWEST SIDE OF GUDEL DRIVE AND STARLING ROAD INTERSECTION.

175-WATT "MODERN" MERCURY VAPOR LAMP POST TOP FIXTURES ON A 14-FOOT GRAY FIBER GLASS POLE LOCATED 2-10' FROM BACK OF CURB.

1). LOCATED AT NORTHEAST SIDE OF STARLING ROAD AND ORIOLE COURT INTERSECTION.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, LAND AND DEVELOPMENT DIVISION. DATE 12-16-87

CHIEF, BUREAU OF HIGHWAYS. DATE 12/24/87

CHIEF, BUREAU OF ENGINEERING. DATE 12-21-87

APPROVED: OFFICE OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE 12/22/87

FOR REVISION Ⓑ ONLY

STATE OF MARYLAND JOHN E. MILDENBERG NO. 10,020 REGISTERED PROFESSIONAL ENGINEER

DETAIL SHEET

McKENZIE MEADOWS

O P & Z REFERENCE P-87-51
SECTION TWO
TAX MAP NO17 PARCELS 36
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND.

JOHN E. HARMS JR. AND ASSOCIATES INC.
CONSULTING ENGINEERS - ARCHITECTS - SURVEYORS
9030 RED BRANCH ROAD SUITE 100
COLUMBIA, MARYLAND 21045 TELEPHONE (301) 740-5200

NO.	REVISION	BY	DATE
1	REV. ADDED PROFILE 5.0 Sq.Ft. (temp)	MLM	3.25.88
Ⓑ	REVISED SEDIMENT CONTROL		
	LOTS 67-97	KAM	2/22/89
Ⓐ	Add Sidewalk Chart	KAM	9/13/90

DESIGNED BY: J.A.B.
DRAWN BY: R.W.R.
CHECKED BY: K.B.C.
DATE: 7-24-87
SCALE: NOT TO SCALE
W.O. NO. 44-86-0028
SHEET 20 OF 20

802

A&E INC.-BALT

F-88-36