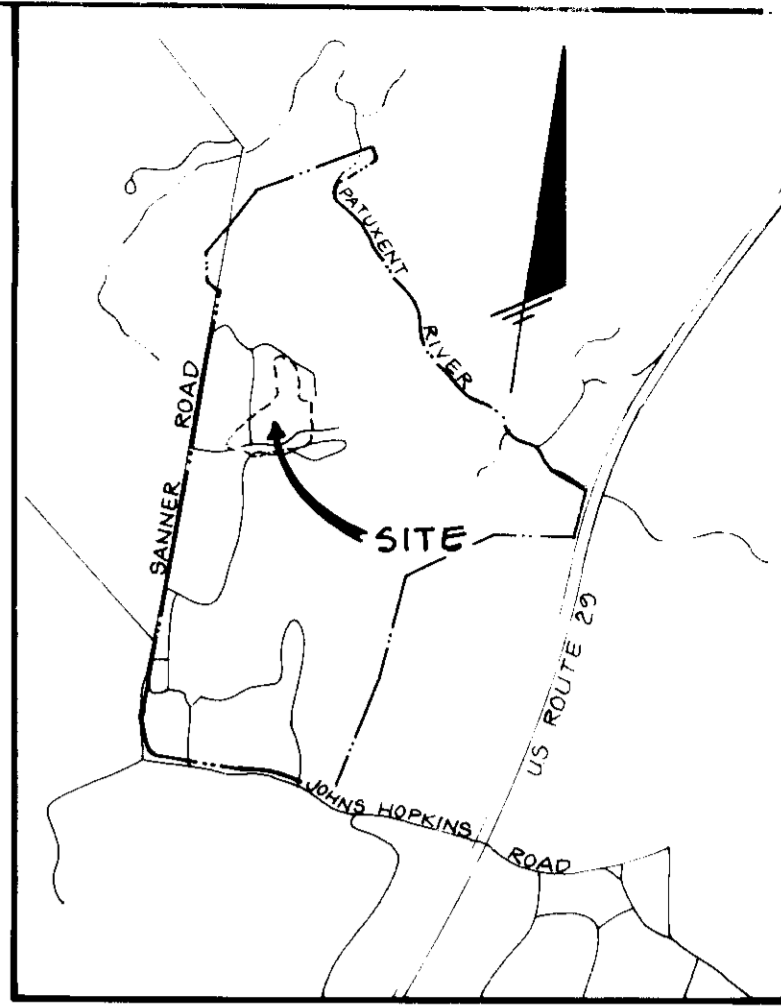
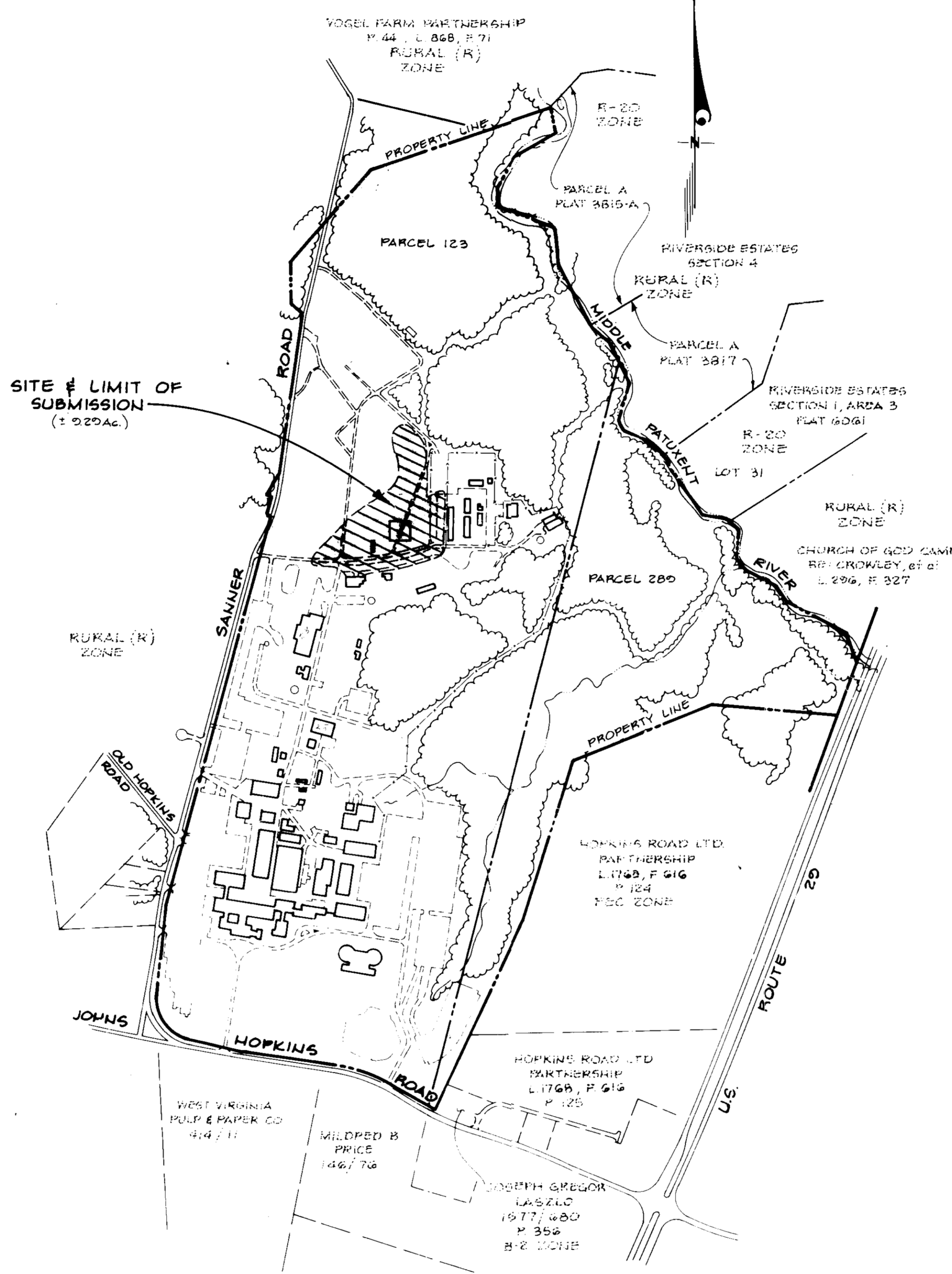


GENERAL NOTES

- All work shall be performed in accordance with the Howard County Specifications and Details for Construction.
- Elevations shown are based on the Johns Hopkins University Applied Physics Laboratory datum. JHU-APL Datum - .94' = Howard County Datum.
- The Contractor shall notify Miss Utility, 1-800-257-7777, five days prior to start of construction.
- Polyfilter X filter cloth blanket or equal shall be placed under all stone rip-rap.
- Approximate location of existing utilities are shown. The Contractor shall take all necessary precautions to protect the existing utilities and to maintain uninterrupted service. Any damage by the Contractor's operations shall be repaired immediately at the Contractor's expense.
- Access to the construction area through the secure area of the Applied Physics Laboratory (within the fenced enclosure) must be arranged in advance by contacting the Plant Engineering Office (301) 792-5134.
- Security must be maintained within the existing fenced area. All required fence construction and relocation shall be by the Contractor who shall be responsible to coordinate with JHU-APL as to when such work is required.
- Landscaping shall be done by JHU-APL.
- The Contractor shall contact Mr. Arthur Stucki, Plant Engineer (301) 792-5133 at least five days before starting work or the need to shut down any utilities.
- The Contractor shall tie in to the existing utilities only after normal working hours of JHU-APL. Work must be scheduled accordingly. Normal working hours are 8:30 a.m. to 5:00 p.m., Monday through Friday.
- All pipe elevations shown are invert elevations.
- All water mains shall be Ductile Iron Class 52, unless otherwise noted.
- All sanitary sewer mains shall be Howard County Schedule 35 PVC unless otherwise noted.
- The Contractor or Developer shall contact the Construction Inspection Division, 24 hours in advance of commencement of work, at (301) 792-2417 or 2418.
- The top of all water mains shall have a minimum of 3 1/2' of cover unless otherwise noted.
- All fittings shall be buttressed or anchored with concrete in accordance with the Standard Details unless otherwise provided for on the drawing.
- Clear all utilities by a minimum of 6". Clear all poles 2'-0" minimum, or tunnel as required.
- The Contractor shall not operate any water main valves on the existing water systems.
- The Contractor shall provide a joint in all Sanitary & Storm drains within 2'-0" of exterior manhole wall.
- The Contractor shall permanently seed and stabilize all disturbed areas that are not to be paved.
- The building proposed is for shipping and receiving for Research & Development.
- There are no wetlands within the limit of disturbance shown. Therefore, Section 404 and Section 401 do not apply and permits are not required.
- All driveways are privately owned and maintained.
- Topography was compiled from actual field survey, dated Nov. 1989 by Clark, Finebrock & Sackett, Inc.
- The area shown is located on Tax Map # 41.
- The information concerning underground utilities was obtained from available records, but the contractor must determine the exact location by digging test pits, by hand, at all crossings well in advance of construction.
- Handicap parking details shall be in accordance with the "Maryland Building Code for the Handicapped," Section 5-01-7.05 and detail sheet 2.
- See also Howard County files: SDP 89-65, 89-133, 90-119, 90-194



VICINITY MAP
Scale: 1" = 2000'



SITE ANALYSIS

Present Zoning	Rural - R
Area of Property	366 Ac
Area of Submission	19.29 Ac
Building Floor Space:	
Existing	1,447,954
Proposed (Distribution, Storage & Guard House)	23,813
Total	1,471,767
Number of Employees:	
Existing	3,109
Proposed	0
Total	3,109
Number of Parking Spaces:	
Existing	3,166
Required (3,109 x 0.7)	2,176
Provided	3,285 (3,166 + 73 new spaces)
Green Area:	
Existing	304.14 Ac (83.2%)
Proposed	301.11 Ac (82.3%)
Building Coverage:	
Existing	14,652 Ac (4.00%)
Proposed (23,598 sf Added)	15,194 Ac (4.15%)
Paving Area:	
Existing	46.91 Ac (12.82%)
Proposed (2.50 Ac Added)	49.41 Ac (13.50%)

△	Enlarged building floor space	9-18-91
△	Rev. Parking Sp. Quantity as per sht. 2 of 8	4-3-91
REVISION		
No	Date	

ADDRESS CHART					
PARCEL NUMBER	STREET ADDRESS				
P 23 / 123	11100 JOHNS HOPKINS ROAD				
SUBDIVISION NAME	SECT / AREA	LOTS			
JHU APPLIED PHYSICS LAB		P 123 / 123			
PLAT NO	BLOCK NO	ZONE	TAX MAP NO	ELEC DIST	CENSUS TR
234 / 304	16	R	41	5th	G051
400 / 625					
WATER CODE	E 21		SEWER CODE		
			G48C X00		

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT
[Signature] 12-7-90
COUNTY HEALTH OFFICER DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
[Signature] 12/14/90
DIRECTOR DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE
STORM DRAINAGE SYSTEMS AND PUBLIC ROADS
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 11/29/90
DIRECTOR DATE

CHIEF BUREAU OF ENGINEERING
[Signature] 11-29-90
DATE

APPLIED PHYSICS LABORATORY
THE JOHNS HOPKINS UNIVERSITY
Johns Hopkins Road Howard County, Maryland
Approved For The University By: *[Signature]*
Date: 6/14/90 Title: *[Signature]*

CLARK • FINEBROCK & SACKETT, INC.
ENGINEERS • PLANNERS • SURVEYORS
710 MINISTREL WAY • COLUMBIA, MD 21046 • (410) 871-7000 • BALTO • (410) 481-1000 • WASH

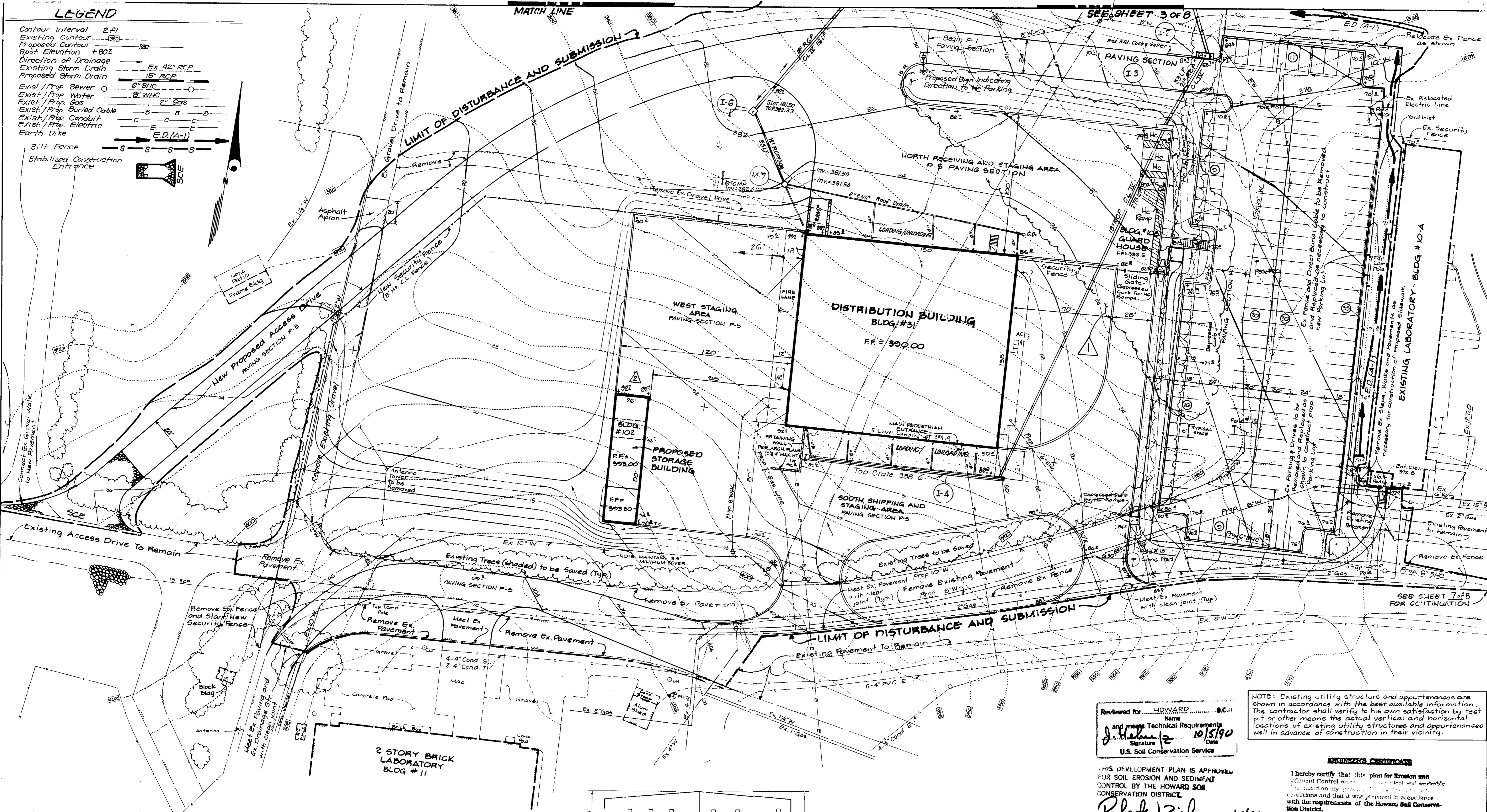
DESIGNED	WHT	SCALE	1" = 600'
DRAWN	PER	DRAWING	1 of 8
CHECKED	WHT	JOB NO	89-116
DATE	6-14-90	FILE NO	89-116-X

FOR: JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LAB
11100 Johns Hopkins Road
Laurel, Md. 20723-6099

[Handwritten Signature]
9/15/90

LEGEND

- Contour Interval 2 Ft
- Existing Contour
- Proposed Contour
- Spot Elevation
- Direction of Drainage
- Existing Storm Drain
- Proposed Storm Drain
- Exist./Prop. Sewer
- Exist./Prop. Water
- Exist./Prop. Gas
- Exist./Prop. Buried Cable
- Exist./Prop. Conduit
- Exist./Prop. Electric
- Earth Dike
- Silt Fence
- Stabilized Construction Entrance



Reviewed for: **HOWARD COUNTY**
 and meet Technical Requirements
 Signature: *[Signature]* Date: **10/5/90**
 U.S. Soil Conservation Service

NOTE: Existing utility structures and appurtenances are shown in accordance with the best available information. The contractor shall verify to his own satisfaction by test pit or other means the actual vertical and horizontal locations of existing utility structures and appurtenances well in advance of construction in their vicinity.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 Robert W. Ziehm 10/5/90
 Approved

ENGINEER'S CERTIFICATE
 I hereby certify that this plan for Erosion and Sediment Control meets the technical and scientific requirements and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.
 Jeffrey L. Schwab 6/14/90
 Date

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT
 County Health Officer: *[Signature]* Date: 12-7-90

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
 Director: *[Signature]* Date: 12/14/90

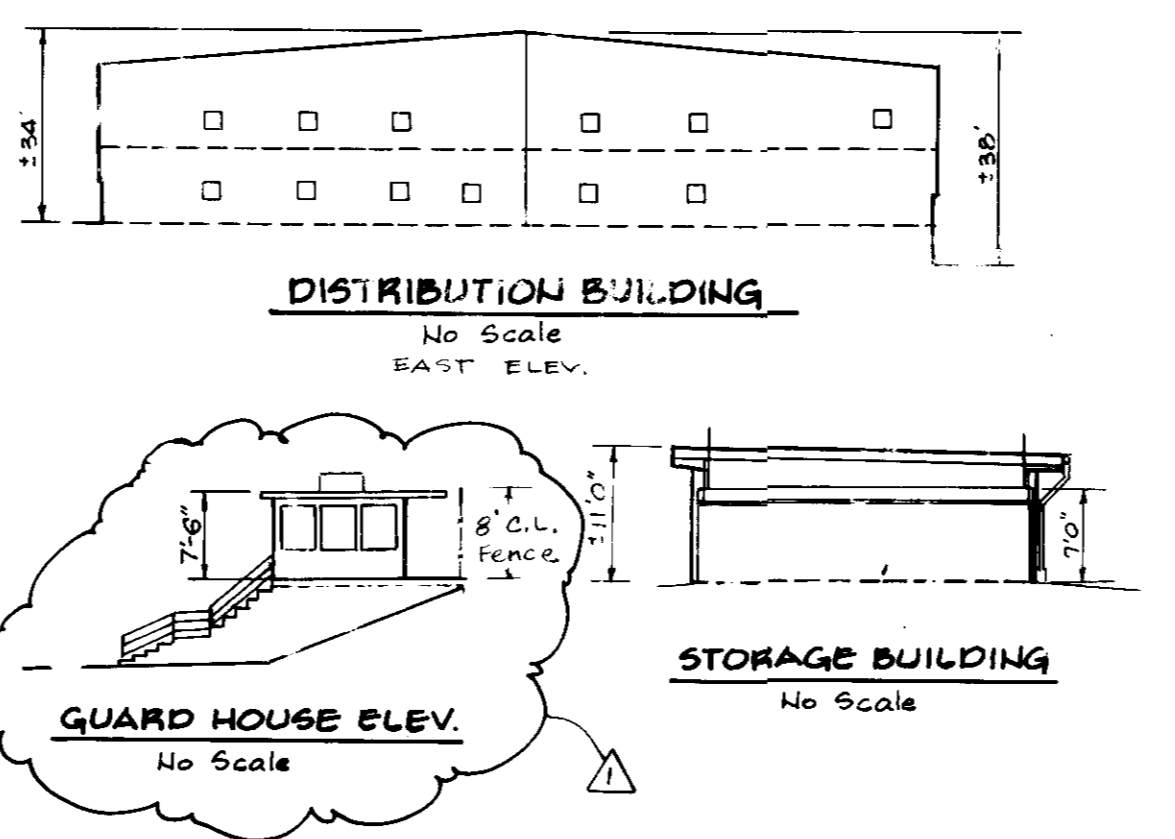
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT
 Date: 12/14/90

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Director: *[Signature]* Date: 11/29/90

CHIEF BUREAU OF ENGINEERING
 Date: 11-29-90

Rev.	Description	Date
1	Rev. Storage building size	9/18/91
2	Rev. Parking & Circulation of Guard House Area	4/3/91
No	REVISION	Date

APPLIED PHYSICS LABORATORY
 THE JOHNS HOPKINS UNIVERSITY
 Johns Hopkins Road, Howard County, Maryland
 Approved for the University by: *[Signature]*
 Date: 6/14/90 Title: *[Signature]*



DEVELOPER'S/SUBMITTER'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 Management Training Program for the Control of Sediment and Erosion that is being held. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents, as are deemed necessary.
 James E. Towse 6/14/90
 Signature of Developer/Submitter

CLARK • FINEROCK & SACKETT, INC.
 ENGINEERS • PLANNERS • SURVEYORS
 7115 MINSTREL WAY • COLUMBIA, MD 21045 • (301) 881-7500 BALTO • (301) 621-8100 - WASH

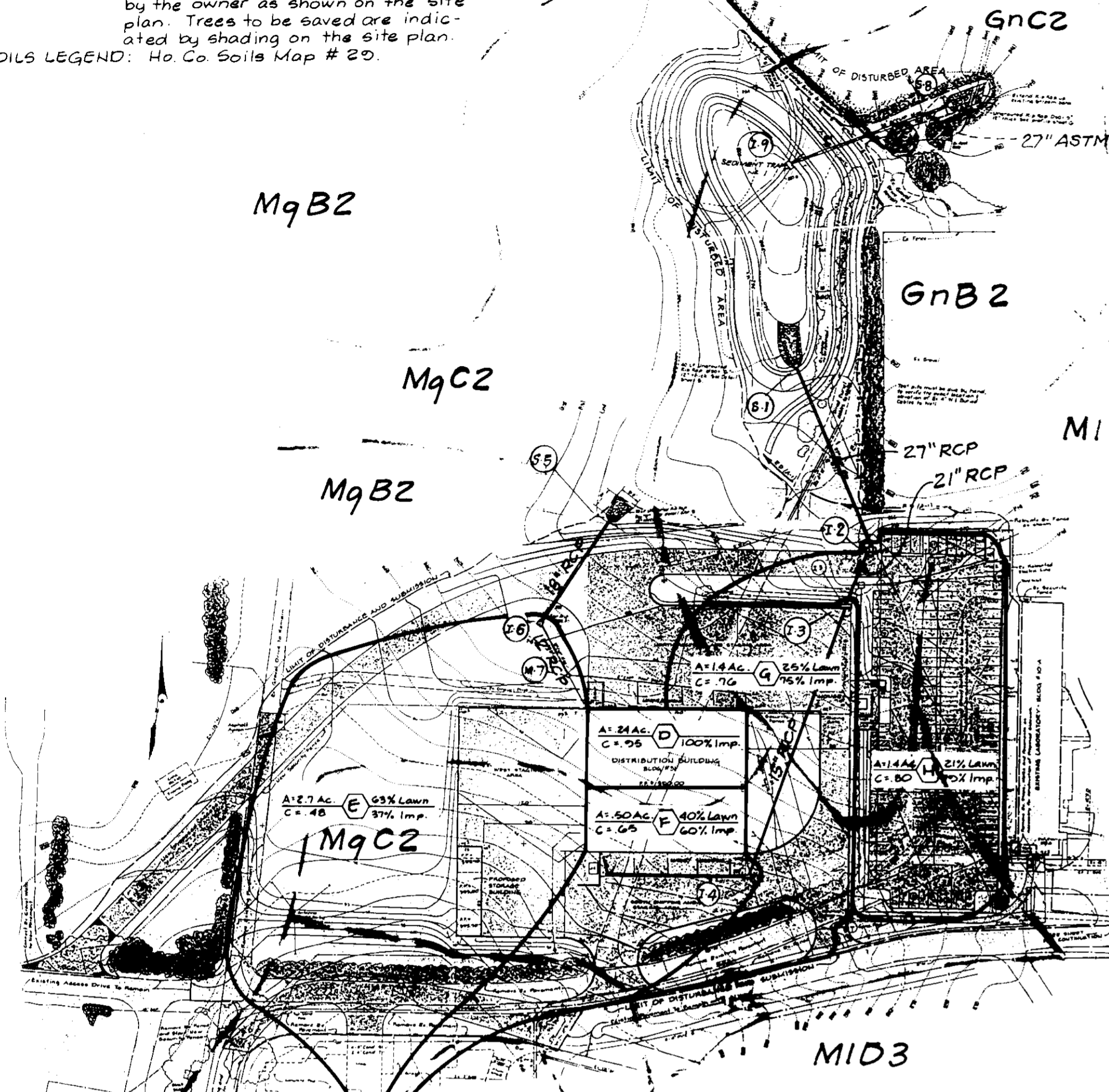
DESIGNED WHT	SITE DEVELOPMENT PLAN CENTRALIZED DISTRIBUTION/SHIPPING RECEIVING FACILITY	SCALE 1"=30'
DRAWN PER	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY	DRAWING 2 of 8
CHECKED WHT	TAX MAP 41 PARCEL 123/123 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	JOB NO. 89-116
DATE 6-14-90	FOR JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LAB 11100 Johns Hopkins Road Laurel Maryland, 20723-6099	FILE NO. 89-116 X

ENVIRONMENTAL NOTES

1. SLOPES: Existing slopes average 7-8%. No steep slopes exist within project area.
2. 100 YEAR FLOODPLAIN: Does not exist on the site.
3. WETLANDS: Do not exist on site per field investigation report by ESA, Inc., dated Oct 20, 1989.
4. VEGETATION: The only significant trees located in the project area are rows of 20' x 30' white pine screens previously planted by the owner as shown on the site plan. Trees to be saved are indicated by shading on the site plan.
5. SOILS LEGEND: Ho. Co. Soils Map # 29.

SYMBOL	SOILS NAME	SLOPE %	EROSION CLASS	HYDRIC CLASS
G1B2	Glenelg Loam	3-8%	Moderate	No
GnB2	Glenville Loam	3-8%	"	Inclusion-Ba
GnC2	"	8-15%	"	"
M1O2	Manor Loam	15-25%	"	No
M1D2	"	15-25%	Severe	No
MgB2	Manor Gravelly Loam	3-8%	Moderate	No
MgC2	"	8-15%	"	No

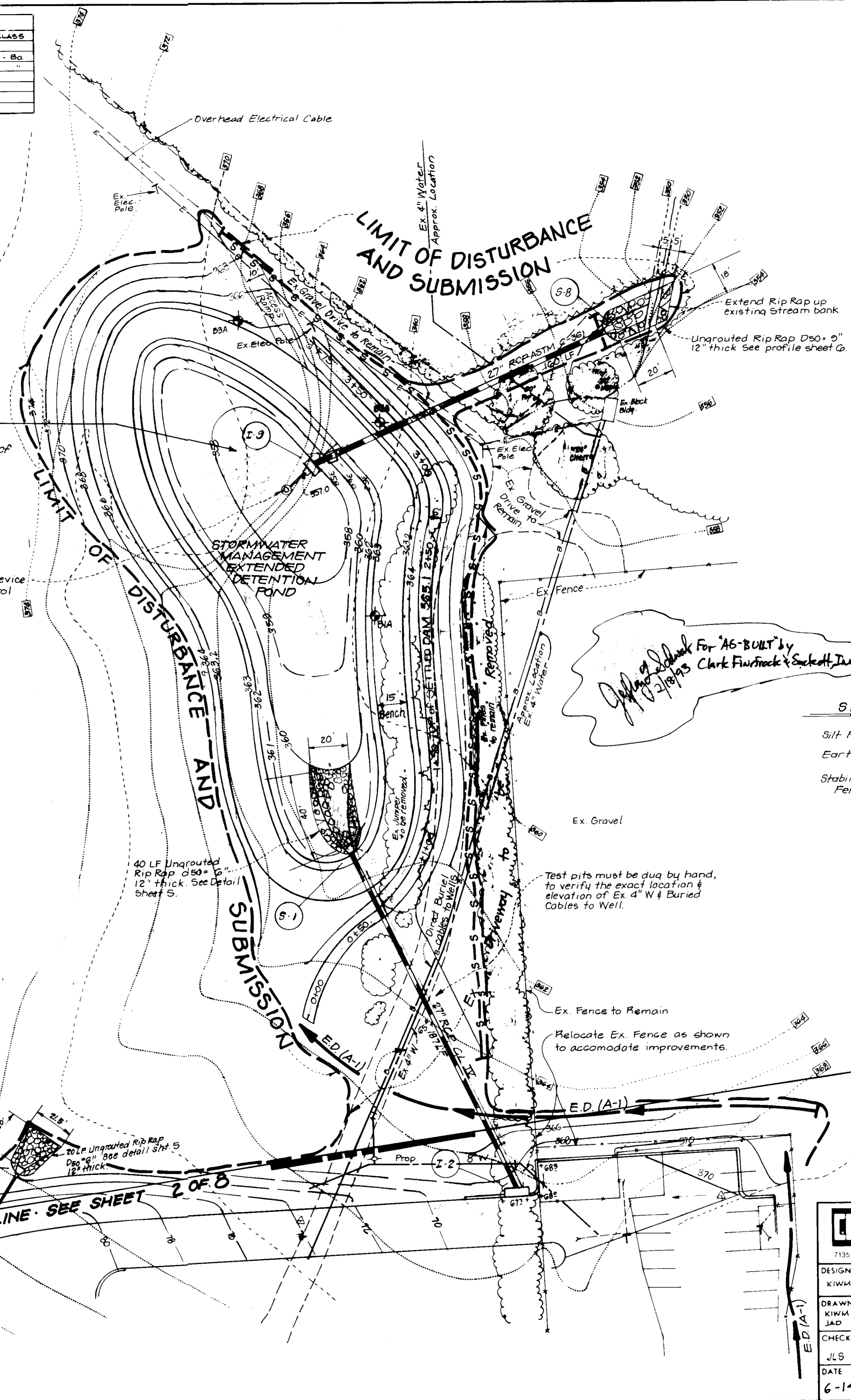
NOTE: See Ho. Co. Soils Map # 29.



TEMPORARY SEDIMENT TRAP NO. 1

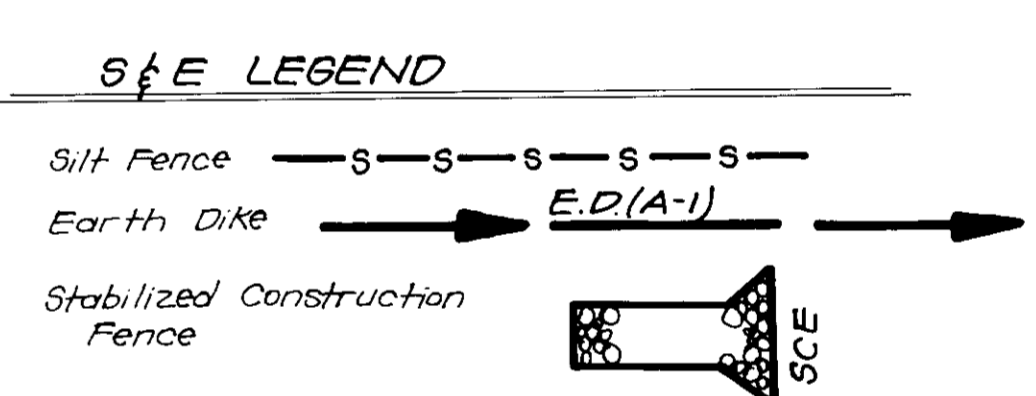
Drainage Area 12.9 Acres
 Storage Required 12.9 x 1800 = 23,220 of
 Storage Provided 56,134 of
 Crest Elevation 362.65
 Clearout Elevation 353.83

Temp Dewatering Device for Sediment Control



NOTE: Existing utility structures and appurtenances are shown in accordance with the best available information. The contractor shall verify with the best available information the actual vertical and horizontal locations of existing utilities and appurtenances well in advance of construction in their vicinity.

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for soil erosion control, soil erosion and sediment control. Approved: *James E. Trench* 10/15/90
 Howard S.C.D. Date



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 Attention from the Department of Planning and Public Works, Howard County, Maryland, before beginning the construction. We also certify that we have notified the Howard Soil Conservation District and its built plan of the pond within 30 days of completion. We also authorize periodic inspections by the Howard Soil Conservation District."
James E. Trench 9/18/90
 Signature of Developer

ENGINEER'S CERTIFICATE
 "I certify that this plan for point construction, erosion, and sediment control meets the technical 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 notify the Howard Soil Conservation District with a certified 'as built' of the pond within 30 days of completion."
James E. Trench 9/19/90
 Signature of Engineer

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT. COUNTY HEALTH OFFICER: *James E. Trench* 12-7-90 DATE. APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING. DIRECTOR: *James E. Trench* 12/14/90 DATE. CHIEF DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT. APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS. DIRECTOR: *James E. Trench* 11/29/90 DATE. CHIEF BUREAU OF ENGINEERING. DATE: 11-29-90

APPLIED PHYSICS LABORATORY
 THE JOHNS HOPKINS UNIVERSITY
 Johns Hopkins Road, Howard County, Maryland
 Approved For The University By: *James E. Trench*
 Date: 5/14/90 Title: *Drainage Improvements*

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

DESIGNED KIWM	SITE DEVELOPMENT PLAN, SOILS MAP & SEDIMENT & EROSION CONTROL PLAN CENTRALIZED DISTRIBUTION/SHIPPING RECEIVING FACILITY	SCALE 1"=30'
DRAWN KIWM JAD	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY	DRAWING 3 OF 8
CHECKED JLS	TAX MAP # 41 PARCEL 123/129 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	JOB NO. 89-116
DATE 6-14-90	FOR JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LAB 11100 Johns Hopkins Road Laurel Maryland, 20723-6000	FILE NO. 89-116 X

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 previously 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 sq ft) and 600 lbs per acre 10-10-10 fertilizer (24 lbs/1000 sq ft) before seeding.
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.

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.

Mulching - Apply 1 1/2 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.

Maintenance - Inspect all seeded areas and make needed repairs, replacements and reseeds.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redistributed 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 600 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 25 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).

Mulching: Apply 1 1/2 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.

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

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 redistribution, 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, Chapter 12, of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.

5) All disturbed areas must be stabilized within the time period specified above in accordance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seedings (Sec. 51) and temporary seedings (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

Table with 2 columns: Item, Value. Includes Total Area of Site (9.29 Acres), Area Disturbed (9.29 Acres), Area to be roofed or paved (3.95 Acres), Area to be vegetatively stabilized (2.34 Acres), Total Cut (20,700 Cu. Yds), Total Fill (29,240 Cu. Yds), Offsite waste/borrow area location (undetermined).

8) Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

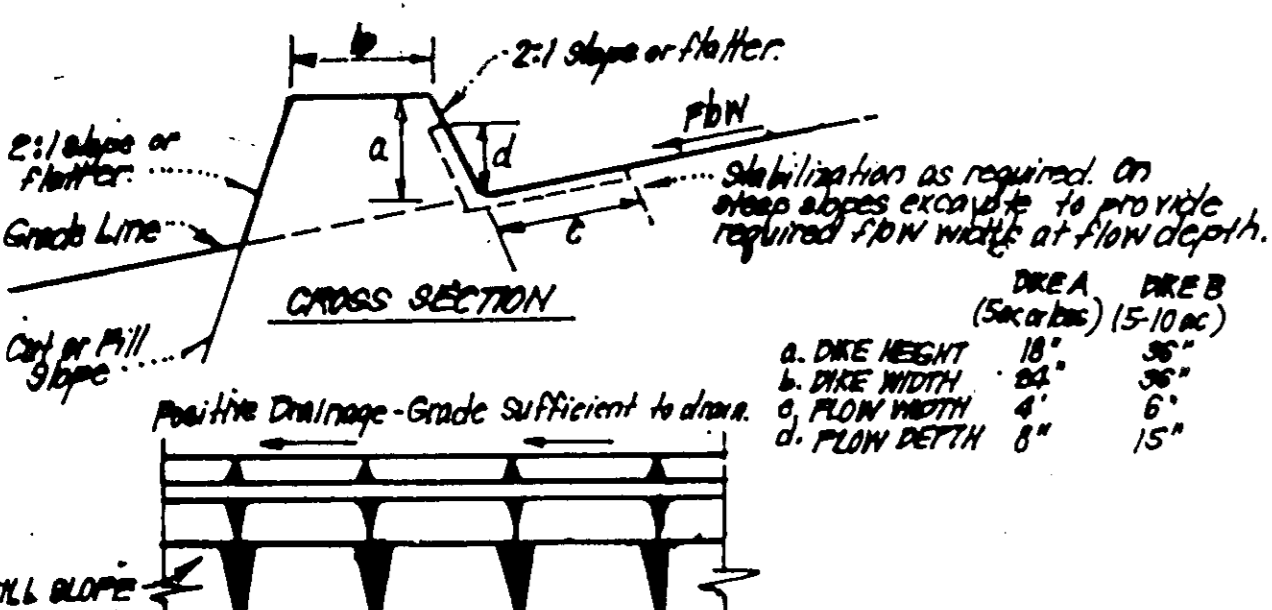
9) Additional sediment control must be provided, if deemed necessary by the Howard County DPM sediment control inspector.

10) On 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.

11) If houses are to be constructed on an "As-Built" basis, at random, Single Lot Sediment Control as shown below shall be implemented. N/A

12) All pipes to be blocked at the end of each day (see detail below).

13) The total amount of straw bale dikes/silt fence equals 46.6 L.F.



CONSTRUCTION SPECIFICATIONS:

- 1. All dikes shall be constructed 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 cleaning by construction traffic.
4. Final location should be adjusted as needed to utilize a stabilized safe outlet.

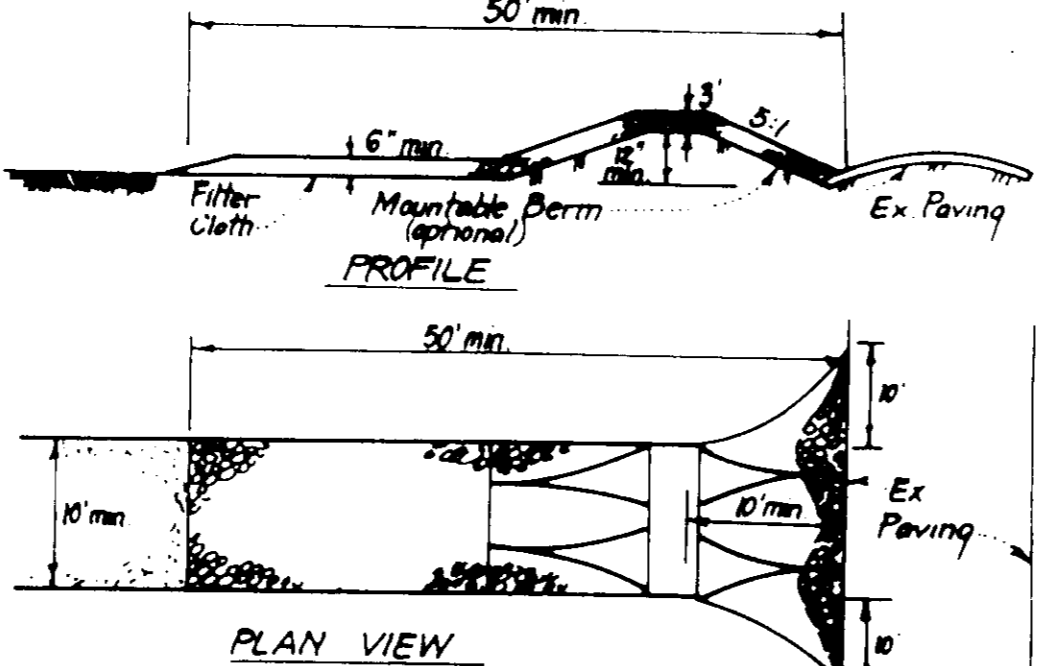
FLOW CHANNEL STABILIZATION

Table with 3 columns: TYPE OF TREATMENT, CHANNEL, DIKE A, DIKE B. Lists treatments like 2" stone, straw mulch, etc.

- A. Stone to be 2" stone, or recycled concrete equivalent, in a layer at least 3" thick and be pressed into soil with construction equipment.
B. Rip Rap to be 4"-6" in a layer at least 8" thick, pressed into soil.

EARTH DIKE DETAIL (E.D.)

NO SCALE

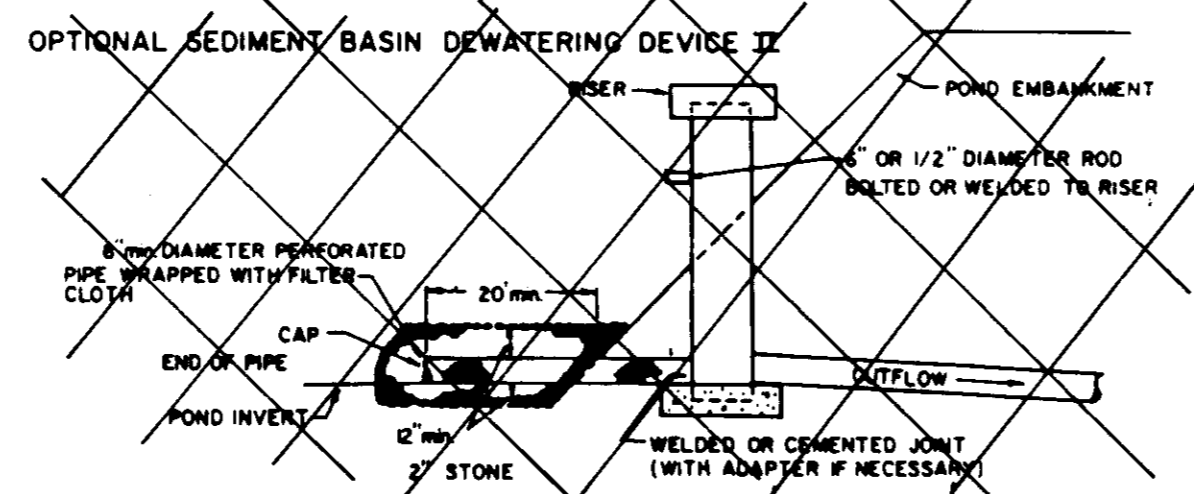
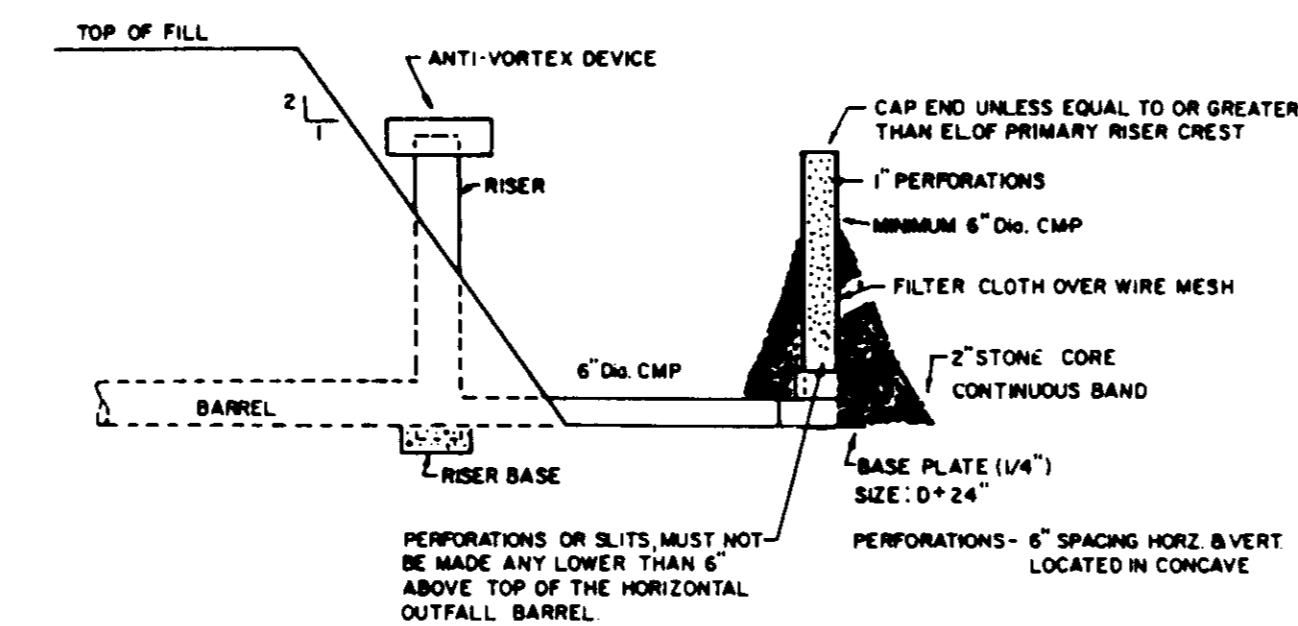


CONSTRUCTION SPECIFICATIONS:

- 1. Stone size - Use 2" stone, 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.

STABILIZED CONSTRUCTION ENTRANCE (SCE)

OPTIONAL SEDIMENT BASIN DEWATERING DEVICE I WITH 6" PERFORATED RISER



BORING 1-A data table. Columns: Elev, Material Description, Strata Depth, Sample Data (No, Blows/6", Type, Rec), Notes. Shows soil layers from 0 to 15.0 feet depth.

BORING 2-A data table. Columns: Elev, Material Description, Strata Depth, Sample Data (No, Blows/6", Type, Rec), Notes. Shows soil layers from 0 to 15.0 feet depth.

BORING 3-A data table. Columns: Elev, Material Description, Strata Depth, Sample Data (No, Blows/6", Type, Rec), Notes. Shows soil layers from 0 to 15.0 feet depth.

Reviewed for HOWARD COUNTY... J. Helm... J.S. Soil Conservation Service

THIS DEVELOPMENT PLAN IS APPROVED FOR... CONTROL BY THE HOWARD COUNTY... Robert J. Ziehm 10/5/90

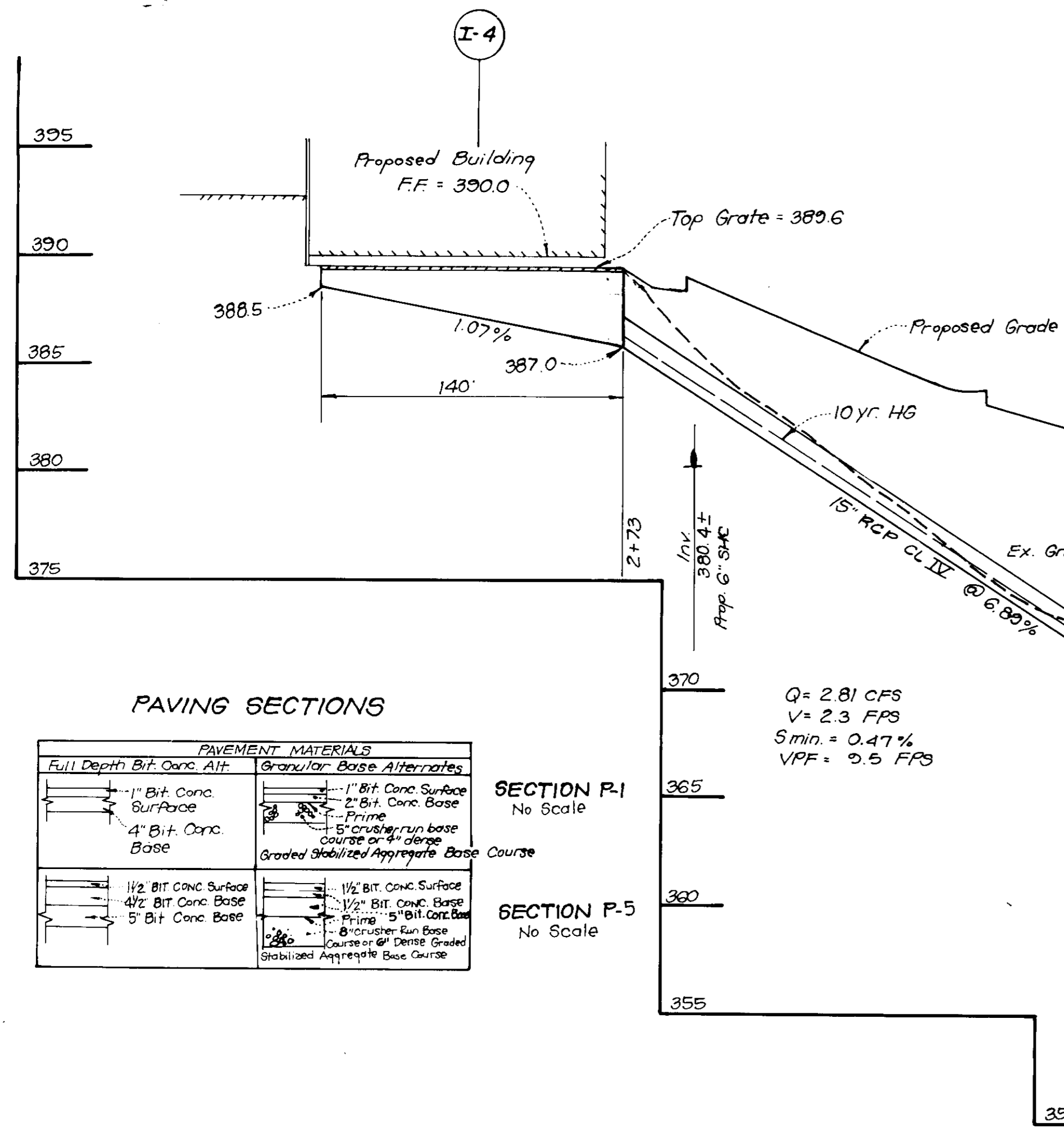
Jeffrey Schwab 9/19/90

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS... COUNTY HEALTH OFFICER... DEPT OF PLANNING & ZONING... CHIEF DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT... CHIEF BUREAU OF ENGINEERING

APPLIED PHYSICS LABORATORY THE JOHNS HOPKINS UNIVERSITY John Hopkins Road Howard County, Maryland Approved For The University By: James E. Louch Date: 6/14/90 Title: Pump Supervisor

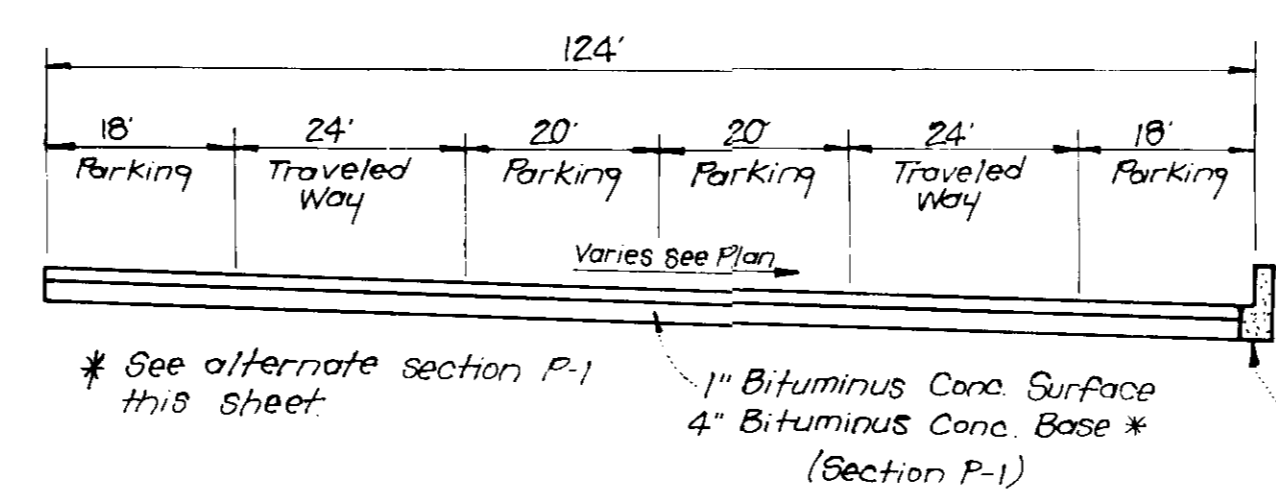
DEVELOPER'S BUILDERS CERTIFICATE I certify that all development and construction will be done according to the plan of development and plan for erosion and sediment control... James E. Louch 9-18-90

CLARK • FINEFROCK & SACKETT, INC. ENGINEERS • PLANNERS • SURVEYORS. DESIGNED: JLS. DRAWN: BAL. CHECKED: JLS. DATE: 6-14-90. SCALE: As Shown. DRAWING: 4 OF 8. JOB NO: 89-116. FILE NO: 89-116 SE.

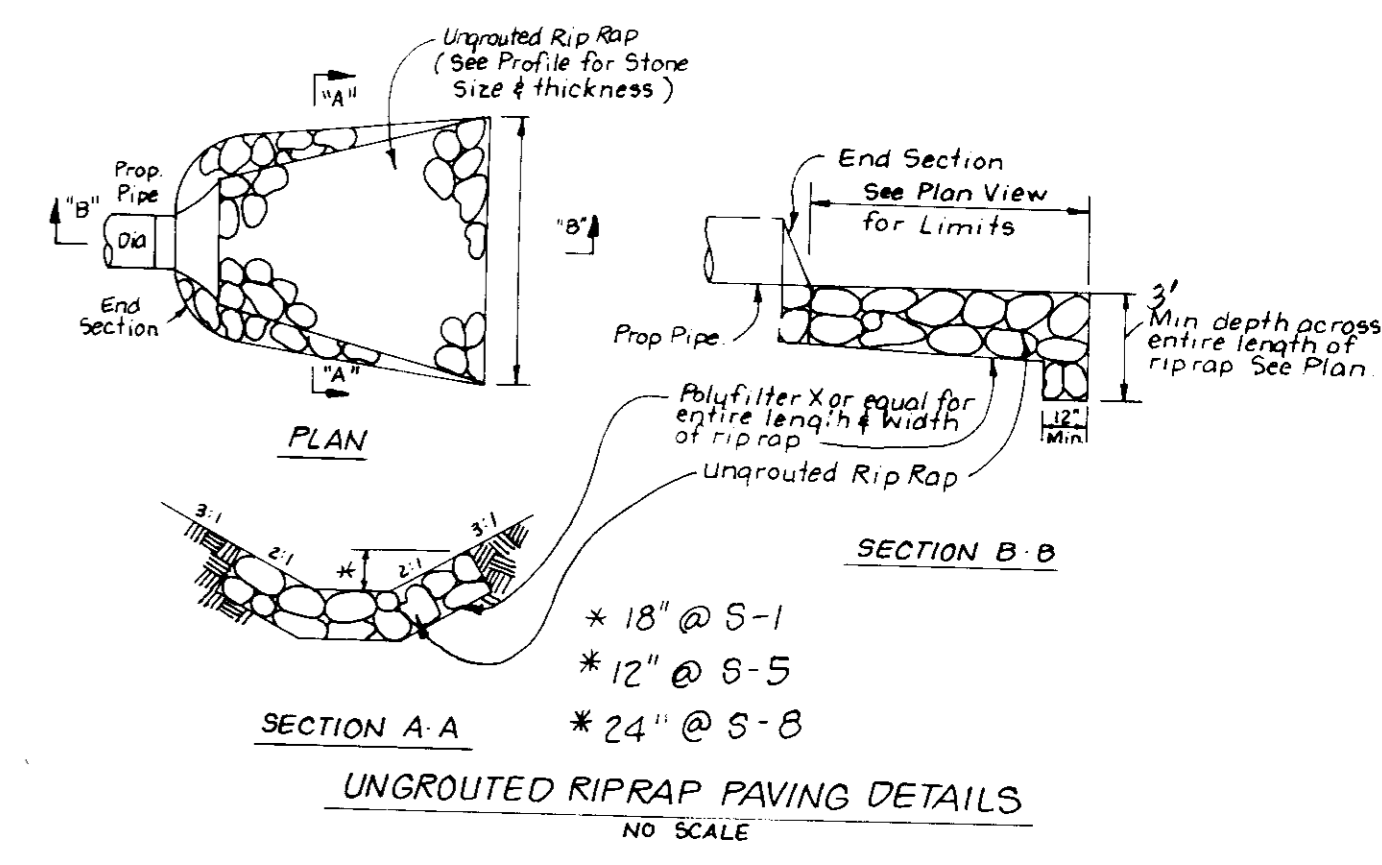


PAVING SECTIONS

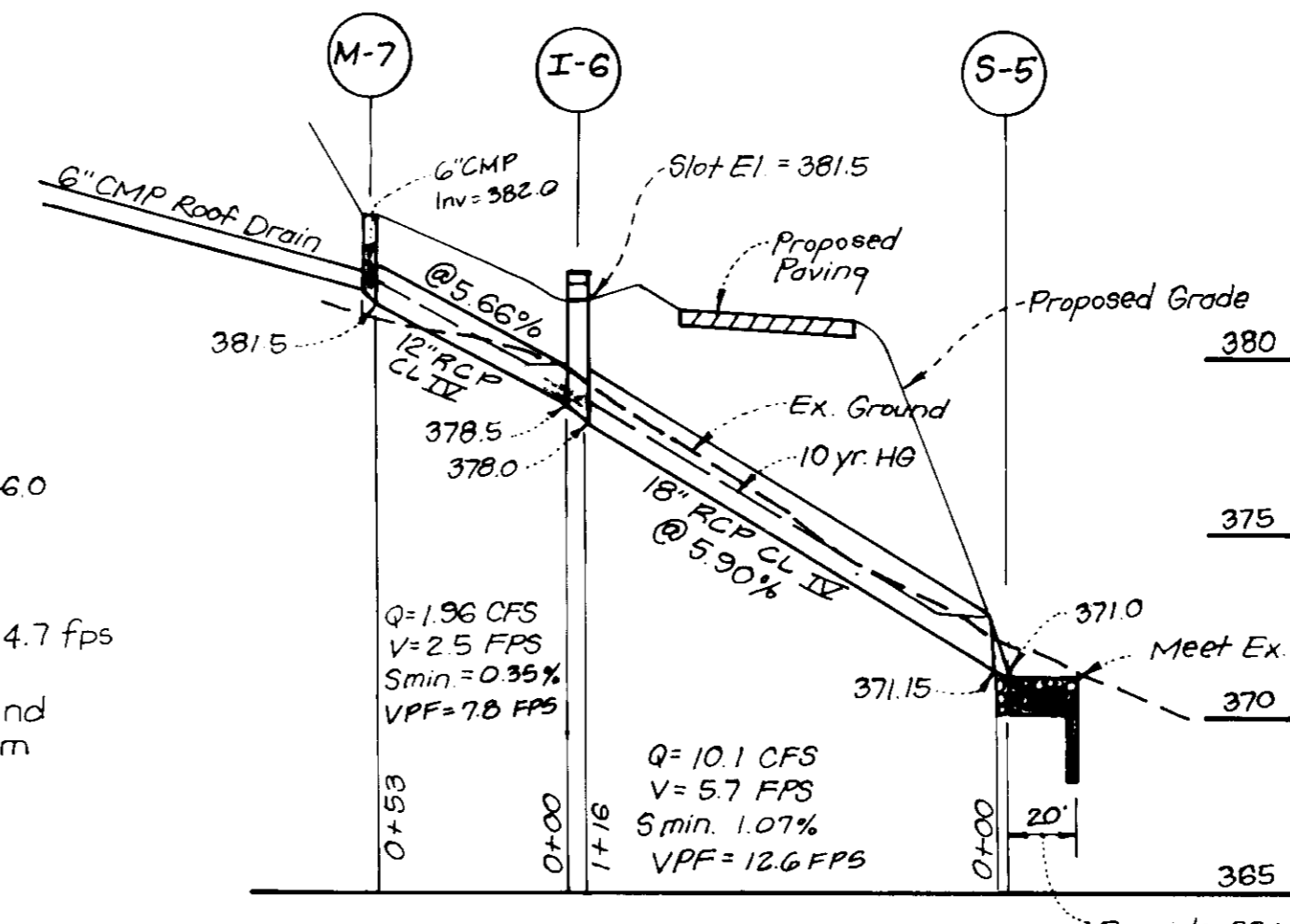
PAVEMENT MATERIALS	
Full Depth Bit Conc. Alt.	Granular Base Alternates
1" Bit Conc. Surface	1" Bit Conc. Surface
4" Bit Conc. Base	2" Bit Conc. Base
5" Bit Conc. Base	Prime
	Graded Stabilized Aggregate Base Course or 4" alternate
1/2" Bit Conc. Surface	1/2" Bit Conc. Surface
4 1/2" Bit Conc. Base	2 1/2" Bit Conc. Base
5" Bit Conc. Base	Prime
	Graded Stabilized Aggregate Base Course or 4" alternate



TYPICAL PAVING SECTION
No Scale

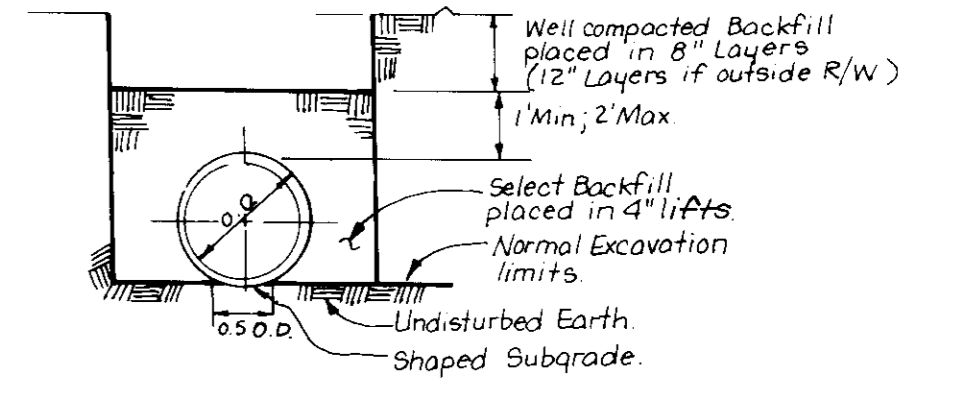


UNGRADED RIPRAP PAVING DETAILS
NO SCALE



TYPICAL SECTION ACCESS DRIVE
No Scale

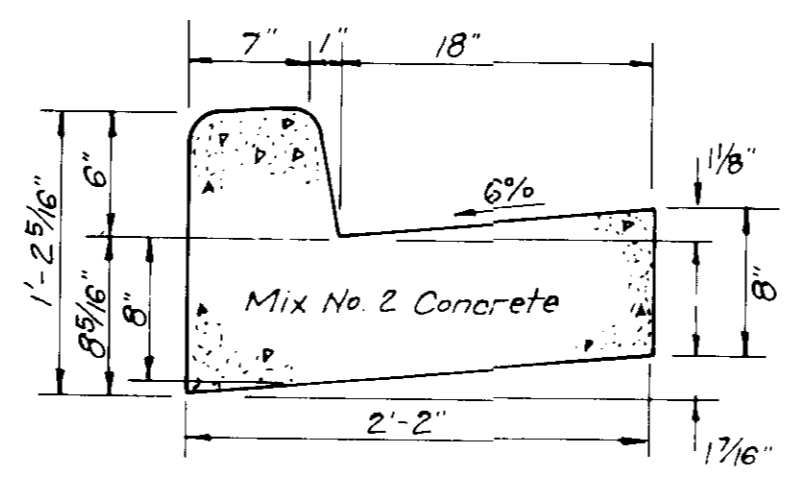
- Notes:**
- For D.O. of pipe see manufacturers specs or field measure circumference of pipe and divide by 3.14.
 - Within road R/W, trench compaction density shall be 95% as determined A.A.S.H.T.O. T-100 A.
 - For conditions requiring solid sheeting or trench shields 'A', shall not exceed 30'.
 - For Pay Waits, See detail Ho. Co. Std. 62.02.02.01-A.



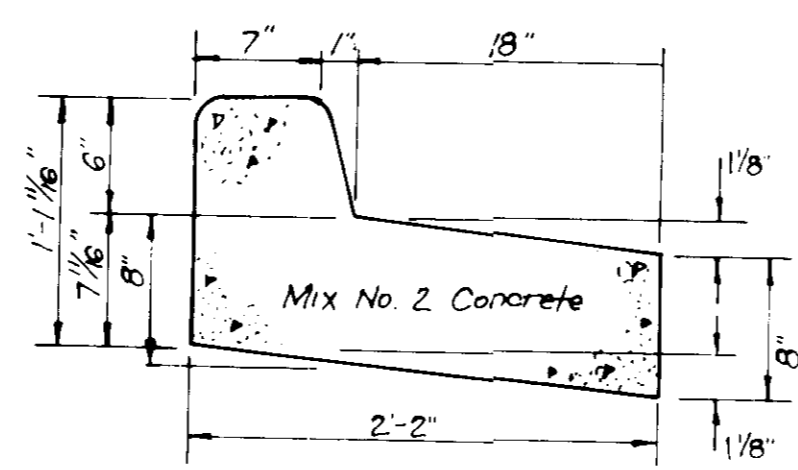
TRENCH COMPACTION DETAIL
NO SCALE

PROFILES

Scales: Horiz. 1" = 50'
Vert. 1" = 5'



STANDARD 6" COMBINATION CURB & GUTTER
No Scale



REVERSE 6" COMBINATION CURB & GUTTER
No Scale

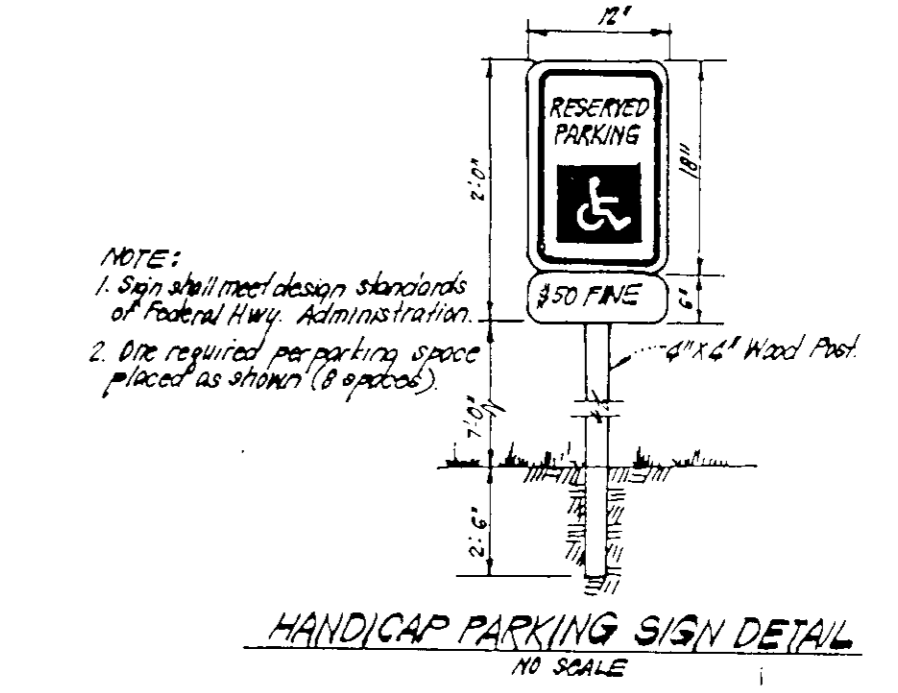
STRUCTURE SCHEDULE

No.	TYPE	INV IN	INV OUT	TOP ELEVATION		REMARKS	LOCATION
				UPPER	LOWER		
S-1	Concrete Section	360.04	360.0			Ho. Co. Std. 5D 5.52 27" Ø	SEE PLAN
I-2	A-10 Inlet	363.34	362.58	362.2		5D 4.02 W=2'6"	
I-3	A-10 Inlet	368.20	367.00	380.0		5D 4.02 W=2'6"	
I-4	C - Inlet	388.50	387.00	Top Grate = 389.6		5D 4.15	
S-5	Concrete Section	371.15	371.00			5D 5.52 18" Ø	
I-6	D - Inlet	378.50	378.0	Top = 382.33 Slot = 381.5		5D 4.11 2'-6" sq	
M-7	Manhole		381.5	384.0		G 5.01 4' Ø	
I-9	Mod A-5 Inlet - See det. Sht. 3	357.00	356.00	364.98	TOP	See det. Sht. 3	
S-8	Conc. End Section	352.14	352.0			5D 5.52 27" Ø	

* Y = 1'-0" X = 1'-5" W = 1'-3/4"
Δ All Inverts are fully developed

PIPE SCHEDULE

SIZE	TYPE	LENGTH
15"	RCP CL IV	73 LF
18"	RCP CL IV	116 LF
21"	RCP CL IV	53 LF
27"	RCP CL IV	187 LF
6"	CMP Perf	3 LF
12"	RCP CL IV	53 LF
27"	ASTM C-391	160 LF



HANDICAP PARKING SIGN DETAIL
NO SCALE



LEGEND
Legend and Border: Green
White Symbol on Blue Background
Background: White

Reviewed for: HOWARD COUNTY
Name: J. Helmer
Signature: J. Helmer
Date: 10/5/90
U.S. Soil Conservation Service

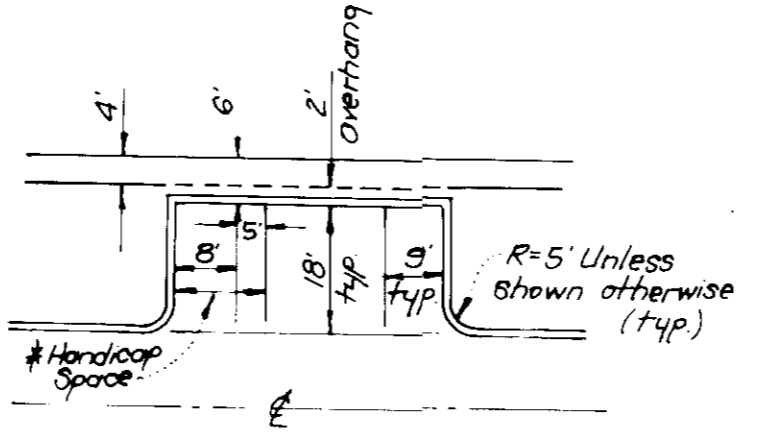
DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Approved: Robert Zehner 10/5/90
Jeffrey L. Schwab 10/5/90

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.

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER: [Signature] DATE: 12-7-90
APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
PLANNING DIRECTOR: [Signature] DATE: 12/14/90
CHIEF DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT: [Signature] DATE: 12/14/90
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DIRECTOR: [Signature] DATE: 11/29/90
CHIEF BUREAU OF ENGINEERING: [Signature] DATE: 11-29-90

APPLIED PHYSICS LABORATORY
THE JOHNS HOPKINS UNIVERSITY
Johns Hopkins Road, Howard County, Maryland
Approved For The University By: James E. [Signature]
Date: 6/14/90 Title: Group Supervisor



TYPICAL PARKING
No Scale

* Two 8' handicap spaces may share one 5' aisle.

DEVELOPER'S/BLINDERS CERTIFICATE
I/We certify that all development and construction will be done according to this plan of site, permit, and construction and sediment control and that all responsibility for the construction project will have a Certificate of Approval from the Dept. of Natural Resources...
James E. [Signature] 9-18-90

CLARK • FINEROCK & SACKETT, INC.
ENGINEERS • PLANNERS • SURVEYORS
7135 MINSTREL WAY • COLUMBIA, MD 21045 • (301) 981-7500 • BALTO. • (301) 621-8500 • WASH.
DESIGNED: KIVM
DRAWN: BAL
CHECKED: JLS
DATE: 6-14-90
SCALE: AS SHOWN
DRAWING: 50FB
JOB NO: 80-116
FILE NO: 80-116-X

Reinforced Concrete Pipe:

- Materials - Reinforced concrete pipe shall have a rubber gasket joint and shall equal or exceed ASTM Specification C-391. An approved equivalent is AWA Specification C-301.
- 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 10% of its outside diameter with a minimum thickness of 3", or as shown on the drawings.
- 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 line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe.
- Backfilling shall conform to structural backfill as shown above.
- Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

CONCRETE

- Materials
 - Cement - Normal Portland cement shall conform to the latest ASTM Specification C-150.
 - Water - The water used in concrete shall be clean, free from oil, acid, alkali, scales, organic matter, or other objectionable substances.
 - 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.
 - 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.
 - Reinforcing Steel - The reinforcing steel shall be deformed bars of intermediate grade, hot rolled or steel coil conforming to ASTM Specification A-615.

- 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 95 pound bag of cement. The proportion of materials for the trial mix shall be 1:2:3-1/2. The combination of aggregates may be adjusted to produce a plastic and workable mix that will not produce hardness in placing or honeycombing in the structure.
- 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 mixer-charging operations. Excessive overwatering requiring the addition of water to produce 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.
- Forms - The forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure. They shall be 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.

- 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.
- 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.
- Finishing - Defective concrete, honeycombed areas, voids left by the removal of tie rods, ridges on all concrete surfaces 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 removed and completely filled with dry-dropped mortar.
- 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.
- Placing Temperature - Concrete may not be placed at temperatures below 32° F with the temperature falling, or 30° with the temperature rising.

- 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 berms 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.

- 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.

SITE PREPARATION

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, brush 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.

The fill material shall be taken from approved designated borrow areas 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 all along the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.

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.

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.

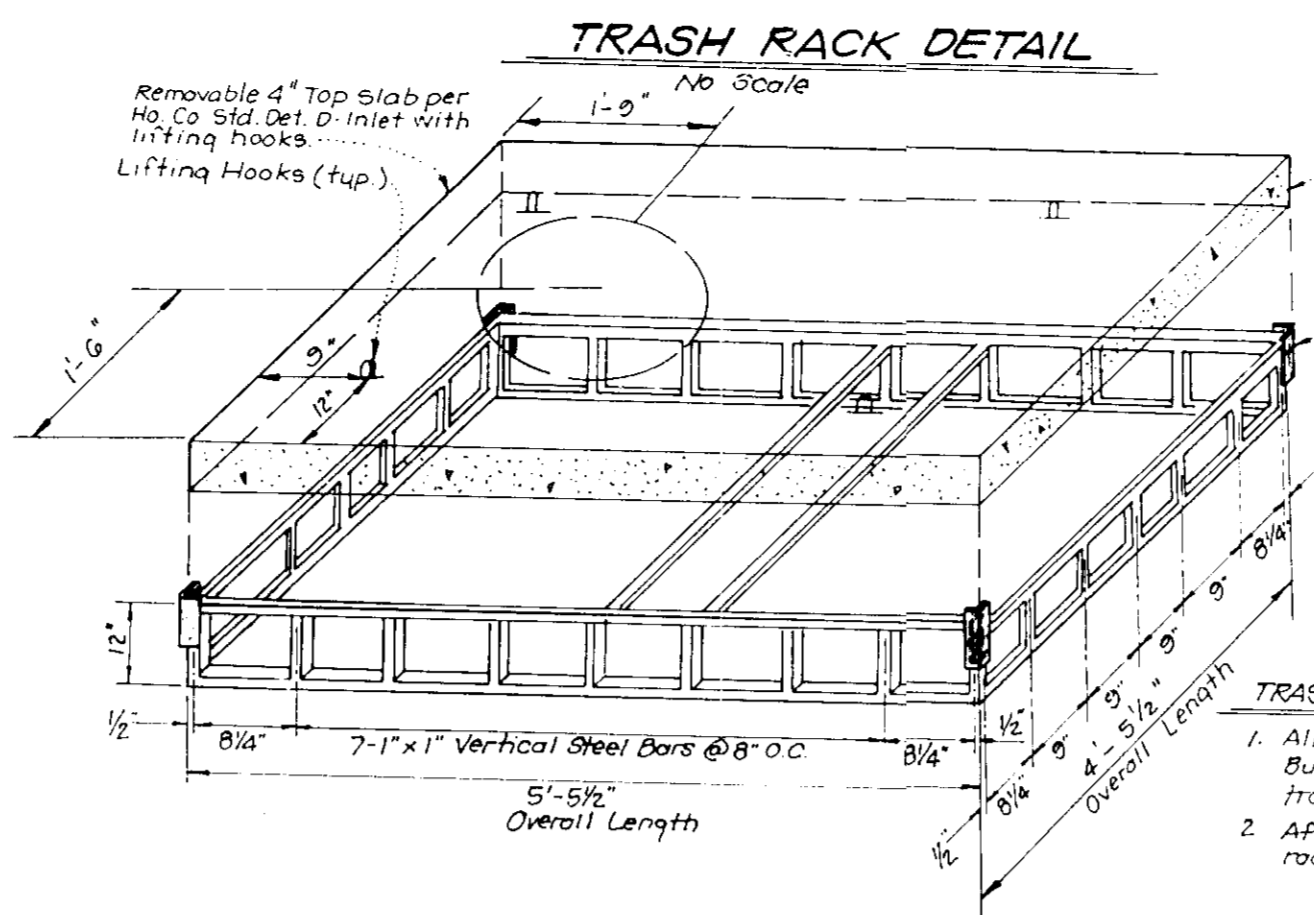
Backfill material shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tamper or other compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe unless there is a compacted fill of twenty-four inches or greater over the structure or pipe.

PIPE CONDUITS

A. Corrugated Metal Pipe

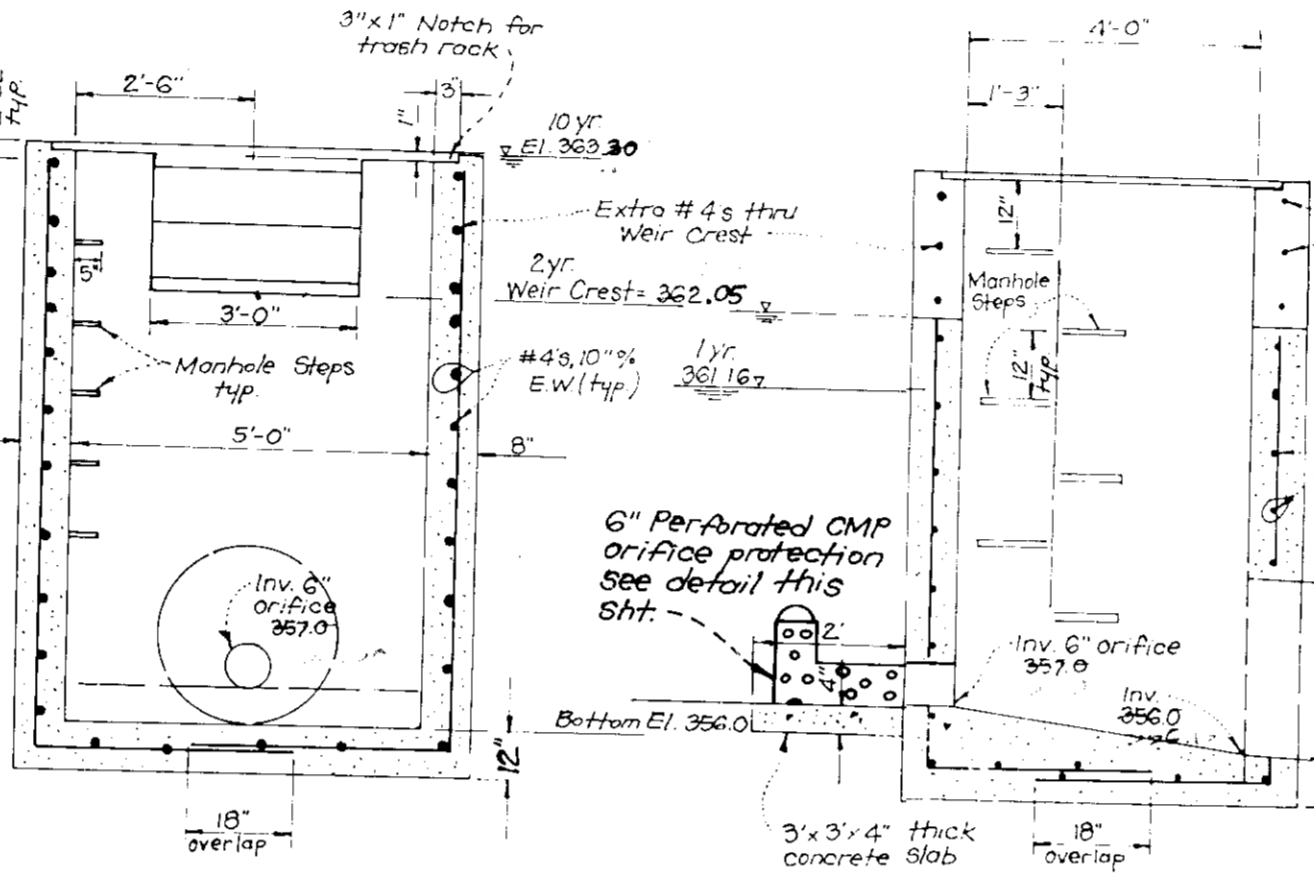
- Materials - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of ASTM Specification M-190 Type A with watertight coupling bands. Any bituminous coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.
- Materials - (Aluminized Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of ASTM Specification M-274-791 with watertight coupling bands or flanges.
- Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of ASTM Specification M-196 or M-211 with watertight coupling bands or flanges. Coupling bands, anti-seep collars, end 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.

- 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 metal. 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 the completely watertight. Dipole bands are not considered to be watertight.
- 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 earth compacted to provide adequate support.
- Laying pipe - The pipe shall be placed with inside circumferential laps pointing downstream and with the longitudinal laps at the sides.
- Backfilling shall conform to structural backfill as shown above.
- Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.



TRASH RACK NOTES

- All steel shall be 1"x1" Butt welded to form this trash rack.
- After fabrication, trash rack shall be galvanized.

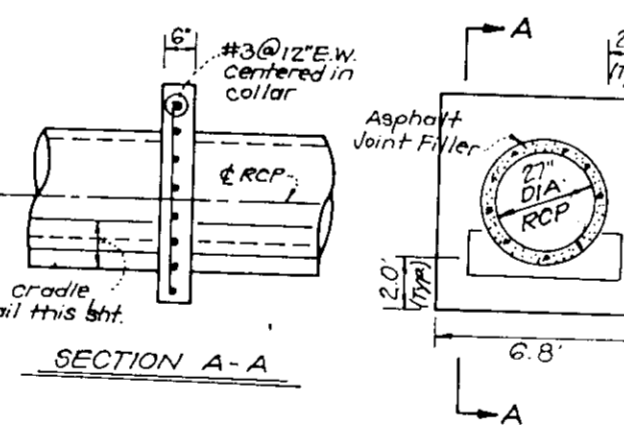


STRUCTURE DETAIL @ I-2
No Scale

- STRUCTURE NOTES:**
1. P.C. 3000 psi @ 28 days SHA Mix Concrete
 2. All cast for drainage structures to be air entrained
 3. Do not backfill against structure until it has reached design strength
 4. Chamfer (1"x1") all exposed edges
 5. All exposed steel to be coated with black epoxy coating in accordance with SHS Specs
 6. Structure to be embedded in 8" crushed gravel
 7. Provide Manhole steps (epoxy coated) as shown
 8. Reinforcing bars to conform to ASTM A-615 Specs

ANTI-SEEP COLLAR NOTES

1. P.C. = 3000 psi @ 28 days
2. Pour collar w/ pipe in place
3. Backfill evenly on both sides of collars
4. Locate collars a min. of 2' from pipe joints

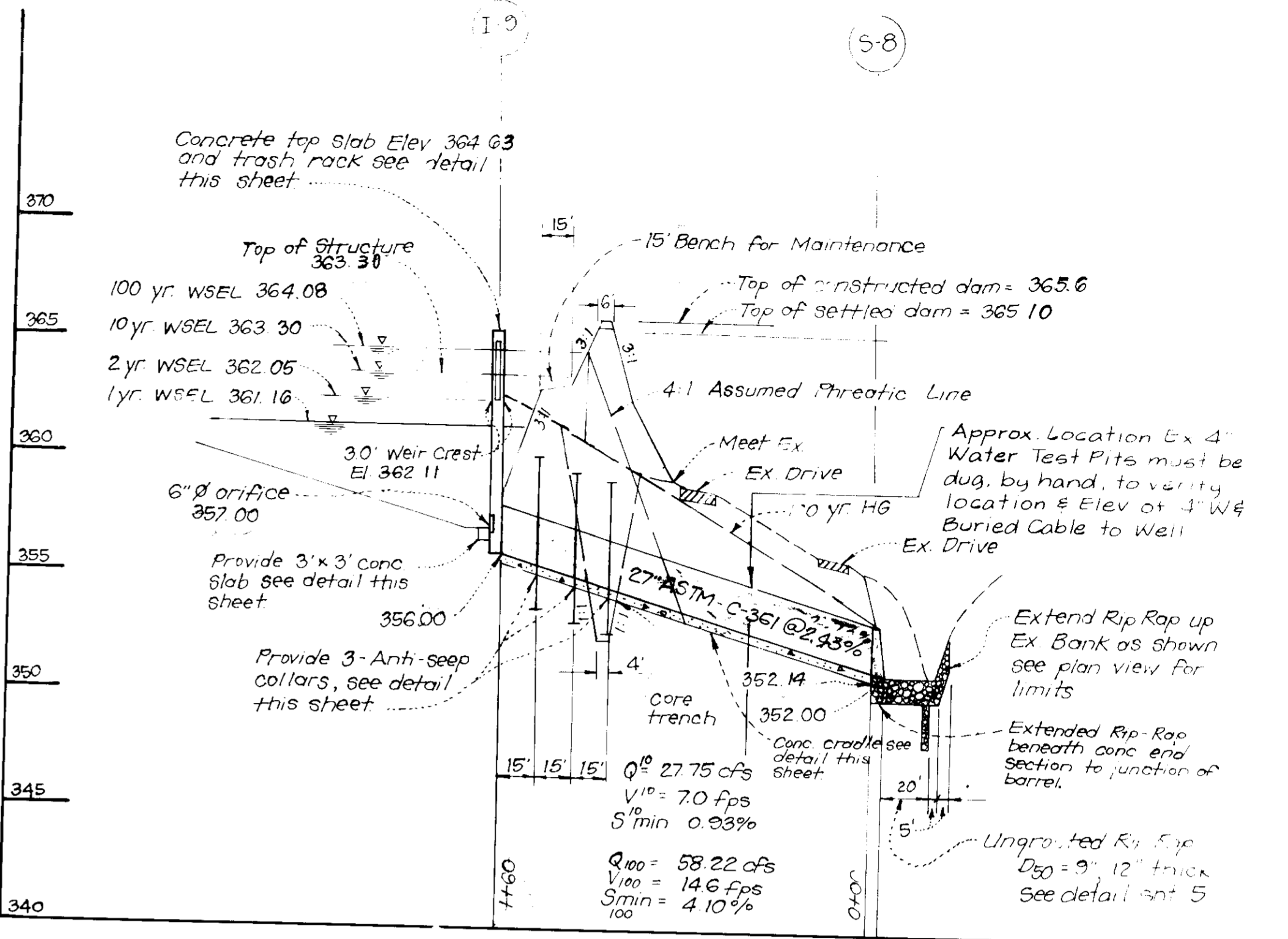


ANTI-SEEP COLLAR DETAILS
No Scale

CONCRETE CRADLE DETAIL

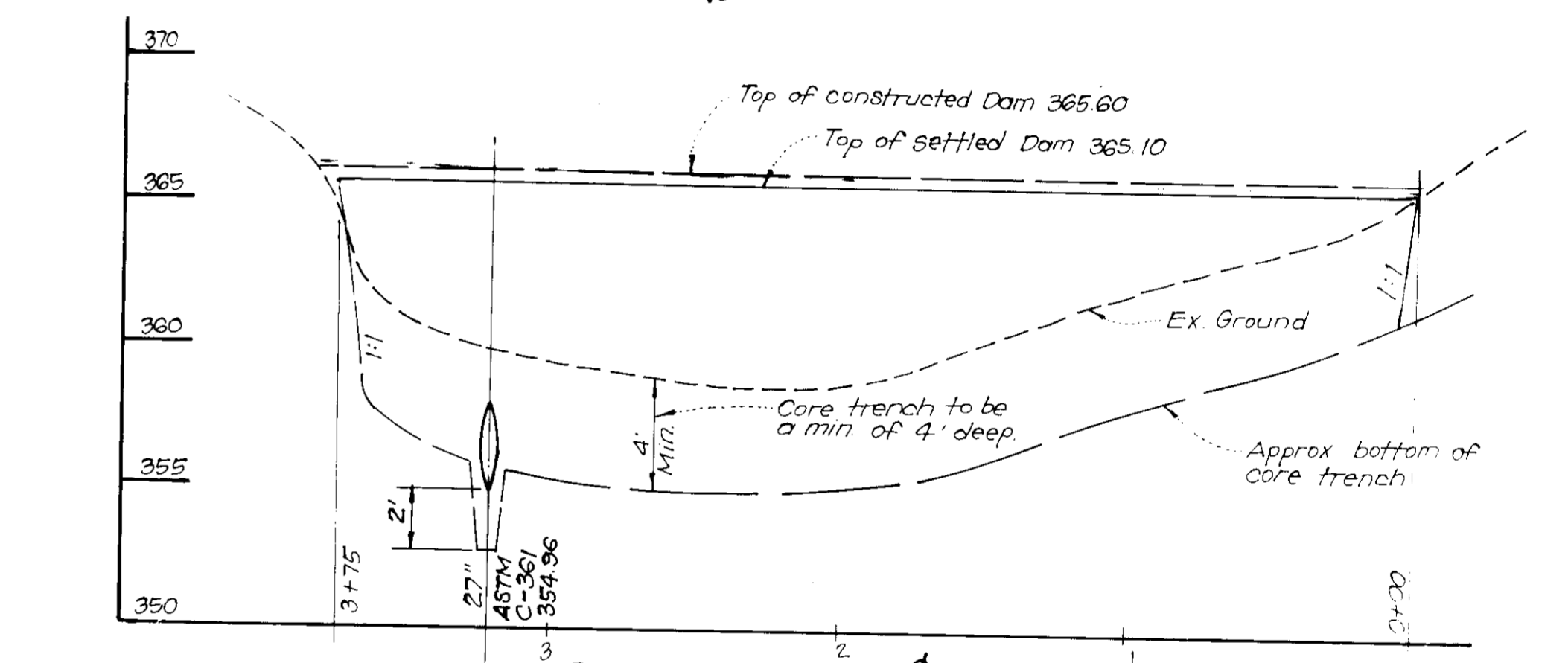


CONCRETE CRADLE DETAIL
No Scale



PROFILE

Scales: Horiz 1" = 50'
Vert 1" = 5'



PROFILE ALONG E OF DAM

Scales: Horiz 1" = 50'
Vert 1" = 5'

Applied Physics Lab for AS-BUILT by Clark, Finefrock & Sackett, Inc.

ENGINEER'S CERTIFICATE

I certify that the plans for the construction and construction control of the storm drainage system for the Howard County Applied Physics Laboratory, located at 1100 Johns Hopkins Road, Laurel, Maryland, were prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer in the State of Maryland. I am a member of the Howard County Board of Engineers and Surveyors and am duly registered with the State Board of Engineers and Surveyors. I am the developer of the plans and specifications for the construction and construction control of the storm drainage system for the Howard County Applied Physics Laboratory, located at 1100 Johns Hopkins Road, Laurel, Maryland, and I am responsible for the design and construction of the same.

Jeffrey L. Schaub 8/19/90

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT

James E. Fisher 12-7-90
COUNTY HEALTH OFFICER DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

James E. Fisher 12/14/90
PLANNING DIRECTOR DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

James E. Fisher 11/29/90
DIRECTOR DATE

APPLIED PHYSICS LABORATORY
THE JOHNS HOPKINS UNIVERSITY

Johns Hopkins Road, Howard County, Maryland

Approved For The University By: *James E. Fisher*
Date: 6/14/90 Title: *Group Supervisor*

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

J. Fisher 10/5/90
Howard County Conservation District

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

Approved: *James E. Fisher* 10/5/90
Howard County Conservation District

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

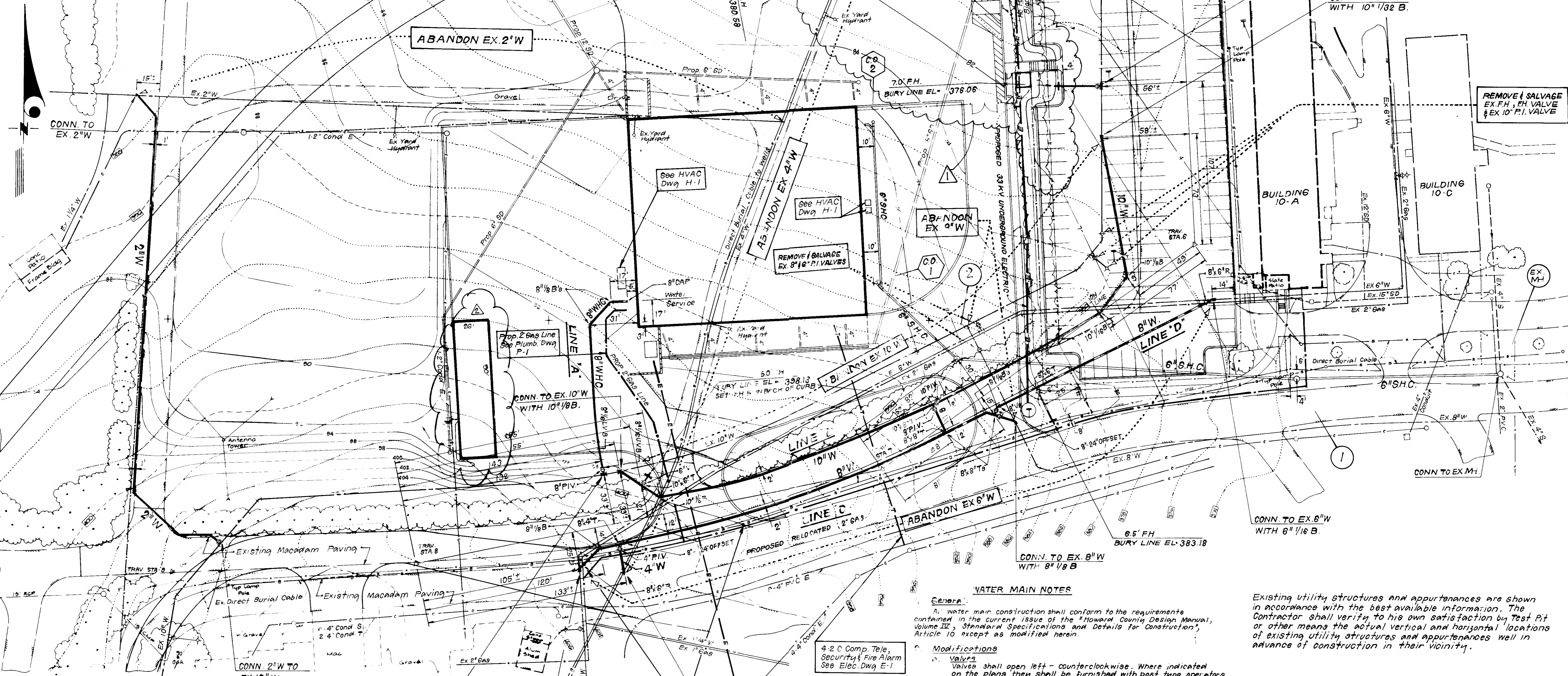
James E. Fisher 6/14/90
Howard County Conservation District

<p>CLARK • FINEFROCK & SACKETT, INC. ENGINEERS • PLANNERS • SURVEYORS</p> <p>7135 MINSTREL WAY • COLUMBIA, MD 21046 • (301) 381-7500 - BALTO. • (410) 677-8800 - WASH.</p>		
DESIGNED KIWM	STORM WATER MANAGEMENT DETAILS CENTRALIZED DISTRIBUTION/SHIPPING RECEIVING FACILITY	SCALE AS SHOWN
DRAWN BAL	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY TAX MAP NO. 41 PARCEL 128/129 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	DRAWING 6 of 8
CHECKED JLS		JOB NO. 89-116
DATE 6-14-90	FOR: JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LAB 1100 Johns Hopkins Road Laurel, Maryland 20723-6099	FILE NO. 89-116-X

NOTE: DIRECT BURIAL CABLE TO WELLS TO BE ABANDONED IN PLACE

EXISTING YARD HYDRANTS TO BE REMOVED & SALVAGED BY JHU APL.

PLAN SCALE
1" = 30'



WATER MAIN NOTES

- General**
 A. Water main construction shall conform to the requirements contained in the current issue of the "Howard County Design Manual, Volume II, Standard Specifications and Details for Construction", Article 10 except as modified herein.
- Modifications**
- Valves**
 Valves shall open left - counterclockwise. Where indicated on the plans they shall be furnished with post type operators.
 - Hydrants**
 All outlet nozzles shall have National Standard Fire Hose Coupling Screw Threads.
 - Pipe Joint Bonding**
 - All pipe joints shall be bonded to insure electrical continuity. Bonding may be accomplished either with shop welded copper terminal straps and copper jumper straps with corrosion resistant bolts or with copper wire exothermic welded in the field.
 - All bonding between joints for pipe, fittings, valves, and specials shall be tested for electrical continuity. Each joint shall be inspected and resistance tested prior to coating and backfilling. No resistance will be permissible across any joint.
 - All bonded joints shall be coated with a rust-inhibitive paint.
 - 2" Water Pipe** shall be P.V.C., ASTM D 2241, Polyethylene (PE) ASTM D 2239, D 2737 or Polybutylene (PB) ASTM D 2666, D 2662. Maintain minimum 3.5' of cover on 2" W.
 - All water and sewer lines shown on these plans are John Hopkins University Applied Physics Laboratory private system.

Existing utility structures and appurtenances are shown in accordance with the best available information. The Contractor shall verify to his own satisfaction by Test Pit or other means the actual vertical and horizontal locations of existing utility structures and appurtenances well in advance of construction in their vicinity.

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
 HOWARD COUNTY HEALTH DEPARTMENT
 COUNTY HEALTH OFFICER: [Signature] DATE: 12-7-90
 APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
 PLANNING DIRECTOR: [Signature] DATE: 12/14/90
 CHIEF DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT: [Signature] DATE: 11/14/90
 APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 DIRECTOR: [Signature] DATE: 11/29/90
 CHIEF BUREAU OF ENGINEERING: [Signature] DATE: 11/29/90

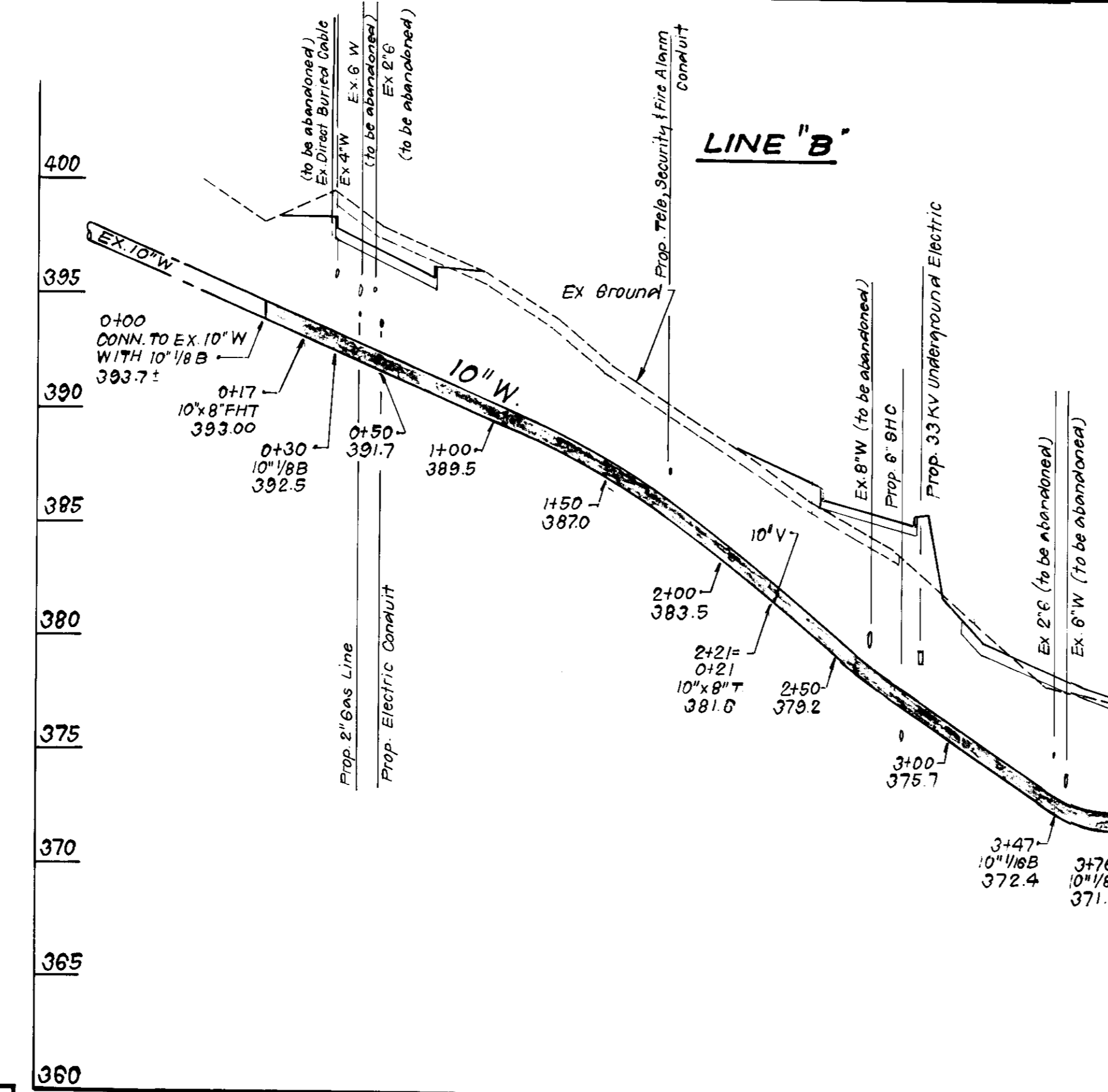
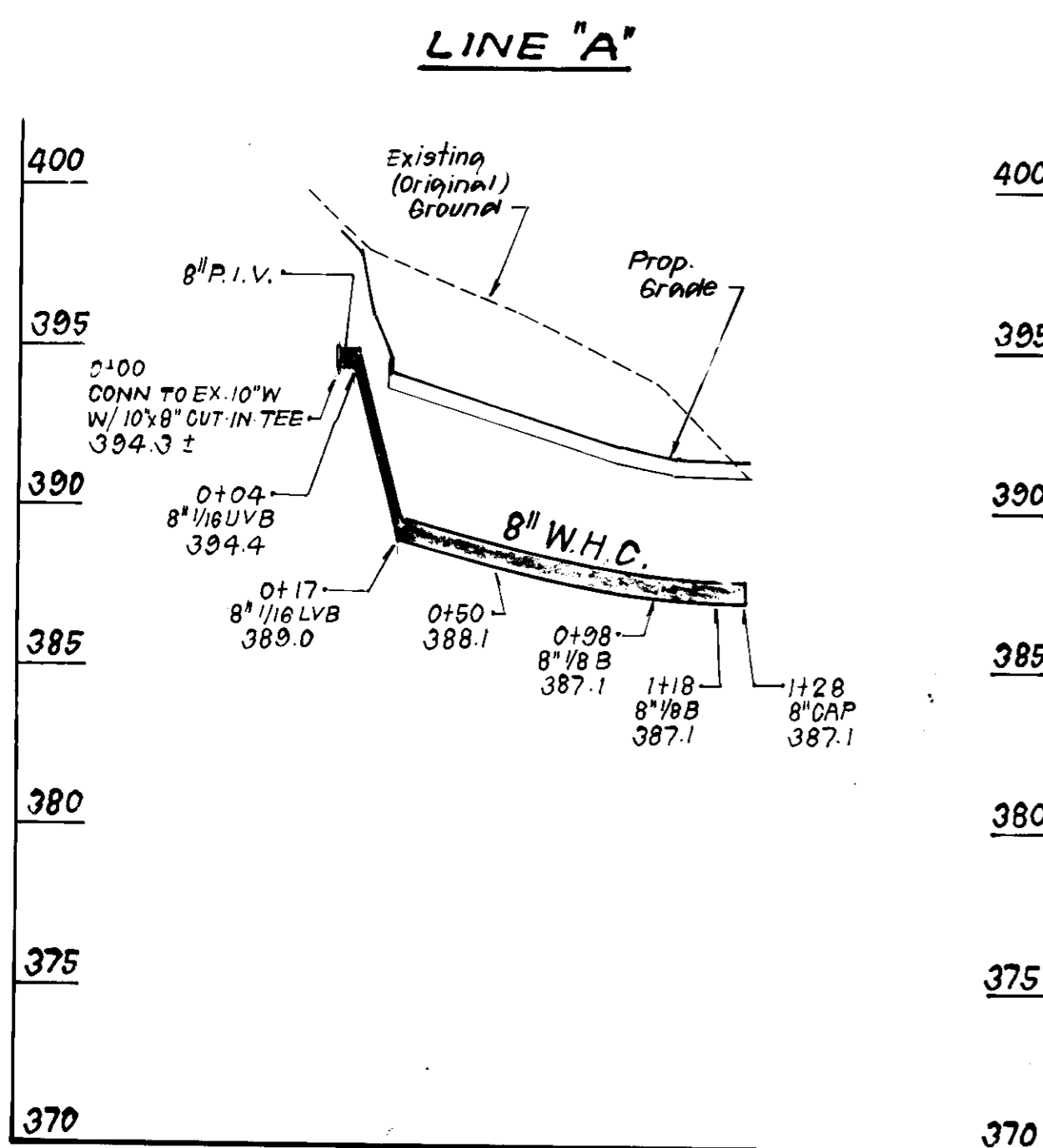
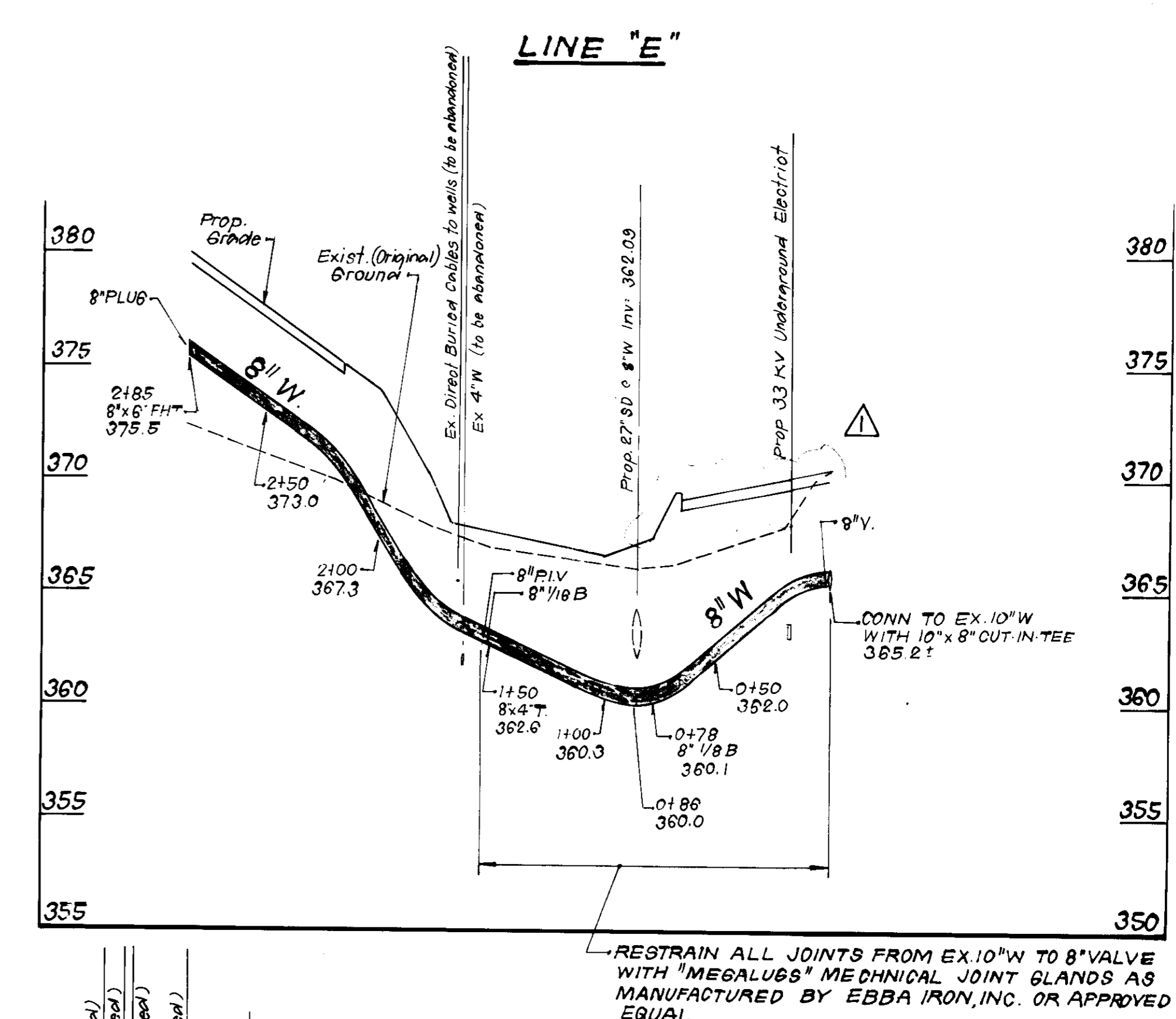
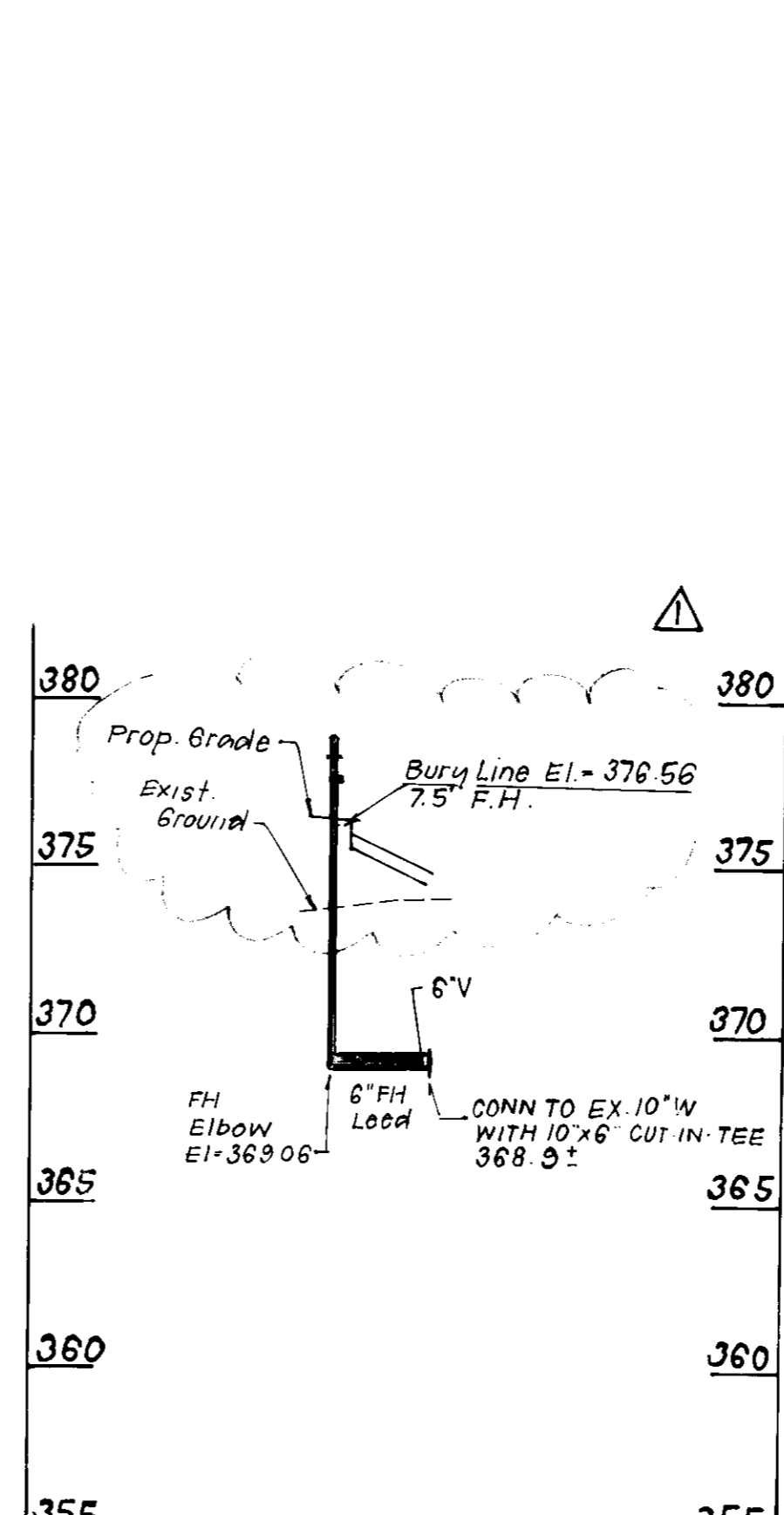
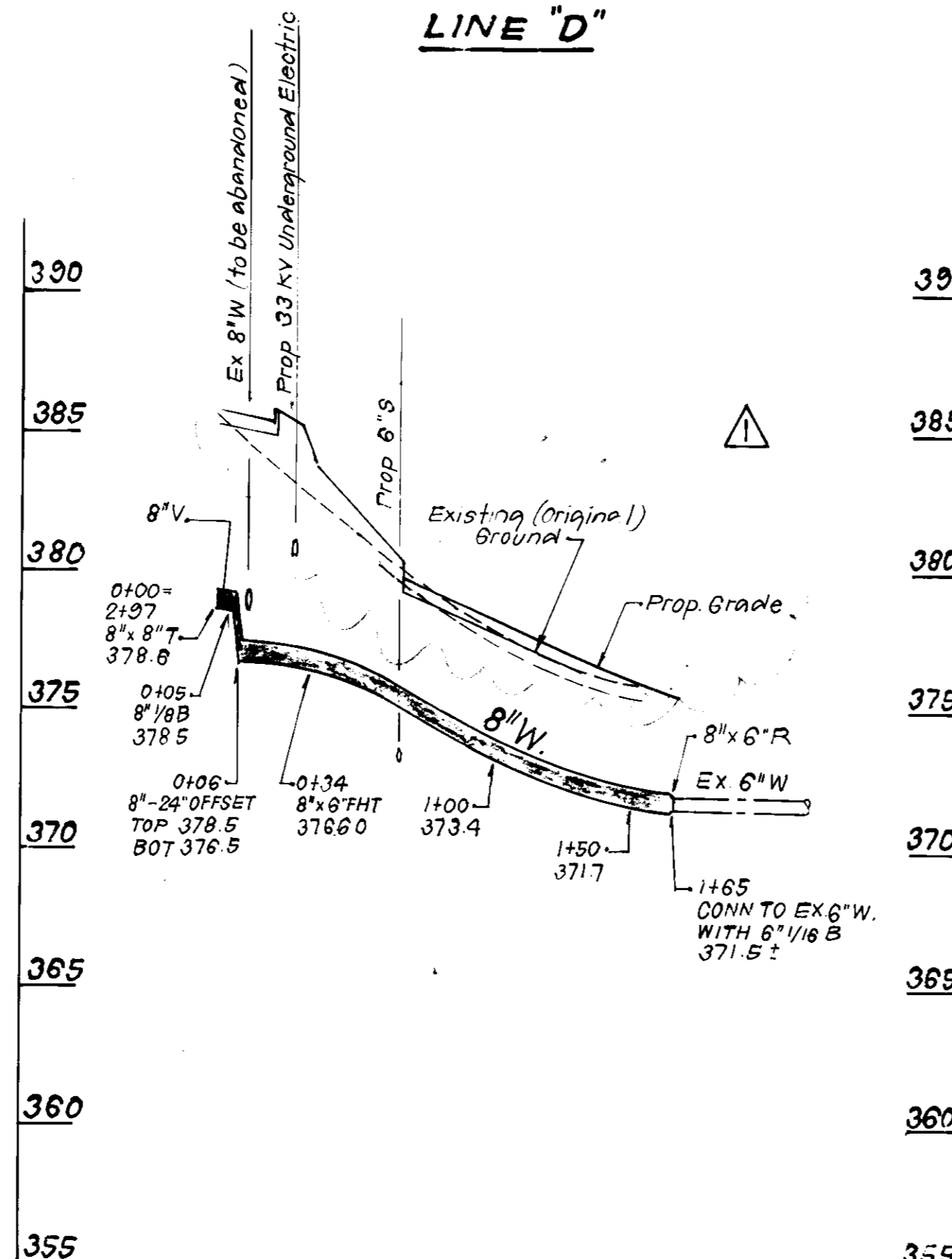
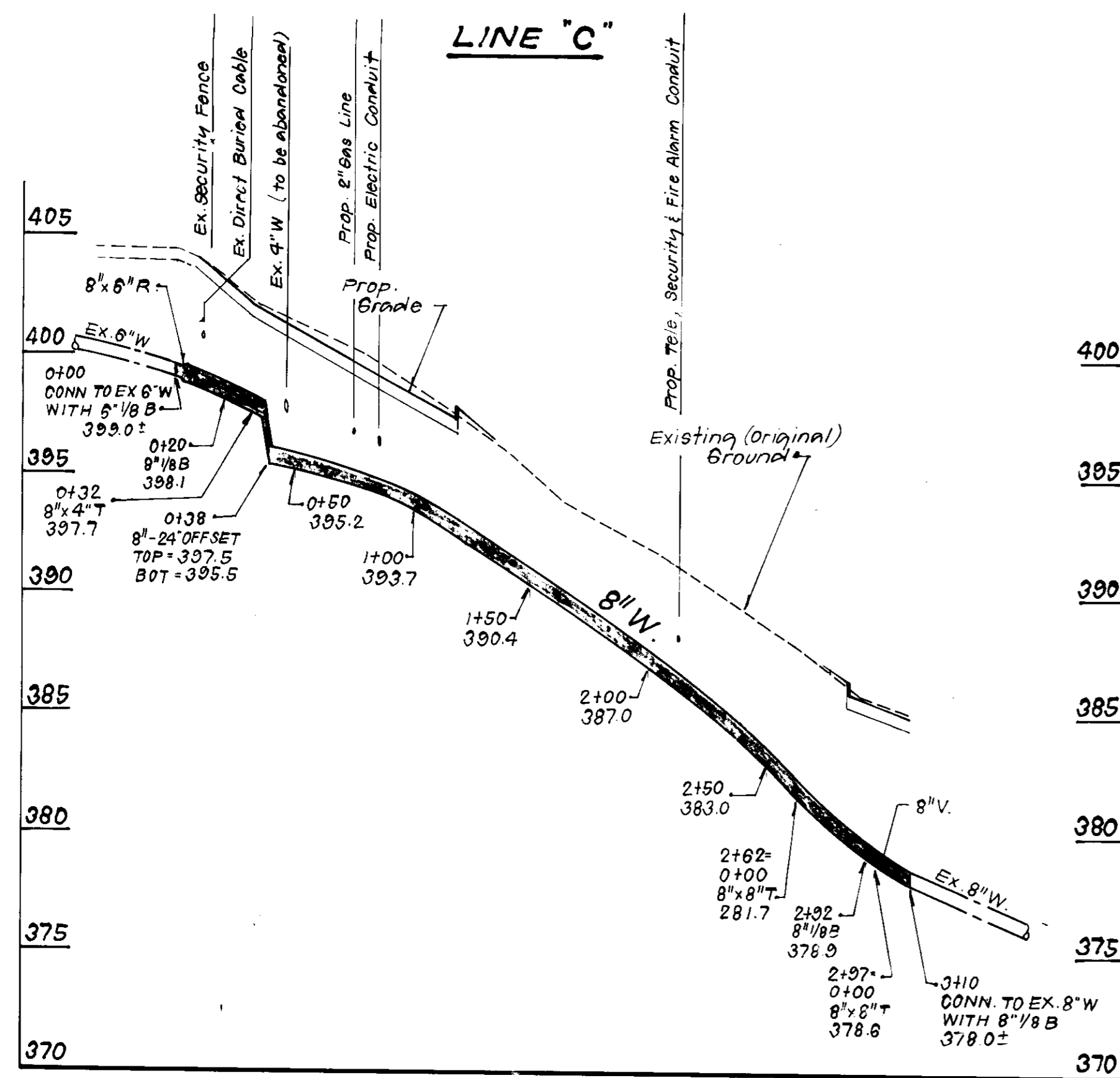
APPLIED PHYSICS LABORATORY
 THE JOHNS HOPKINS UNIVERSITY
 Johns Hopkins Road Howard County, Maryland
 Approved For The University By: [Signature] DATE: 6/14/92 Title: Group Supervisor



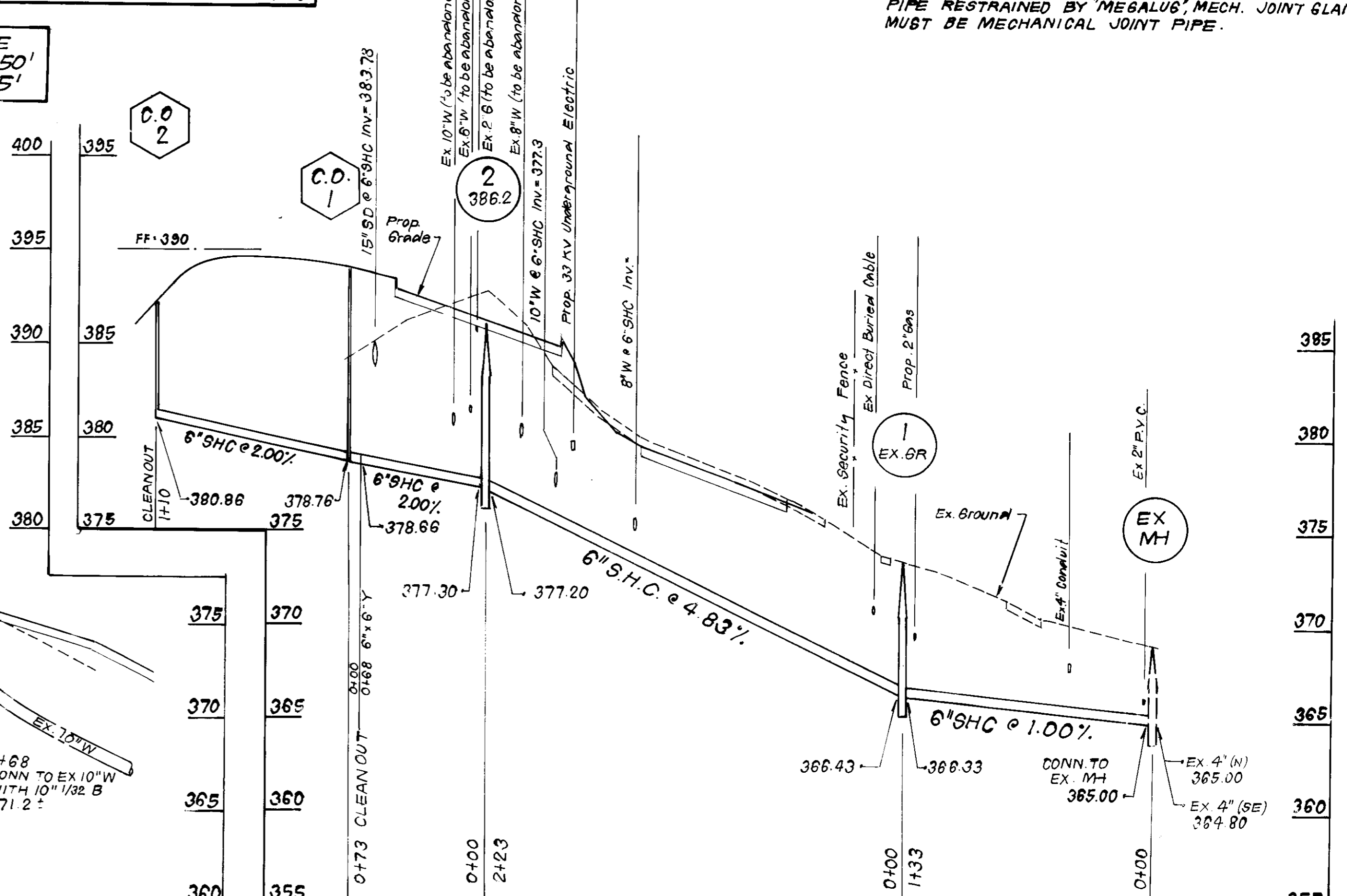
No	REVISION	Date
1	Rev Storage building Size	9/18/91
2	Rev FH Lengths & Bury Ground Elev And Rev Parking & Guard House Area	4-3-91
3	3" Parallel Runs of 3# 750 MCM XHHW 1# 310 BR 5" C See Elec. Plans E-2	

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

DESIGNED J. R.	WATER & SEWER RELOCATION PLAN CENTRALIZED DISTRIBUTION/SHIPPING RECEIVING FACILITY	SCALE 1" = 30'
DRAWN J. R.	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY	DRAWING 70F 8
CHECKED J. R.	TAX MAP NO 41 PARCEL 123 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	JOB NO. 85-116
DATE 6-14-90	FOR: JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LAB 1100 Johns Hopkins Road Laurel Maryland • 20723-6099	FILE NO. 89-116-X



PROFILE SCALE
HORIZONTAL: 1"=50'
VERTICAL: 1"=5'



RESTRAIN ALL JOINTS FROM EX. 10" W TO 8" VALVE WITH "MEGALUBS" MECHANICAL JOINT GLANDS AS MANUFACTURED BY EBBA IRON, INC. OR APPROVED EQUAL. PIPE RESTRAINED BY "MEGALUB" MECH. JOINT GLANDS MUST BE MECHANICAL JOINT PIPE.

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS.
HOWARD COUNTY HEALTH DEPARTMENT
DATE: 12-7-90
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
DATE: 12/14/90
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE.
STORM DRAINAGE SYSTEMS AND PUBLIC ROADS
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DATE: 11/29/90

APPLIED PHYSICS LABORATORY
THE JOHNS HOPKINS UNIVERSITY
Johns Hopkins Road, Howard County, Maryland
Approved For The University By: [Signature]
Date: 6/14/90 Title: [Signature]



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

DESIGNED J. R.	WATER & SEWER RELOCATION PROFILES CENTRALIZED DISTRIBUTION/ SHIPPING RECEIVING FACILITY	SCALE AS SHOWN
DRAWN J. R.	JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY	DRAWING 8 OF 8
CHECKED J. R.	TAX MAP N° 41 PARCEL 123 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	JOB NO. 89-116
DATE 6-14-90	FDR: JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LAB. 1100 Johns Hopkins Road Laurel, Maryland, 20723 - 6099	FILE NO. 89-116-X

No	REVISION	Date
1	Rev. FH length & bury line elev. Rev. Prop. Grd. to reflect C&G	4-3-91