

DATE	REVISIONS	BY	No.
4/3/88	APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.		
4/15/88	Chief, Land Development Division		
4/15/88	Chief, Bureau of Highways		
4/15/88	Chief, Bureau of Engineering		
7/15/88	APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING.		
7/15/88	Chief, Division of Community Planning & Land Development		

CLARK • FINEROCK & SACKETT, INC.
 ENGINEERS • PLANNERS • SURVEYORS
 7135 MINSTREL WAY • COLUMBIA, MD. 21045 • (301) 381-7500 - BALTO. • (301) 621-8100 - WASH.

ROAD CONSTRUCTION PLANS
 KARAS WALK

MELBOURNE ESTATES
 SECTION ONE AREA ONE
 1ST ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

FOR: THE BUILDERS GUILD, INC.
 8750 Rte. 108, Suite 114, Gorman Plaza
 Columbia, Md. 21045

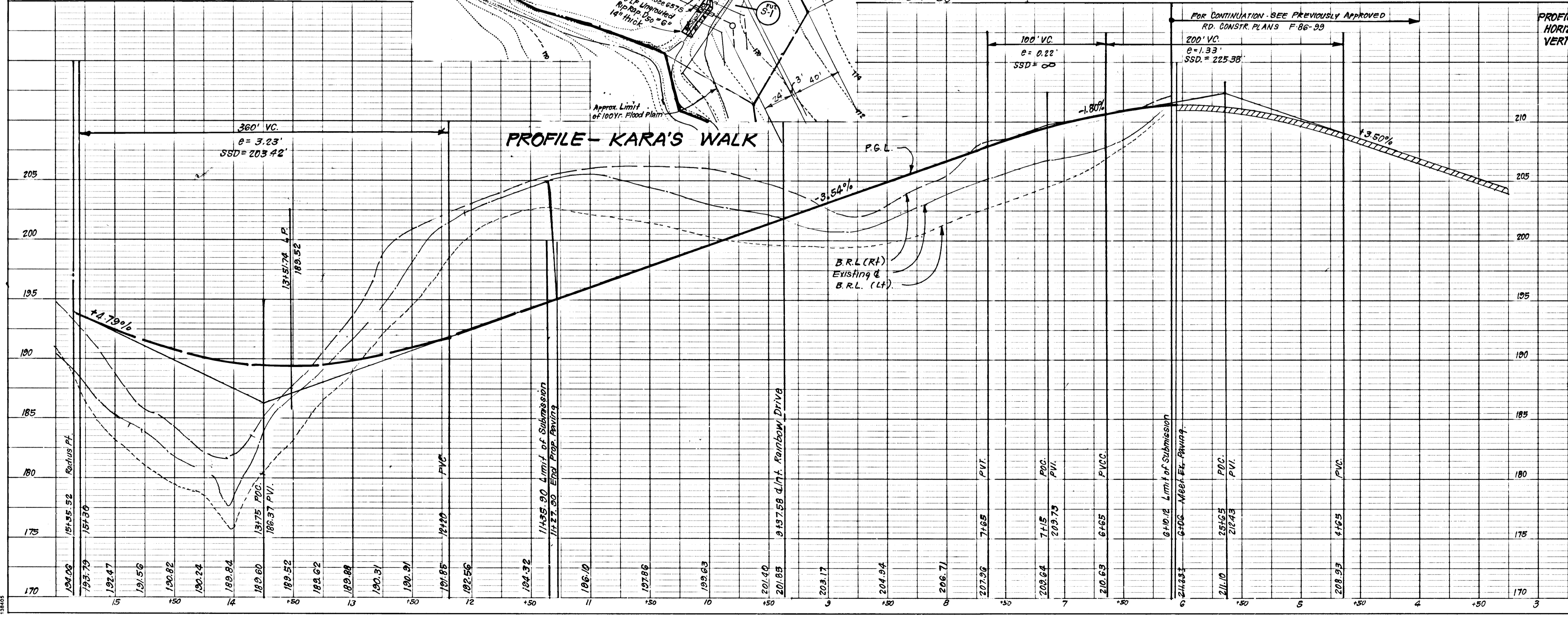
DESIGNED: GLB
 DRAWN: KIW
 CHECKED: GLB
 DATE: 5-27-88

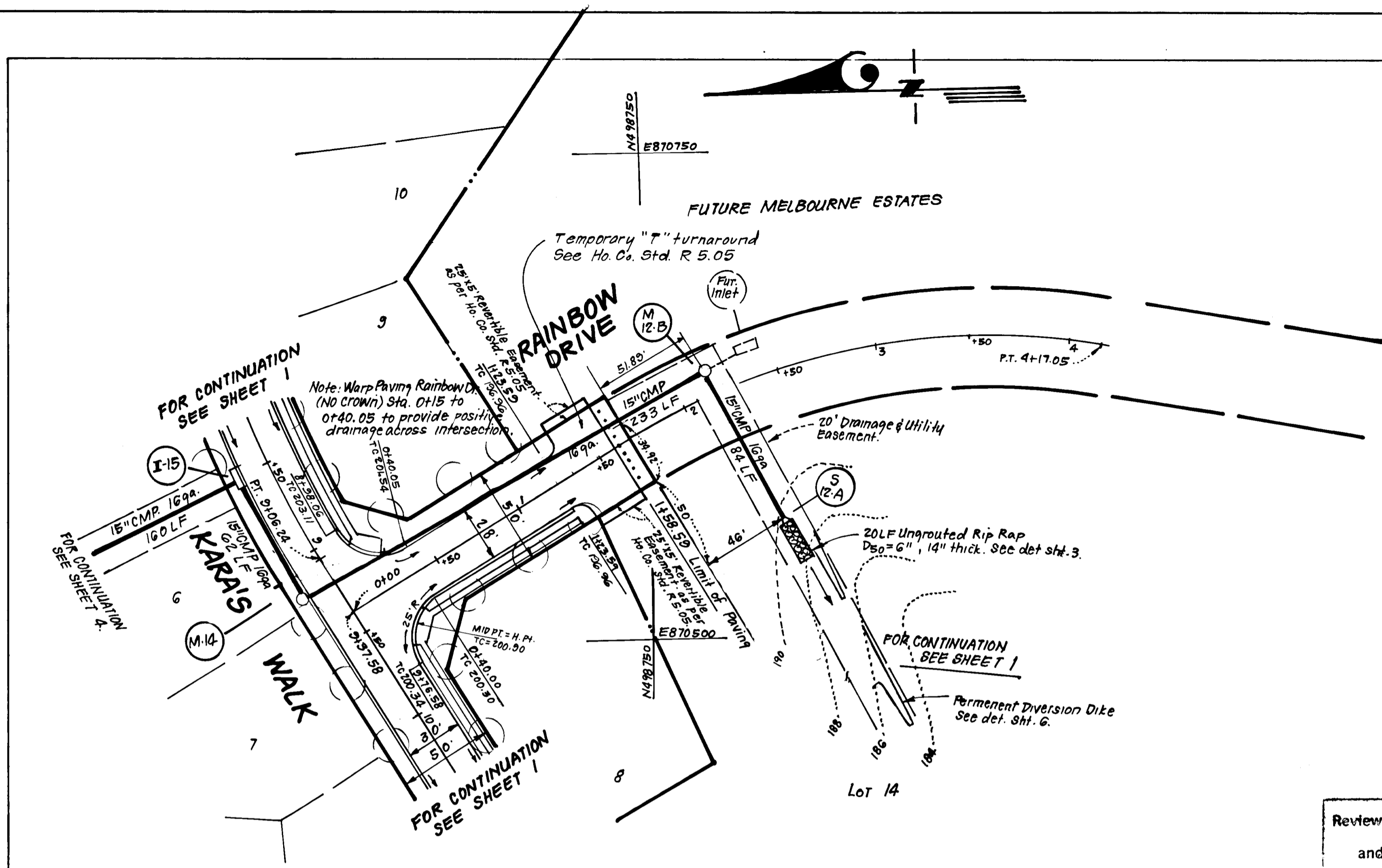
SCALE: As Shown
 DRAWING: 1 OF 6
 JOB NO.: 86-122
 FILE NO.: 86-122-D

STREET TREE TABLE

SYM	TYPE	SIZE	QUANT.	REMARKS
(A)	ACER RUBRUM/OCTOBER GLORY	2 1/2" DIA.	29	B.B. Heavy Heads
	OCTOBER GLORY MAPLE	2 1/2" DIA.	29	B.B. Heavy Heads

Notes:
 1. Contractor to verify location of underground utilities prior to digging.
 2. Final location of trees may be adjusted slightly to accommodate field cond.
 3. Planting procedures shall comply with "Landscape Specs. for Baltimore Washington Metropolitan Area."
 4. Substitution of the approved 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 Ho. Co. Subdivision Regulations.





PLAN
SCALE: 1"=50'

CENTERLINE CURVE DATA						
NAME	PC to PT	RADIUS	DELTA	ARC	TAN	CHORD BEARING
FUTURE 1 RAINBOW DRIVE	PC 1166.53 to PT 4+17.05	350.00'	41° 00' 00"	250.46'	130.86'	145° 14' 50" 30' 00" E

Reviewed for Howard S.C.D. Name
and meets Technical Requirements
J. Helms 3/16/89 Date
Signature
U.S. Soil Conservation Service

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

Robert J. Zelen 3/16/89 Approved Date

DEVELOPER'S/BUILDER'S CERTIFICATE

"I/We certify that all development and construction will be done according to this plan of development and plan for erosion and sediment control and that all responsible personnel involved in the construction project will have a Certificate of Attendance at a Dept. 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 or their authorized agents, as are deemed necessary."

K. Chandrup 6/15/88 Signature of Developer/Builder Date

ENGINEER'S CERTIFICATE

I hereby certify that this plan for Erosion and Sediment Control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.

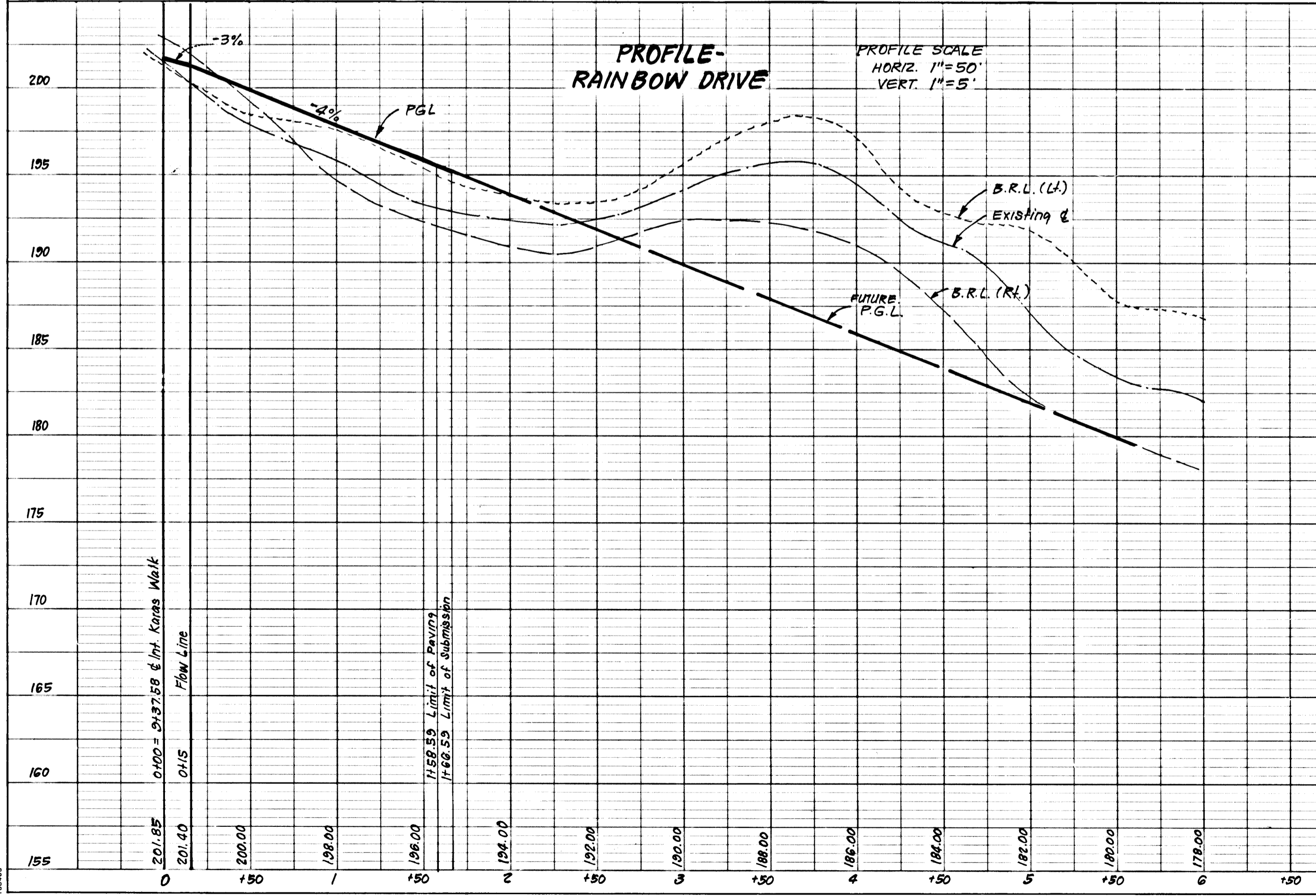
G. Nelson Clark 6-15-88 Date



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
Donald Eason 4/3/89 Chief, Land Development Division Date
Drummond H. Williams 4/4/89 Chief, Bureau of Highways Date
James S. Pany 4-15-89 Chief, Bureau of Engineering Date
APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING.
Frank J. J. Smith 7/1/89 Chief, Division of Community Planning & Land Development Date

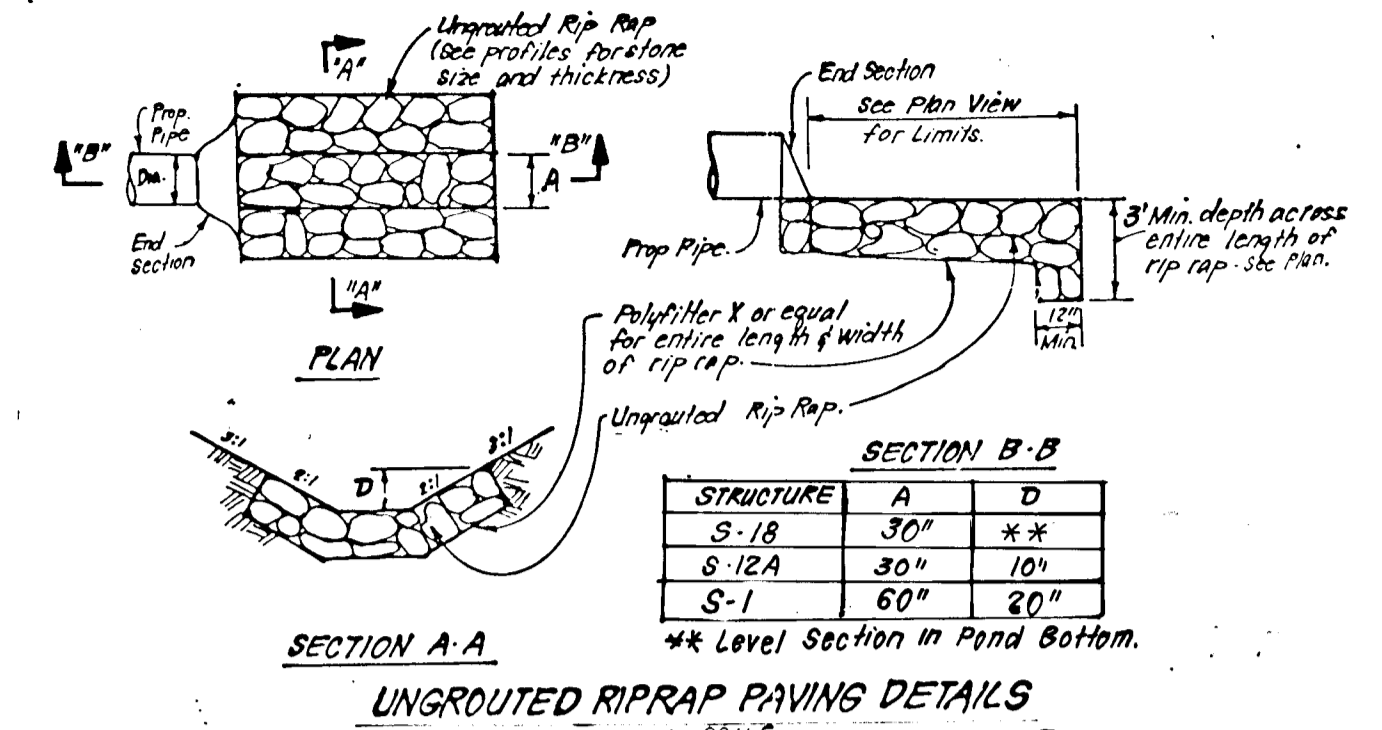
CLARK • FINEROCK & SACKETT, INC.
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DESIGNED GLB	ROAD CONSTRUCTION PLANS RAINBOW DRIVE MELBOURNE ESTATES SECTION ONE AREA ONE 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND. FOR: THE BUILDERS GUILD, INC. 8950 FTE 108 Suite 114, Garman Plaza Columbia, Md. 21045	SCALE As Shown
DRAWN KIW		DRAWING 2 OF 6
CHECKED GLB		JOB NO. 86-122
DATE 5-27-88		FILE NO. 86-122-D

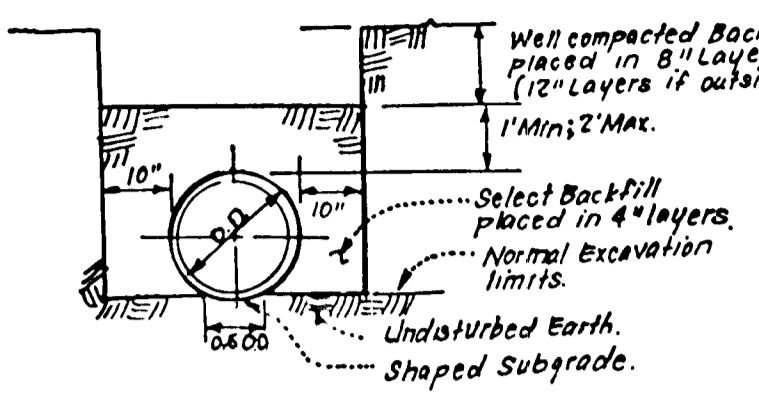


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SOIL BORING INFORMATION									
BORING NO.	ELEV.	DEPTH	SCALE	NO.	LOGS/6"	TYPE	REC.	NOTES	
BORING NO. 1	154.0	0	0	7	7-9	DS	11	Water on rod: None Topsoil: 4"	GP-TSF B1=2.3 B2=5.8
	146.0	8	0	27	41-71	DS	16	Completion: Water: Dry Cave-ins: 13.5	
		15	0	17	15-17	DS	10		
		10	0	14	12-14	DS	10		
		12	0	12	12	DS	10		
BORING NO. 2	171.0	0	0	12	15-6	DS	12	Green Rock Boulders #2.6	
	165.5	5.5	0	6	8-12	DS	16	Water on rod: 8.6 Completion: Water: 10.9 Cave-ins: 12'	
	163.0	0.8	0	13	18-22	DS	16		
		15	0	15	31-4	DS	16		
		10	0	10	10	DS	16		
BORING NO. 3	168.0	0	0	5	3-6	DS	10	Water on rod: 8.5 Topsoil: 4"	
	165.0	3.0	0	4	6-12	DS	10	Auger refusal: 12.5	
	162.5	5.5	0	42	77-108.5	DS	10	Completion: Water: Dry Cave-ins: 11.0	
		10	0	59-104.5	DS	6			
		4	0	100/1	DS	1			
BORING NO. 4	174.0	0	0	33	44-39	DS	10	Water on rod: None Topsoil: 4"	
	161.5	12.5	0	39	48-45	DS	10	Auger refusal: 12.5	
		13	0	37-100.4	DS	6			
		10	0	100/1	DS	4			
		3	0	100/1	DS	1			
BORING NO. 5	170.0	0	0	3	4-16	DS	10	Water on rod: 4.0	
	164.5	5.5	0	21	37-92	DS	15		
		10	0	50	48-9	US	15		
		18	0	100/1	DS	1			
		10	0	100/1	DS	1			

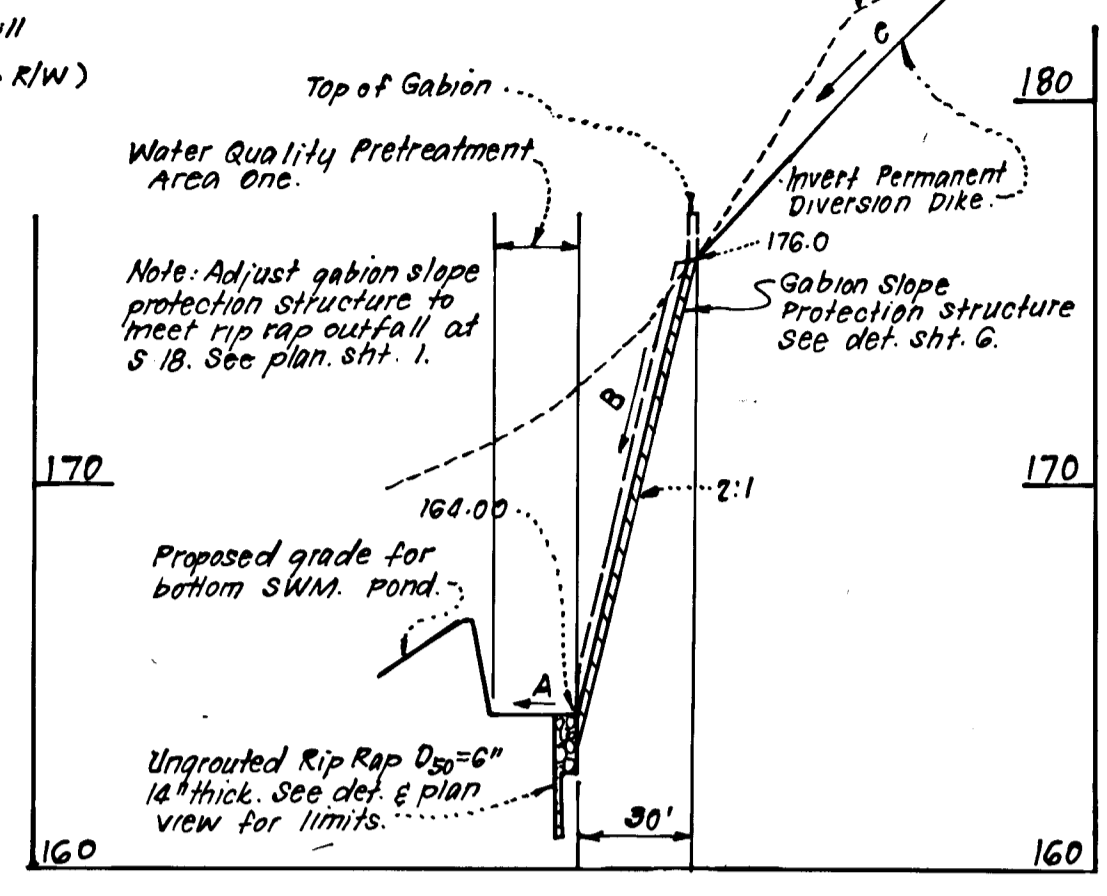


TRENCH COMPACTION DETAIL
NO SCALE

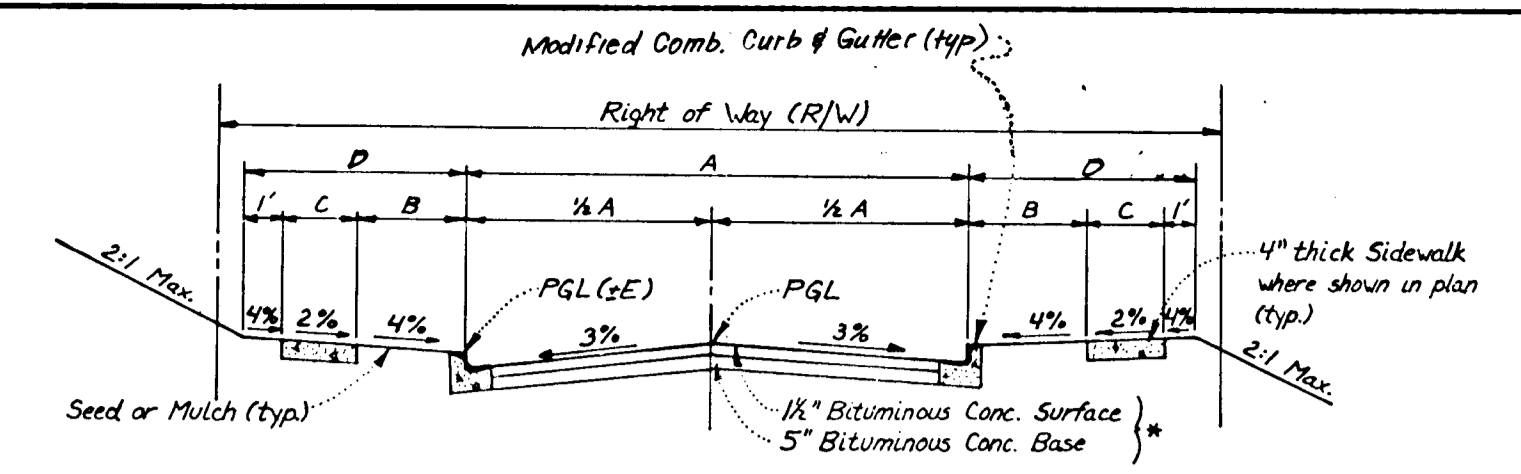


SECTION	G	D	V
A	8.4	1.42	1.1
B	5.6	0.21	8.9
C	5.6	0.75	4.3

SEE DRAINAGE COMPUTATIONS

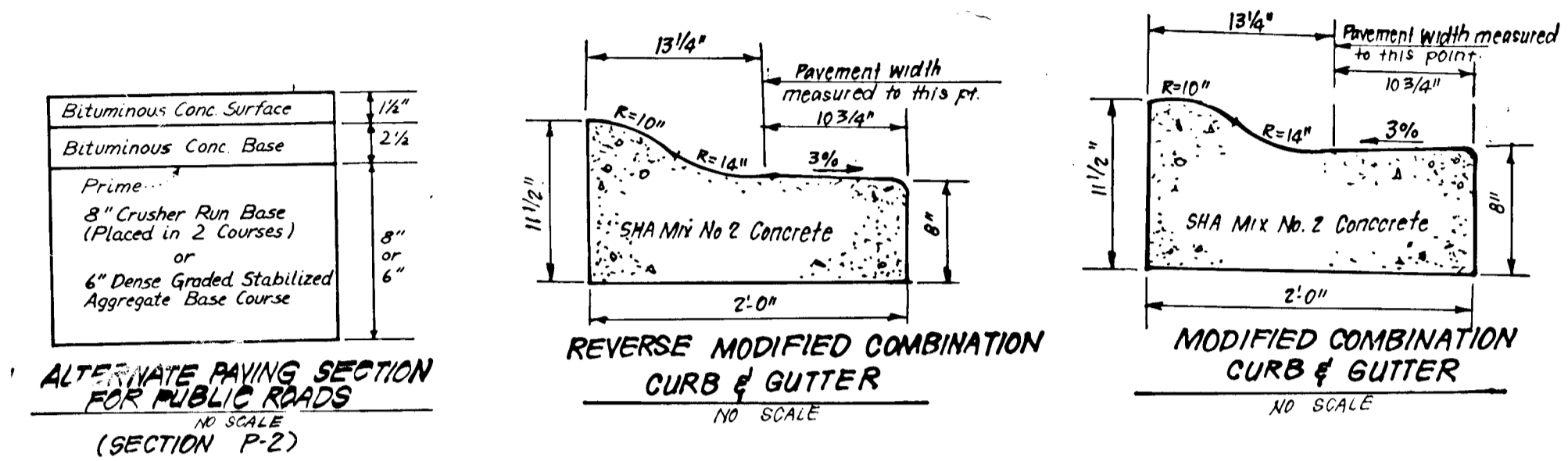


GABION SLOPE PROTECTION PROFILE
FROM DIVERSION DIKE TO S-18 OUTFALL
SCALE: HORIZ. 1"=50'
VERT. 1"=5'



NO SCALE
* For Alternate Paving Section - See det. this sht.

STREET NAME & STATION	TYPE OF TRAFFIC	A	B	C	D	R/W	ZONING	DESIGN SPEED	E
KANSAS WALK 6710.12 TO 114 27.90	LOCAL	30'	4'	4'	9'	50'	R-12	30 mph	-13
RAINBOW DR. 0100 TO 1158.69	LOCAL	28'	4'	4'	9'	50'	R-12	30 mph	-10



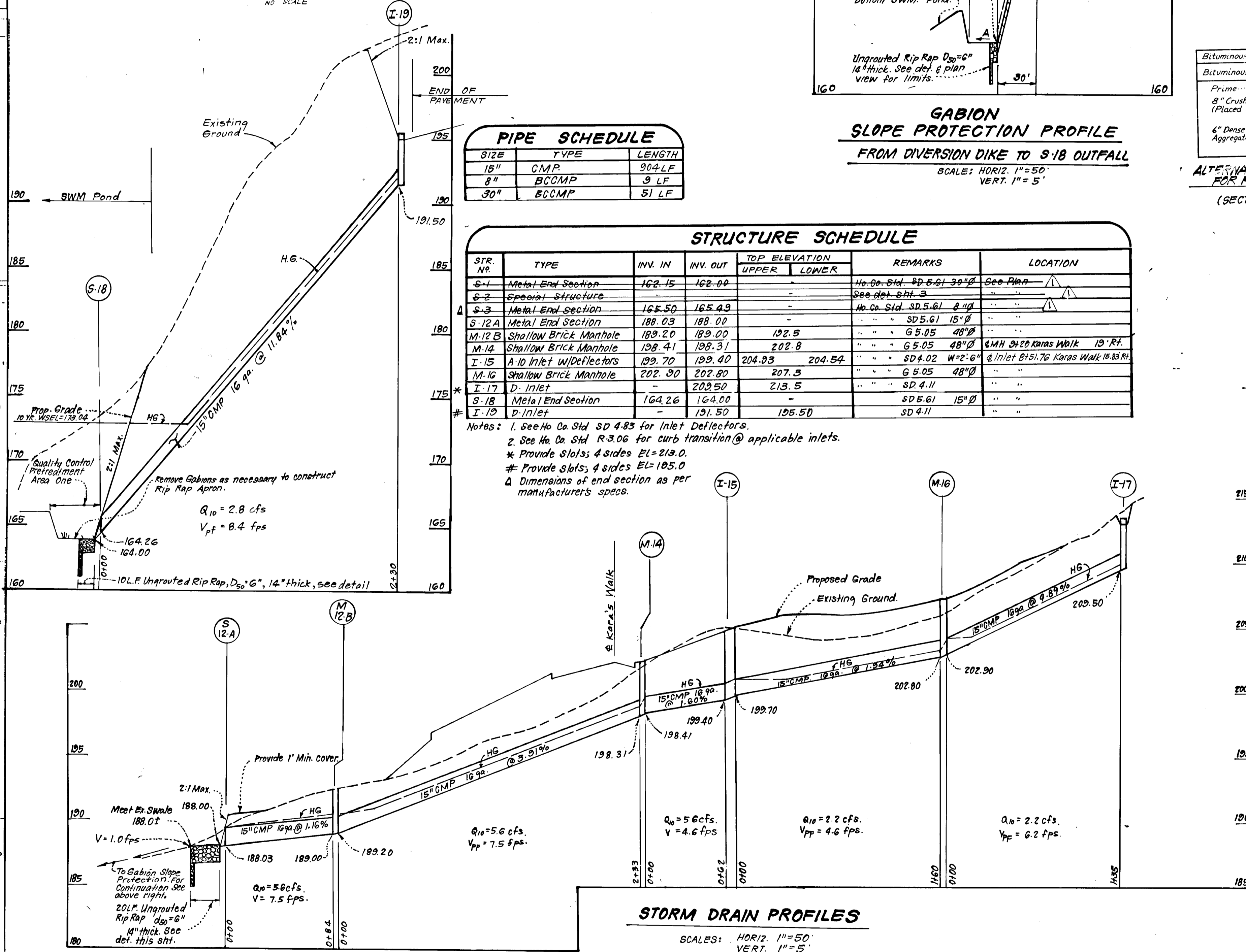
PIPE SCHEDULE

SIZE	TYPE	LENGTH
18"	CMP	904 LF
8"	BCCMP	3 LF
30"	BCCMP	51 LF

STRUCTURE SCHEDULE

STR. NO.	TYPE	INV. IN	INV. OUT	TOP ELEVATION		REMARKS	LOCATION
				UPPER	LOWER		
S-1	Metal End Section	162.15	162.00	-	-	No. Co. Std. SD 5.61 30"Ø	See Plan
S-2	Special Structure	-	-	-	-	See det. sht. 3	
S-3	Metal End Section	165.50	165.49	-	-	No. Co. Std. SD 5.61 30"Ø	
S-12A	Metal End Section	188.03	188.00	-	-	SD 5.61 15"Ø	
M-12B	Shallow Brick Manhole	189.20	189.00	192.5	-	G 5.05 48"Ø	
M-14	Shallow Brick Manhole	198.41	198.31	202.8	-	G 5.05 48"Ø	6 MH @ 20 Kansas Walk 13.81
I-15	A-10 Inlet w/Deflectors	199.70	199.40	204.33	204.54	SD 4.02 W=2'6" & Inlet 8151.76 Kansas Walk 15.83	
M-16	Shallow Brick Manhole	202.30	202.80	207.3	-	G 5.05 48"Ø	
I-17	D Inlet	-	203.50	213.5	-	SD 4.11	
S-18	Metal End Section	164.26	164.00	-	-	SD 5.61 15"Ø	
I-19	D Inlet	-	191.50	195.50	-	SD 4.11	

Notes:
1. See No. Co. Std. SD 4.83 for Inlet Deflectors.
2. See No. Co. Std. R-3.06 for curb transition @ applicable inlets.
* Provide slots; 4 sides EL=213.0.
* Provide slots; 4 sides EL=195.0
Δ Dimensions of end section as per manufacturer's specs.



STORM DRAIN PROFILES
SCALE: HORIZ. 1"=50'
VERT. 1"=5'

Developers Certification:
"We certify that all development and/or construction will be done according to these plans, 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 will provide the Howard Soil Conservation District with an "as built" plan of the pond within 30 days of completion. I also authorize periodic on-site inspections by the Howard Soil Conservation District."

[Signature]
Date: 4/15/89

ENGINEER'S CERTIFICATE
"I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a red-lined "as built" of the pond within 30 days of completion."

[Signature]
Date: 6-15-88

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

Approved: *[Signature]* 3/16/89
Date

Plan Number

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.

Approved: *[Signature]* 3/16/89
Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
[Signature] 4/3/89
Date
[Signature] 4/14/89
Date
[Signature] 4-15-89
Date

APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING.
[Signature] 4/15/89
Date

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DESIGNED	SCALE
GLB	AS SHOWN
DRAWN	DRAWING
KIW	3 OF 6
CHECKED	JOB NO.
GLB	86-122
DATE	FILE NO.
5-27-88	86-122-D

ROAD CONSTRUCTION PLANS
STORM DRAIN AND PAVING DETAILS

MELBOURNE ESTATES
SECTION ONE AREA ONE
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

FOR: The BUILDERS GUILD, INC.
8750 Rte. 108, Suite 104, Gorman Plaza
Columbia, Md 21045

This is to certify that the undersigned is responsible for revision No. 1 shown dated 1-20-95.

[Signature]

1430

DATE	REVISIONS	BY	NO.
1-20-95	DELETE S-1, S-2, & S-3 FROM THE STRUCTURE SCHEDULE	JHE	1

STORM WATER MANAGEMENT NOTES

I. SITE PREPARATION
 Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1.
 Areas to be covered by the pond or reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush and stumps shall be cut approximately level with the ground surface.
 All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

II. EARTH FILL
Material
 The fill material shall be taken from approved designated borrow area or areas. It shall be free of roots, stumps, wood, rubbish, oversize stones, frozen or other objectionable materials. The embankment shall be constructed to an elevation which provides for anticipated settlement to the design elevation. The fill height at all along the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.

Placement
 Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in 8-inch maximum thickness (before compaction) layers which are to be continuous over the entire length of the fill. The most porous borrow material shall be placed in the downstream portions of the embankment.
Compaction
 The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber-tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction can be obtained with the equipment used.

Where a minimum required density is specified, each layer of fill shall be compacted as necessary to obtain that density and is to be certified by the Engineer.
Cutoff Trench
 Where specified, a cutoff trench shall be excavated along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be as shown on the drawings, with the minimum width being four feet. The depth shall be at least four feet or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill material for the cutoff trench shall be the most impervious material available and shall be compacted with equipment or rollers to assure maximum density and minimum permeability.

III. STRUCTURAL BACKFILL
 Backfill material shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate under no circumstances shall equipment be driven over any part of a pipe or structure. The structure shall be compacted with a minimum of twenty-four inches or greater over the structure or pipe.
IV. PIPE CONDUITS
 All pipes shall be circular in cross section.
A. Corrugated Metal Pipe
 1. Materials - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of AASHTO Specification M-190 Type A with watertight coupling bands. Any bituminous coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.
 Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. The following coatings are commercially available: Nexon, Plastic-Co, Mac-Klad, and Mac-Co-Loy. Coated corrugated steel pipe shall meet the requirements of AASHTO M-243 and M-246.
 Materials - (Aluminized Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274-791 with watertight coupling bands or flanges.
 Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Coupling bands, anti-seep collars, and sections, etc. must be composed of the same material as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be less than 9 and greater than 4.

2. Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are galvanized. Watertight coupling bands or flanges shall be used at all joints. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.
 3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable support material compacted to provide adequate support.
 4. Laying pipe - The pipe shall be placed with inside circumferential lips pointing downstream and with the longitudinal laps at the side.
 5. Backfilling shall conform to structural backfill as shown above.
 6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

V. CONCRETE
1. Material
 a. Cement - Normal Portland cement shall conform to the latest ASTM Specification C-150.
 b. Water - The water used in concrete shall be clean, free from oil, acid, alkali, scales, organic matter or other objectionable substances.
 c. Sand - The sand used in concrete shall be clean, hard, strong and durable, and shall be well graded with 100 percent passing a one-quarter inch sieve. Limestone sand shall not be used.
 d. Coarse Aggregate - The coarse aggregate shall be clean, hard, strong and durable, and free from clay or dirt. It shall be well graded with a maximum size of one and one-half (1-1/2) inches.
 e. Reinforcing Steel - The reinforcing steel shall be deformed bars of intermediate grade billet steel or rail steel conforming to ASTM Specification A-615.

2. Design Mix - The concrete shall be mixed in the following proportions, measured by weight. The water-cement ratio shall be 5-1/2 to 6 U.S. Gallons of water per 94 pound bag of cement. The proportion of materials for the trial mix shall be 1:2:3-1/2. The combination of aggregate may be adjusted to produce a plastic and workable mix that will not produce harshness in placing or honeycombing in the structure.
 3. Mixing - The concrete ingredients shall be mixed in batch mixers until the mixture is homogeneous and of uniform consistency. The mixing of each batch shall continue for not less than one and one-half minutes after all the ingredients, except the full amount of water, are in the mixer. The minimum mixing time is predicted on proper control of the speed of rotation of the mixer and of the introduction of the materials, including water, into the mixer. Water shall be added prior to, during, and following the water-charging operations. Excessive overmixing requiring the addition of water to preserve the required concrete consistency shall not be permitted. Truck mixing will be allowed provided that the use of this method shall cause no violation of any applicable provisions of the specifications given here.
 4. Forms - The forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure, tapping, and vibration without deflection from the prescribed lines. They shall be mortar-tight and constructed so that they can be removed without hammering or prying against the concrete.
 The inside of forms shall be oiled with a non-staining mineral oil or thoroughly wetted before concrete is placed.
 Forms may be removed 24 hours after the placement of concrete. All wire ties and other devices used shall be recessed from the surface of the concrete.

5. Reinforcing Steel - All reinforcing material shall be free of dirt, rust, scale, oil, paint or any other coatings. The steel shall be accurately placed and securely tied and blocked into position so that no movement of the steel will occur during placement of concrete.
 6. Consolidating - Concrete shall be consolidated with internal type mechanical vibrators. Vibration shall be supplemented by spading and hand tamping as necessary to insure smooth and dense concrete along form surfaces, in corners, and around embedded items.
 7. Finishing - Defective concrete, honeycombed areas, voids left by the removal of tie rods, pipes or any other devices permanently exposed to view or exposed to water on the finished structure, shall be repaired immediately after the removal of forms. All voids shall be repaired completely filled with dry-patching mortar.
 8. Protection and Curing - Exposed surfaces of concrete shall be protected from the direct rays of the sun for at least the first three (3) days. All concrete shall be kept continuously moist for at least ten (10) days after being placed. Moisture may be applied by spraying or sprinkling as necessary to prevent the concrete from drying. Concrete shall not be exposed to freezing during the curing period. Curing compounds may also be used.

9. Placing Temperature - Concrete may not be placed at temperatures below 37° F with the temperature falling, or 30° with the temperature rising.
VI. STABILIZATION
 All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and borrow areas, shall be stabilized by seeding, liming, fertilizing and mulching (if required) in accordance with the vegetative treatment specifications or as shown on the accompanying drawings.

VII. EROSION AND SEDIMENT CONTROL
 Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.

VIII. CORE TRENCH MATERIAL
 Core trench material shall be M1, CL, CH, or MH only. Core trench to be constructed under the supervision of a registered professional geotechnical engineer.

1. Materials - Reinforced concrete pipe shall have a rubber gasket joint and shall equal or exceed ASTM Specification C-301. An approved equivalent is AWWA Specification C-301.
 2. Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 102 of its outside diameter with a minimum thickness of 3", or as shown on the drawings.
 3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire length, the bedding shall be placed so that all spaces under the pipe and between the pipe and bedding are exercised to prevent any deviation from the original line and grade of the pipe.
 4. Backfilling shall conform to structural backfill as shown above.
 5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.
 C. For pipes of other materials, specific specifications shall be shown on the drawings.

V. CONCRETE
1. Material
 a. Cement - Normal Portland cement shall conform to the latest ASTM Specification C-150.
 b. Water - The water used in concrete shall be clean, free from oil, acid, alkali, scales, organic matter or other objectionable substances.
 c. Sand - The sand used in concrete shall be clean, hard, strong and durable, and shall be well graded with 100 percent passing a one-quarter inch sieve. Limestone sand shall not be used.
 d. Coarse Aggregate - The coarse aggregate shall be clean, hard, strong and durable, and free from clay or dirt. It shall be well graded with a maximum size of one and one-half (1-1/2) inches.
 e. Reinforcing Steel - The reinforcing steel shall be deformed bars of intermediate grade billet steel or rail steel conforming to ASTM Specification A-615.

2. Design Mix - The concrete shall be mixed in the following proportions, measured by weight. The water-cement ratio shall be 5-1/2 to 6 U.S. Gallons of water per 94 pound bag of cement. The proportion of materials for the trial mix shall be 1:2:3-1/2. The combination of aggregate may be adjusted to produce a plastic and workable mix that will not produce harshness in placing or honeycombing in the structure.
 3. Mixing - The concrete ingredients shall be mixed in batch mixers until the mixture is homogeneous and of uniform consistency. The mixing of each batch shall continue for not less than one and one-half minutes after all the ingredients, except the full amount of water, are in the mixer. The minimum mixing time is predicted on proper control of the speed of rotation of the mixer and of the introduction of the materials, including water, into the mixer. Water shall be added prior to, during, and following the water-charging operations. Excessive overmixing requiring the addition of water to preserve the required concrete consistency shall not be permitted. Truck mixing will be allowed provided that the use of this method shall cause no violation of any applicable provisions of the specifications given here.
 4. Forms - The forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure, tapping, and vibration without deflection from the prescribed lines. They shall be mortar-tight and constructed so that they can be removed without hammering or prying against the concrete.
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 6. Consolidating - Concrete shall be consolidated with internal type mechanical vibrators. Vibration shall be supplemented by spading and hand tamping as necessary to insure smooth and dense concrete along form surfaces, in corners, and around embedded items.
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VII. EROSION AND SEDIMENT CONTROL
 Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.

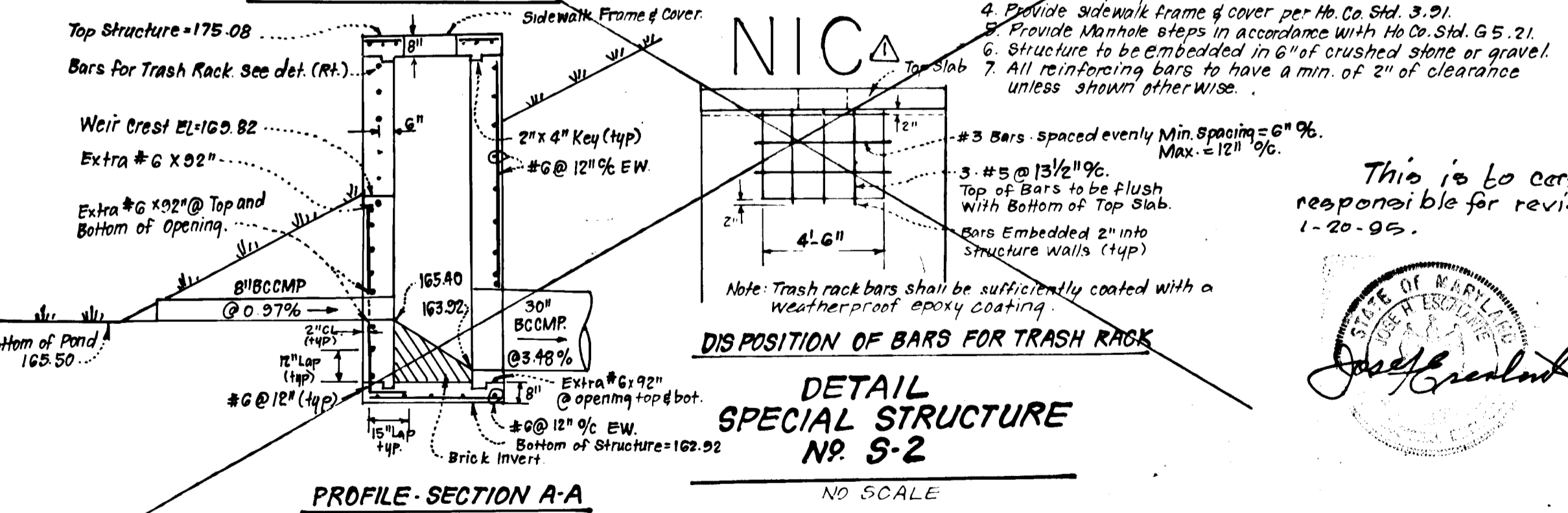
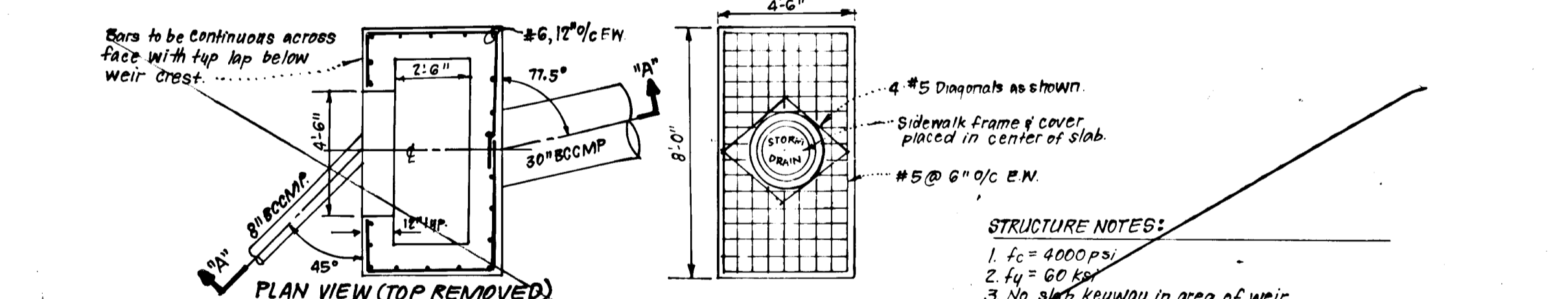
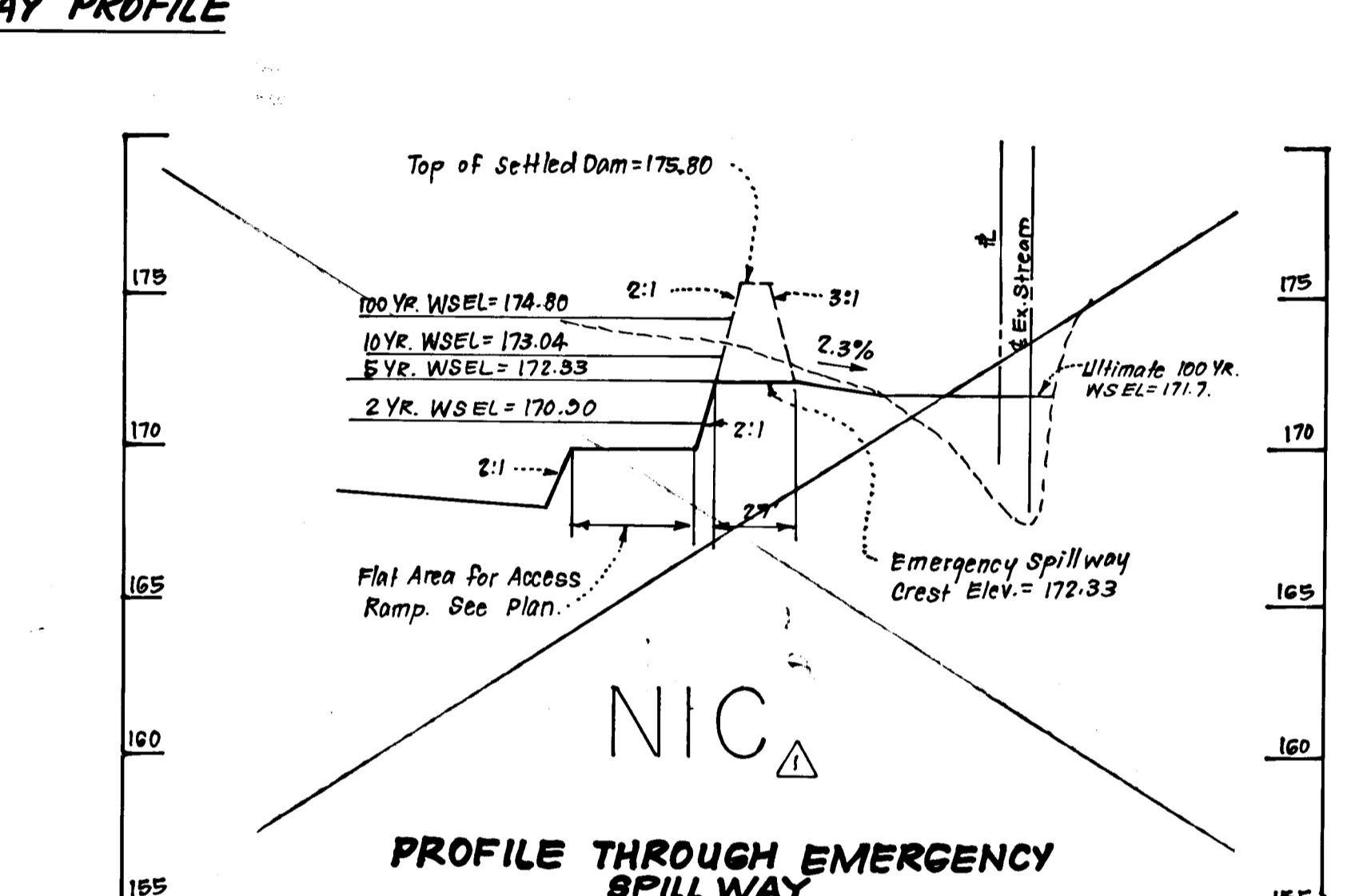
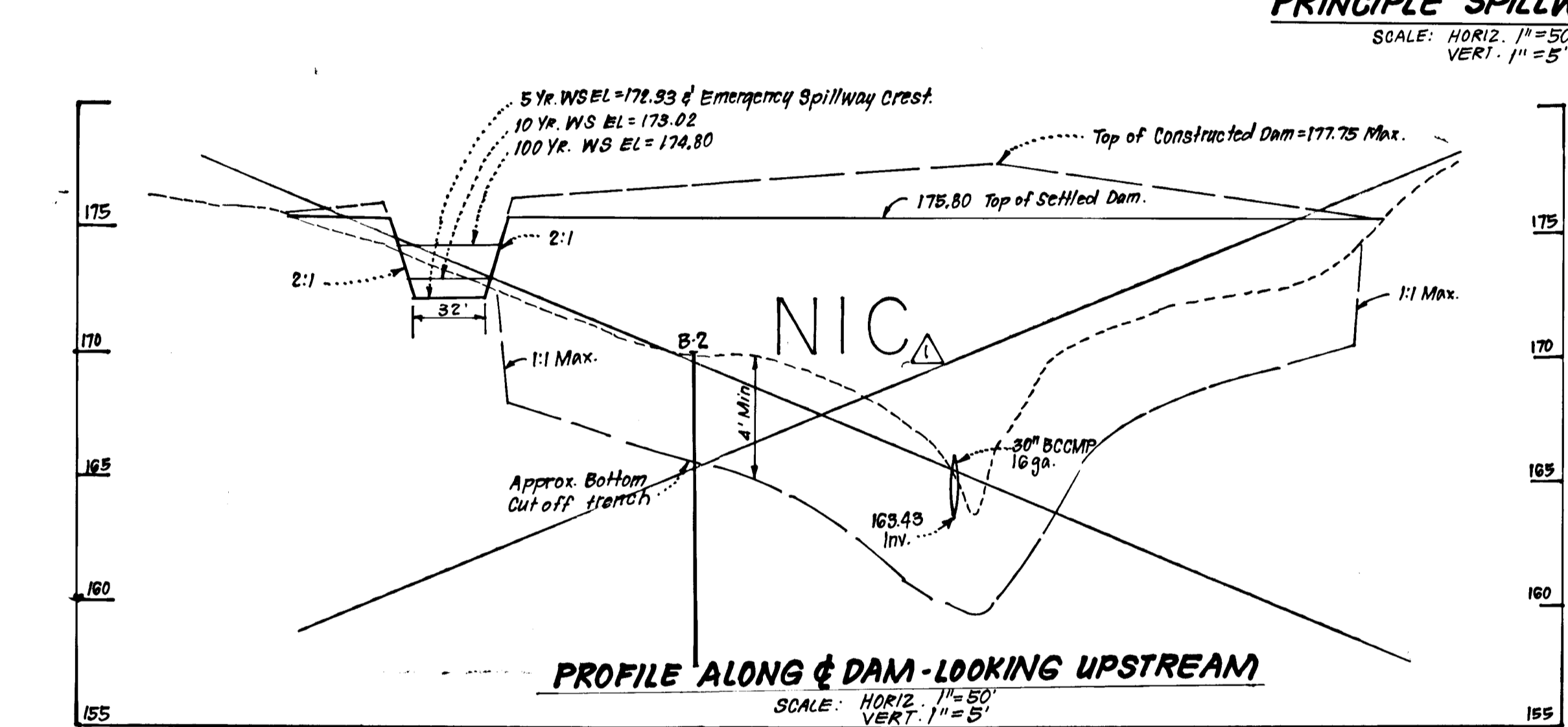
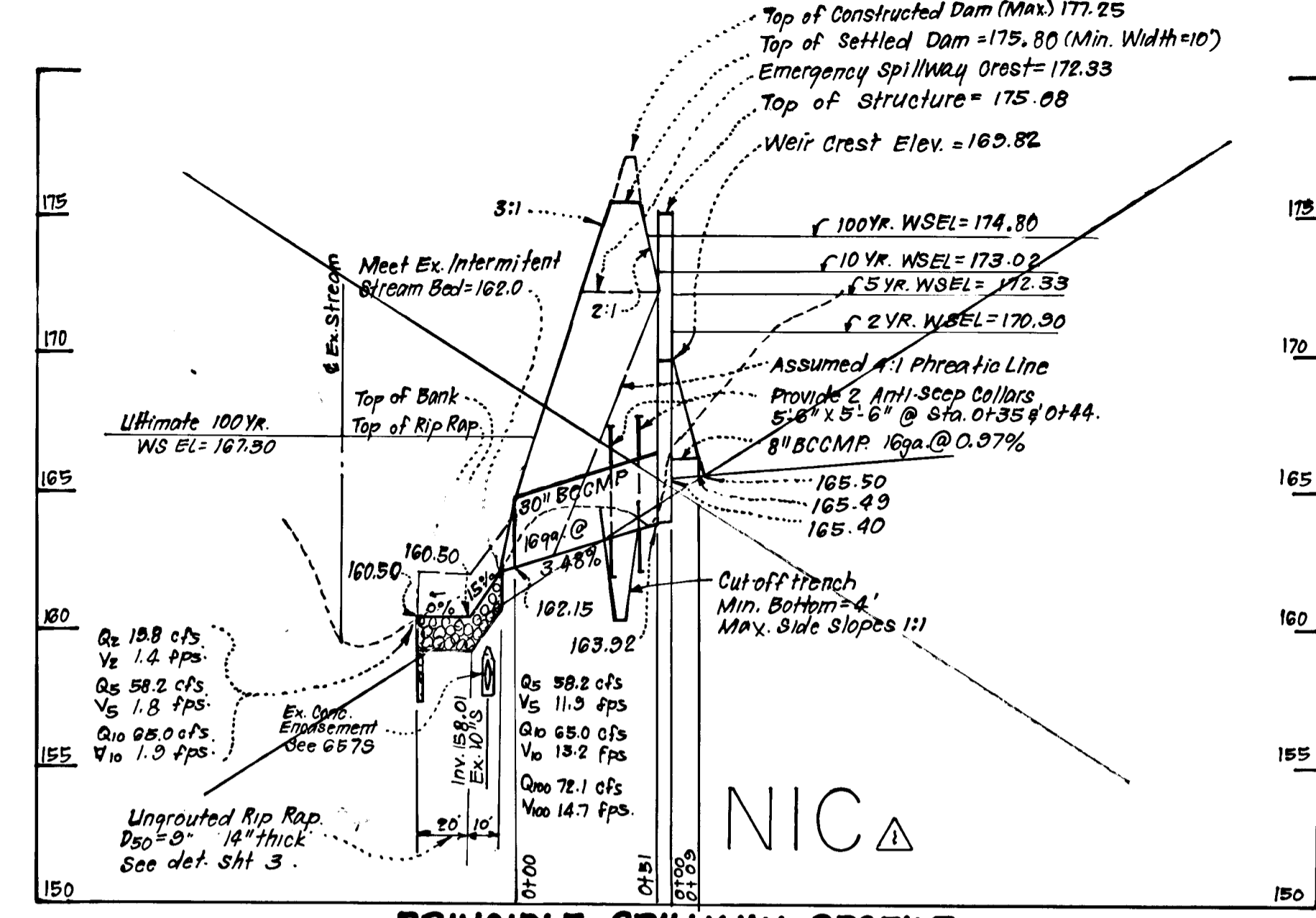
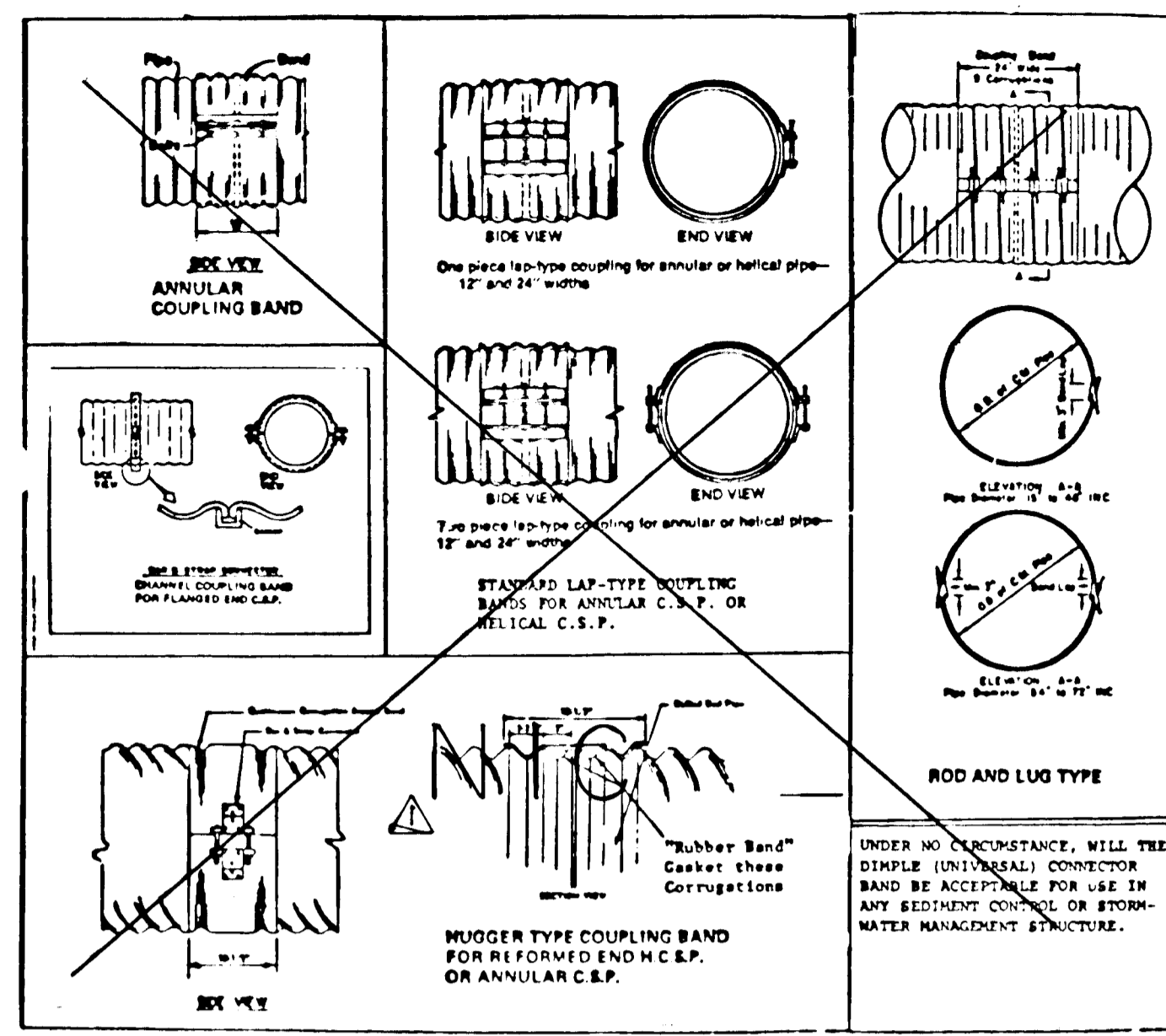
VIII. CORE TRENCH MATERIAL
 Core trench material shall be M1, CL, CH, or MH only. Core trench to be constructed under the supervision of a registered professional geotechnical engineer.

1. Materials - Reinforced concrete pipe shall have a rubber gasket joint and shall equal or exceed ASTM Specification C-301. An approved equivalent is AWWA Specification C-301.
 2. Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 102 of its outside diameter with a minimum thickness of 3", or as shown on the drawings.
 3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire length, the bedding shall be placed so that all spaces under the pipe and between the pipe and bedding are exercised to prevent any deviation from the original line and grade of the pipe.
 4. Backfilling shall conform to structural backfill as shown above.
 5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.
 C. For pipes of other materials, specific specifications shall be shown on the drawings.

V. CONCRETE
1. Material
 a. Cement - Normal Portland cement shall conform to the latest ASTM Specification C-150.
 b. Water - The water used in concrete shall be clean, free from oil, acid, alkali, scales, organic matter or other objectionable substances.
 c. Sand - The sand used in concrete shall be clean, hard, strong and durable, and shall be well graded with 100 percent passing a one-quarter inch sieve. Limestone sand shall not be used.
 d. Coarse Aggregate - The coarse aggregate shall be clean, hard, strong and durable, and free from clay or dirt. It shall be well graded with a maximum size of one and one-half (1-1/2) inches.
 e. Reinforcing Steel - The reinforcing steel shall be deformed bars of intermediate grade billet steel or rail steel conforming to ASTM Specification A-615.

2. Design Mix - The concrete shall be mixed in the following proportions, measured by weight. The water-cement ratio shall be 5-1/2 to 6 U.S. Gallons of water per 94 pound bag of cement. The proportion of materials for the trial mix shall be 1:2:3-1/2. The combination of aggregate may be adjusted to produce a plastic and workable mix that will not produce harshness in placing or honeycombing in the structure.
 3. Mixing - The concrete ingredients shall be mixed in batch mixers until the mixture is homogeneous and of uniform consistency. The mixing of each batch shall continue for not less than one and one-half minutes after all the ingredients, except the full amount of water, are in the mixer. The minimum mixing time is predicted on proper control of the speed of rotation of the mixer and of the introduction of the materials, including water, into the mixer. Water shall be added prior to, during, and following the water-charging operations. Excessive overmixing requiring the addition of water to preserve the required concrete consistency shall not be permitted. Truck mixing will be allowed provided that the use of this method shall cause no violation of any applicable provisions of the specifications given here.
 4. Forms - The forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure, tapping, and vibration without deflection from the prescribed lines. They shall be mortar-tight and constructed so that they can be removed without hammering or prying against the concrete.
 The inside of forms shall be oiled with a non-staining mineral oil or thoroughly wetted before concrete is placed.
 Forms may be removed 24 hours after the placement of concrete. All wire ties and other devices used shall be recessed from the surface of the concrete.

5. Reinforcing Steel - All reinforcing material shall be free of dirt, rust, scale, oil, paint or any other coatings. The steel shall be accurately placed and securely tied and blocked into position so that no movement of the steel will occur during placement of concrete.
 6. Consolidating - Concrete shall be consolidated with internal type mechanical vibrators. Vibration shall be supplemented by spading and hand tamping as necessary to insure smooth and dense concrete along form surfaces, in corners, and around embedded items.
 7. Finishing - Defective concrete, honeycombed areas, voids left by the removal of tie rods, pipes or any other devices permanently exposed to view or exposed to water on the finished structure, shall be repaired immediately after the removal of forms. All voids shall be repaired completely filled with dry-patching mortar.
 8. Protection and Curing - Exposed surfaces of concrete shall be protected from the direct rays of the sun for at least the first three (3) days. All concrete shall be kept continuously moist for at least ten (10) days after being placed. Moisture may be applied by spraying or sprinkling as necessary to prevent the concrete from drying. Concrete shall not be exposed to freezing during the curing period. Curing compounds may also be used.



STRUCTURE NOTES:
 1. fc = 4000 psi
 2. fy = 60,000 psi
 3. No slab roadway in area of weir
 4. Provide sidewalk frame & cover per H.C. Std. 3-91
 5. Provide Manhole steps in accordance with H.C. Std. G.5-21
 6. Structure to be embedded in 6\"/>

DEVELOPERS CERTIFICATION:
 "We certify that all development and/or construction will be done according to these plans, 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 will provide the Howard Soil Conservation District with an "as built" plan of the pond within 30 days of completion. I also authorize personnel on-site inspections by the Howard Soil Conservation District."

ENGINEER'S CERTIFICATE:
 "I certify that this plan for pond construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with a re-dlined "as built" of the pond within 30 days of completion."

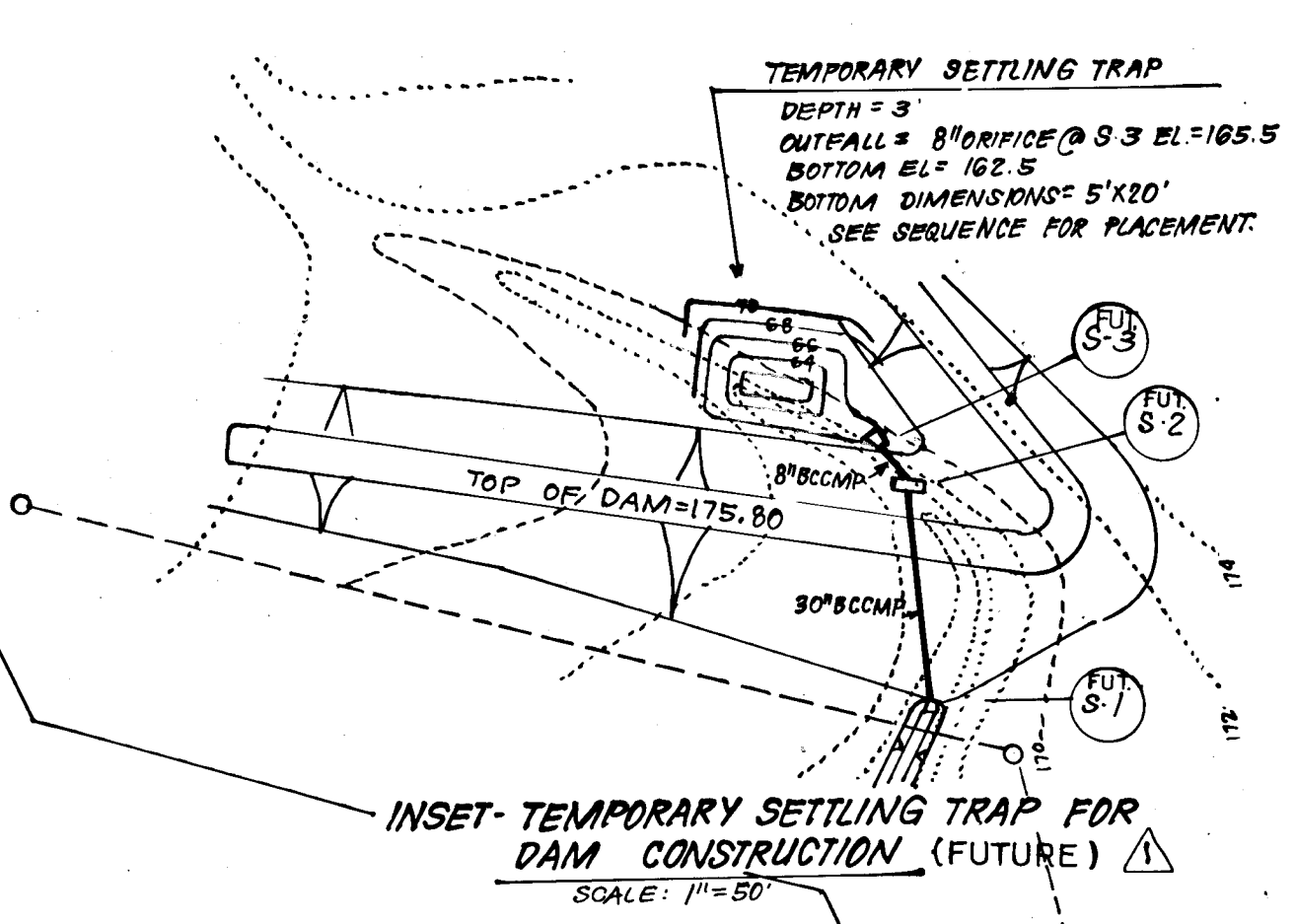
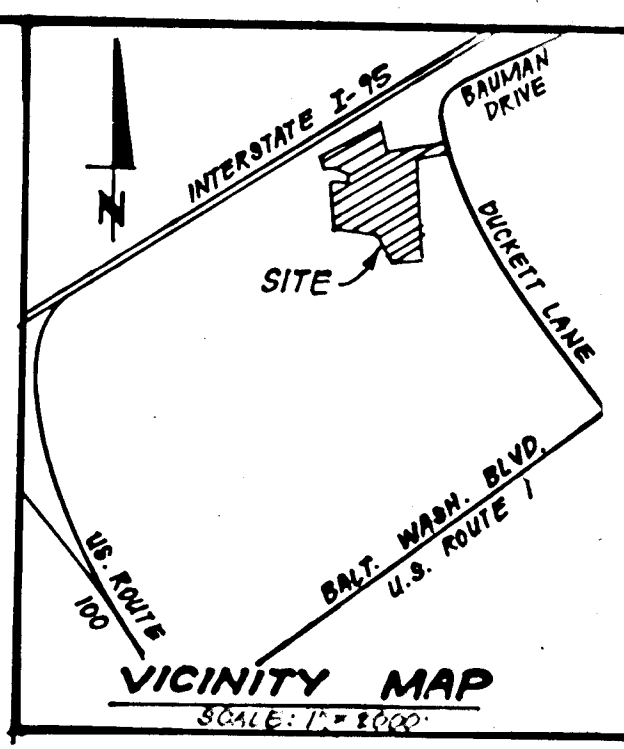
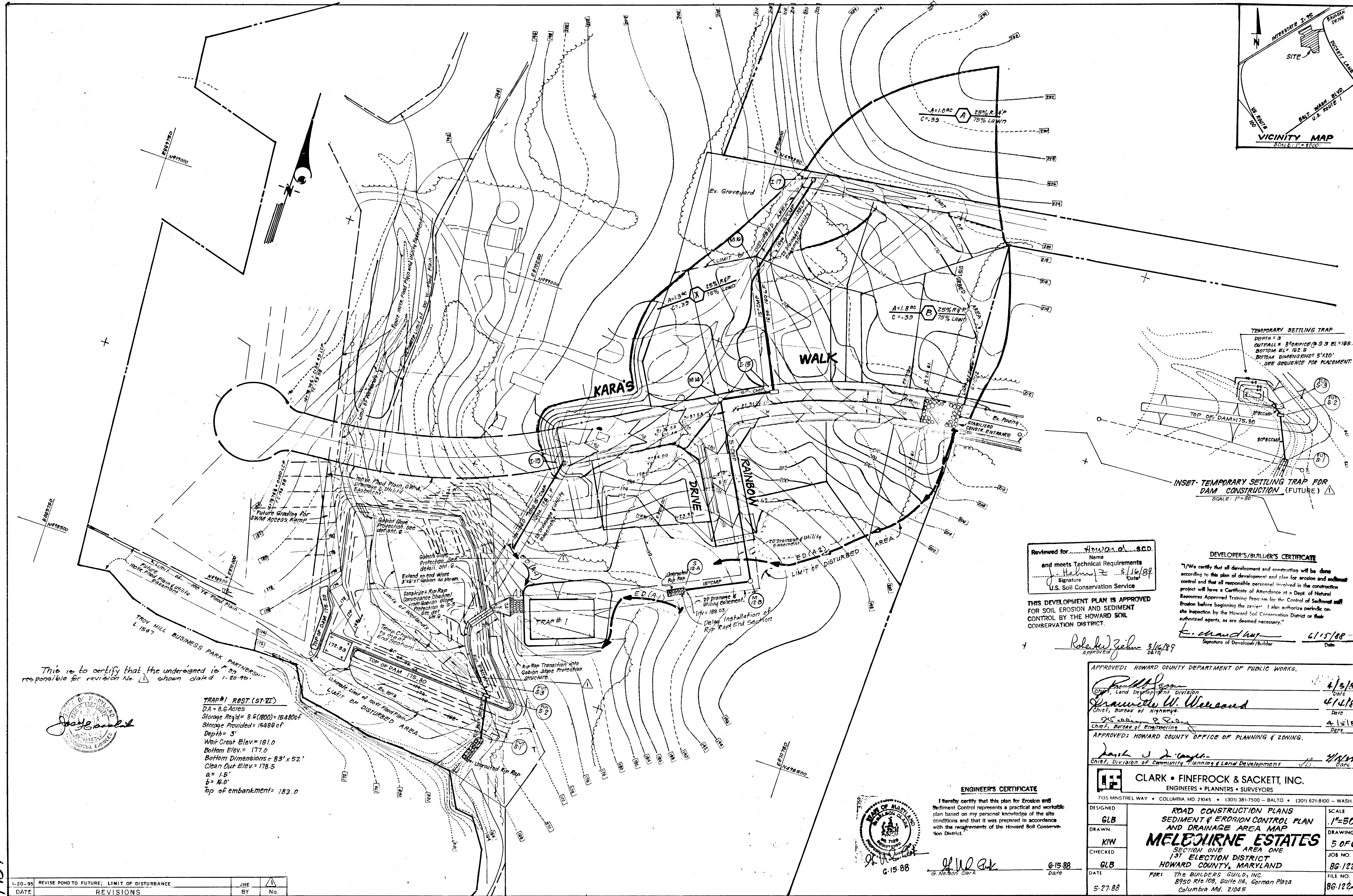
Approved: *[Signature]* 3/16/89
 Date: 3/16/89

Approved: *[Signature]* 6/15/88
 Date: 6/15/88

NOTE: THIS SHEET IS BEING DELETED FROM THESE PLANS AND IS BEING TRANSFERRED TO MELBOURNE ESTATES SECT. 1, AREA 3, F 89 - 224. Δ

1-20-95 DELETE SWM DETAILS FROM PLANS		JHE	Δ
DATE	REVISIONS	BY	No.
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.			
<i>[Signature]</i>	Chief, Land Development Division	4/3/89	Date
<i>[Signature]</i>	Chief, Bureau of Highways	4/4/89	Date
<i>[Signature]</i>	Chief, Bureau of Engineering	4-15-89	Date
APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING.			
<i>[Signature]</i>	Chief, Division of Community Planning & Land Development	7/1/89	Date
CLARK • FINEFROCK & SACKETT, INC.			
ENGINEERS • PLANNERS • SURVEYORS			
7135 MINNISTREL WAY • COLUMBIA, MD 21045 • (301) 381-7500 - BALTO • (301) 621-8100 - WASH			
DESIGNED	ROAD CONSTRUCTION PLANS	SCALE	
GLB	STORM WATER MANAGEMENT DETAILS	AS SHOWN	
DRAWN	MELBOURNE ESTATES	DRAWING	4 OF 6
KW	SECTION ONE AREA ONE	JOB NO.	
CHECKED	1ST ELECTION DISTRICT	86-122	
GLB	HOWARD COUNTY, MARYLAND	FILE NO.	
DATE	FOR THE BUILDERS GUILD INC.	86-122-D	
5-27-88	8950 Rte 108, Suite 114, German Plaza Columbia, MD 21045		

1439

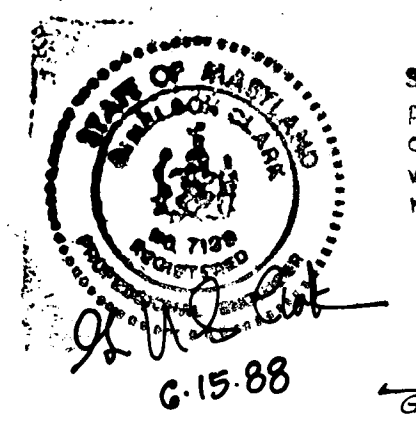


Reviewed for Howard County S.C.D.
 Name
 and meets Technical Requirements
Robert J. Zelnick 3/16/89
 Signature Date
 U.S. Soil Conservation Service

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

DEVELOPER'S/BUILDER'S CERTIFICATE
 I/We certify that all development and construction will be done according to this plan of development and plan for erosion and sediment control and that all responsible personnel involved in the construction project will have a Certificate of Attendance at a Dept. of Natural Resources Approved Training Program for the Control of Sedimentation before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents, as are deemed necessary.
Robert J. Zelnick 3/16/89
 Signature of Developer/Builder Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
Frank J. Zelnick 4/2/89
 Chief, Land Development Division Date
William W. Weiland 4/2/89
 Chief, Bureau of Highways Date
John S. Zelnick 4/15/89
 Chief, Bureau of Engineering Date
 APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING.
Frank J. Zelnick 4/15/89
 Chief, Division of Community Planning & Land Development Date



ENGINEER'S CERTIFICATE
 I hereby certify that this plan for Erosion and Sediment Control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.
Robert J. Zelnick 6-15-88
 Date

CLARK • FINEFROCK & SACKETT, INC. ENGINEERS • PLANNERS • SURVEYORS 7135 MINSTREL WAY • COLUMBIA, MD. 21045 • (301) 381-7500 - BALTO. • (301) 621-8100 - WASH.				
DESIGNED	GLB	ROAD CONSTRUCTION PLANS SEDIMENT & EROSION CONTROL PLAN AND DRAINAGE AREA MAP MELEJOURNE ESTATES SECTION ONE AREA ONE 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND FOR: The BUILDERS GUILD, INC. 8950 Rte 108, Suite 114, Gorman Plaza Columbia Md. 21045	SCALE	1"=50'
DRAWN	KIW		DRAWING	5 OF 6
CHECKED	GLB		JOB NO.	86-122
DATE	5-27-88		FILE NO.	86-122-D

This is to certify that the undersigned is responsible for revision No. 1 shown dated 1-20-96.



TRAP #1 ROST. (ST-VI)
 DA = 8.6 Acres
 Storage Reg'd = 8.6 (1800) = 15480cf
 Storage Provided = 15480cf
 Depth = 3'
 Weir Crest Elev. = 181.0
 Bottom Elev. = 177.0
 Bottom Dimensions = 83' x 52'
 Clean Out Elev. = 178.5
 a = 15'
 b = 16.0'
 Top of embankment = 183.0

1-20-95	REVISE POND TO FUTURE; LIMIT OF DISTURBANCE	JHE	1
DATE	REVISIONS	BY	No.

1459

