GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE HOWARD COUNTY SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
2. ELEVATIONS SHOWN ARE BASED ON THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY DATUM. JHU-APL DATUM -94' = HOWARD COUNTY DATUM.
3. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN AN UNINTERRUPTED SERVICE. SEE MECHANICAL DRAWING GENERAL NOTES AND THE SPECIFICATIONS ON SHEETS 3 AND 4 FOR ADDITIONAL INFORMATION.

   ANY DAMAGE BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
4. LANDSCAPING SHALL BE BY JHU-APL.
5. THE CONTRACTOR SHALL CONTACT MR. ARTHUR STUCKI, PLANT ENGINEER (301) 792-5133 AND MR. JIM LOESCH, GROUP SUPERVISOR OF BUILDING CONSTRUCTION AT LEAST FIVE DAYS BEFORE STARTING WORK OR REQUESTING SHUTTING DOWN ANY UTILITIES.
6. THE CONTRACTOR SHALL SCHEDULE SHUTDOWN AND TIE-IN TO THE EXISTING UTILITIES ONLY AFTER NORMAL WORKING HOURS AT JHU-APL. WORK MUST BE SCHEDULED ACCORDINGLY. NORMAL WORKING HOURS ARE 8:30 AM TO TO 5:00 PM, MONDAY THROUGH FRIDAY.
7. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.
8. ALL WATER MAINS SHALL BE DUCTILE IRON CLASS 52 (SEE SPECIFICATION SECTION 15500).
9. ALL SANITARY SEWER MAINS SHALL BE HOWARD COUNTY SCHEDULE 35 (MINIMUM) PVC.
10. THE CONTRACTOR OR DEVELOPER SHALL CONTACT THE CONSTRUCTION INSPECTION DIVISION, 24 HOURS IN ADVANCE OF COMMENCEMENT OF WORK, AT 992-2417 OR 2418.
11. TOP OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3 1/2 FT. OF COVER UNLESS OTHERWISE NOTED.
12. SEE SPECIFICATION 15500 FOR PIPE REQUIRING CONCRETE BUTTRESSES OR ANCHORS WHICH SHALL BE AS SPECIFIED AND IN ACCORDANCE WITH HOWARD COUNTY STANDARDS.
13. CLEAR ALL UTILITIES BY A MINIMUM OF 6". CLEAR ALL POLES 2'-0" MINIMUM OR TUNNEL AS REQUIRED.
14. THE CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING WATER AND GAS SYSTEMS (SEE GENERAL SITE WORK NOTES ON SHEET 3).
15. THE CONTRACTOR SHALL PROVIDE A JOINT IN ALL SEWER MAINS WITHIN 2'-0" OF EXTERIOR MANHOLE AND CATCH BASIN WALLS.
16. THE CONTRACTOR SHALL PERMANENTLY SEED AND STABILIZE ALL DISTURBED AREAS THAT ARE NOT TO BE PAVED.
17. THE BUILDING PROPOSED IS FOR A CREDIT UNION.
18. THERE ARE NO WETLANDS WITHIN THE LIMIT OF DISTURBANCE SHOWN. THEREFORE SECTION 404 AND SECTION 401 DO NOT APPLY AND PERMITS ARE NOT REQUIRED.

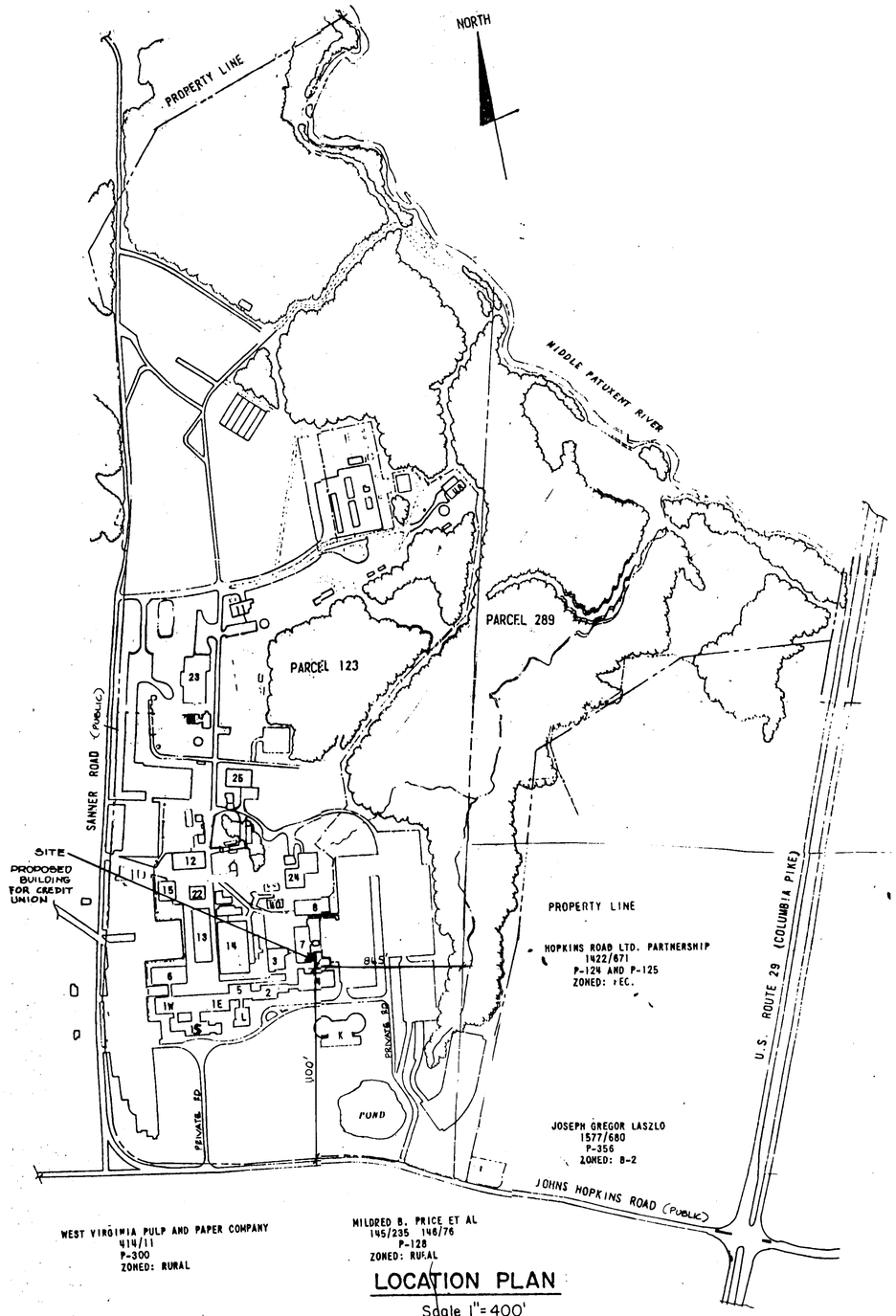
LIST OF SDP APPROVAL

REF	#		
	# 89-65		# 86-262
	# 89-123		# 86-225
	# 90-119		# 86-149
	# 90-194		# 86-106
	# 88-151		# 86-86
SWM	# 86-83		# 85-100
	# 88-06		# 83-21
	# 87-168		# 82-118
	# 87-144		# 81-137
	# 87-87		# 80-46
	# 87-07		# 75-22

SITE ANALYSIS

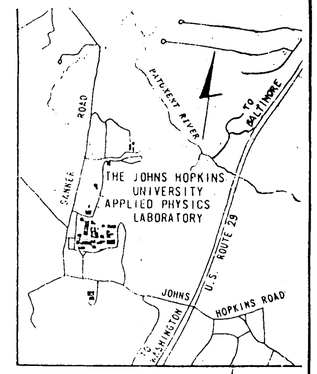
ZONING: RURAL

Area of Property	366 AC	
Area of this Department	0.519 AC	
Building Floor Area		
Existing	1,400,457 SF	
Proposed	7,497 SF	
TOTAL:	1,408,954 SF	
Number of Employees		
Existing	3100	
Proposed	9 additional	
TOTAL:	3109	
Number of Parking Spaces		
Existing	3180	
Required 3109 X 0.7	2177	
Provided	3166	
Open Space		
Existing	304.20 AC	
Proposed	304.14 AC	83.09%
Building Coverage		
Existing	14.48 AC	
Proposed	14.65 AC	4.00%
Paving		
Existing	46.99 AC	
Proposed	46.91 AC	+12.82%



LOCATION PLAN

Scale 1"=400'



VICINITY MAP

SCALE: 1" = 2000'

ADDRESS CHART	
PARCEL NUMBER	STREET ADDRESS
P. 123/129	11100 JOHNS HOPKINS ROAD

SUBDIVISION NAME	SECT./AREA	LOT/PARCEL
J.H.U. APPLIED PHYSICS LAB.		P.123/289

PLAT# OR L/F	BLOCK#	ZONE	TAX/ZONE MAP	ELEC DIST	CENSUS TR
234/304 400/625	16	R	41	5th.	6051

WATER CODE	SEWER CODE
E-21	6480000

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

COUNTY HEALTH OFFICER — DATE 3/21/91

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

PLANNING DIRECTOR — DATE 4/10/91

CHIEF, DIVISION OF COMMUNITY PLANNING & LAND DEVELOPMENT — DATE 4/8/91

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

DIRECTOR — DATE 4/3/91

CHIEF, BUREAU OF ENGINEERING MK — DATE 4-3-91

Charles P. Gusbiglia — Architect
3600 S. Geyer Road • P.O. Box 8004 • St. Louis, Missouri • Area Code 314 821-5005
One Unkas Lane • Windsor, Connecticut 06095 • Area Code 688-7599

APPLIED PHYSICS LABORATORY
THE JOHN HOPKINS UNIVERSITY
JOHNS HOPKINS ROAD HOWARD COUNTY MARYLAND
APPROVED FOR THE UNIVERSITY BY: James E. Loesch
DATE: 2/14/91 TITLE: Assist. Branch Supt.

CREDIT UNION FACILITY

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD LAUREL MARYLAND 20707

COVER SHEET

28 SEPT 90
20 JAN 91
7 FEB 91

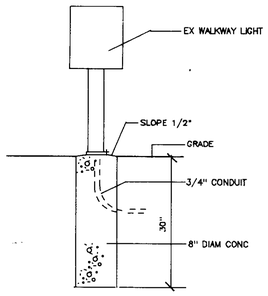
REVISIONS

SCALE: AS SHOWN

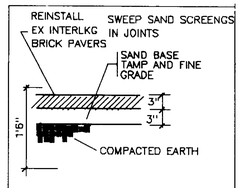
DATE: 21 SEPT 90

SHEET C1 OF 7

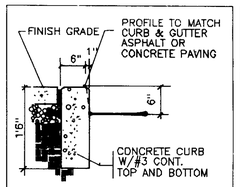
SDP 90-211



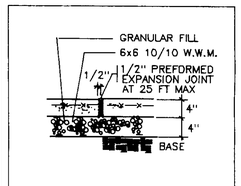
8 C2 WALK LIGHT BASE



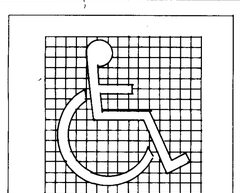
7 C2 BRICK WALK NTS



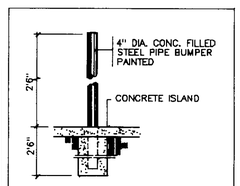
6 C2 CURB & WALK NTS



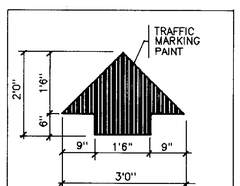
5 C2 CONC WALK NTS



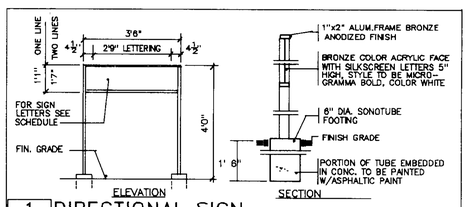
4 C2 H.C. SYMBOL NTS



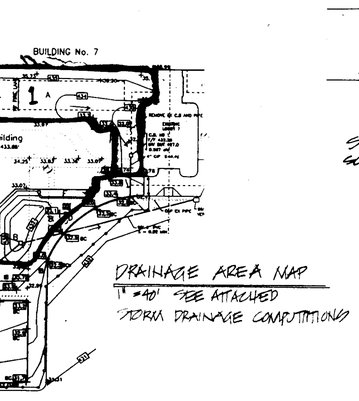
3 C2 PIPE BUMPER NTS



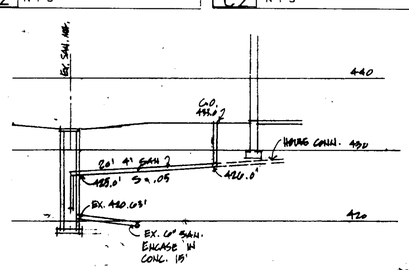
2 C2 DIRECTIONAL ARROW NTS



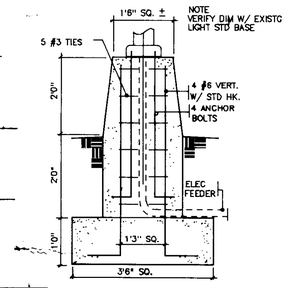
1 C2 DIRECTIONAL SIGN NTS



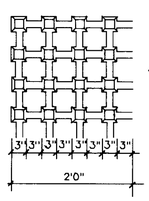
DRAINAGE AREA MAP
1" = 40' SEE ATTACHED
FORM DRAINAGE COMPUTATIONS

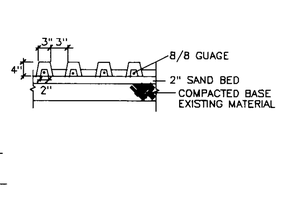


SANITARY DRAIN PROFILE
SCALE 1" = 20'

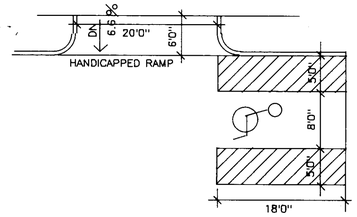


9 C2 LIGHT STANDARD 3/8"=1'0"

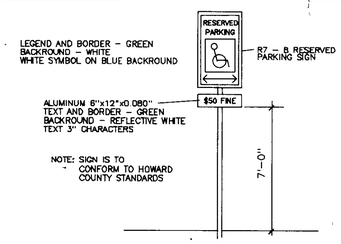




10 C2 OPEN GRID PAVING BLOCK NTS FIRE LANE



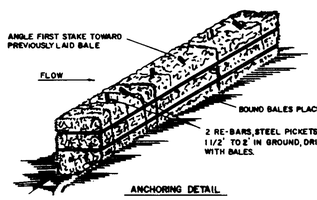
11 C2 HANDICAPPED AREA NTS FOR SPOT GRADES SEE C-3



12 C2 HANDICAPPED SIGN NTS

STRAW BALE DIKE & SPECIFICATIONS
NO SCALE

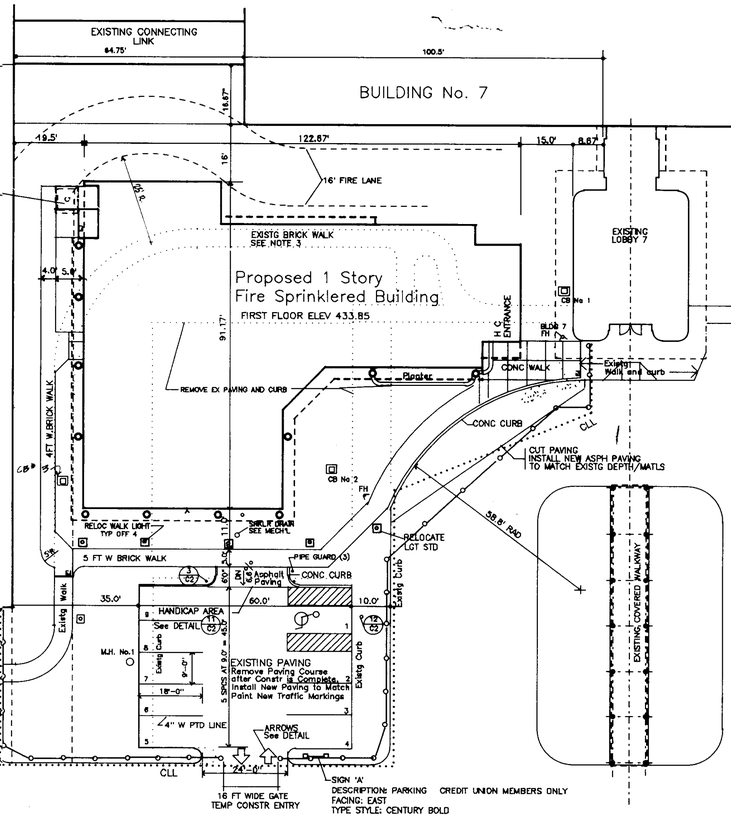
BEDDING DETAIL



ANCHORING DETAIL

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.



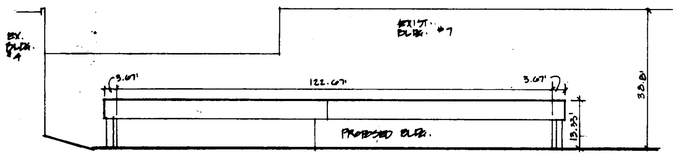
Site Layout Plan
SCALE 1" = 20' 0"

LEGEND

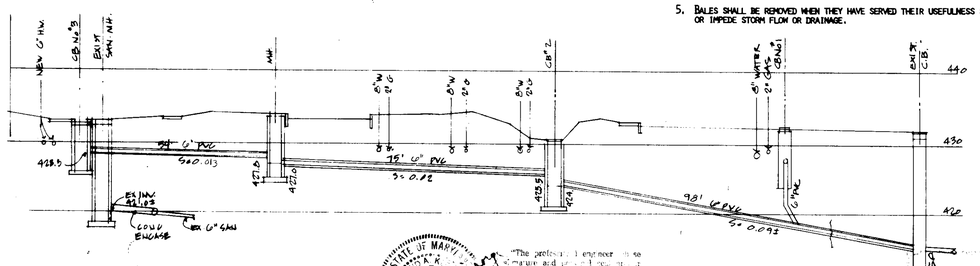
1. HANDICAPPED PARKING SYMBOL
2. CLL CONTRACT LIMIT LINE
3. DEMOLITION
4. NEW CONSTRUCTION
5. EXISTING CONSTRUCTION
6. 8' HIGH TEMPORARY CONSTRUCTION FENCE
7. CB No. CATCH BASIN
8. FH FIRE HYDRANT
9. WALK LIGHT
10. M.H. No.1 MANHOLE

North

NOTES:
1. SEE UTILITY DRAWINGS FOR UNDERGROUND PIPING AND ELECTRICAL WORK
2. ALL WALKS TO HAVE 1/8" PER FT CROSS SLOPE
3. REMOVE AND STORE FOR REUSE ALL BRICK PAVERS
4. ALL LANDSCAPE PLANTINGS (SRHUBS, TREES,ETC) TO BE REMOVED AND REPLANTED BY OWNER (N.I.C.)



PROPOSED BUILDING PROFILE



STORM DRAIN PROFILE
SCALE: 1"=20' HOR'Z.
1" =10' VERT.

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

COUNTY HEALTH OFFICER — DATE 3/21/91

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

PLANNING DIRECTOR — DATE 4/10/91

CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 3/12/91

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

DIRECTOR — DATE 4/3/91

CHIEF, BUREAU OF ENGINEERING — DATE 4-3-91

Approved: Howard S.C.D. 2/11/91

Charles P. Guariglia Architect
13537 Barrett Parkway Drive Suite 215 Manchester, Missouri
Area Code 314 821 2265
One Univac Lane Windsor, Connecticut 06095
Area Code 203 688 7209

BOARD OF EXAMINERS AND REGISTRATION OF ARCHITECTS — CHARLES P. GUARIGLIA — No. 1937 — REGISTERED

THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
JOHNS HOPKINS ROAD
HOWARD COUNTY MARYLAND
APPROVED FOR THE UNIVERSITY BY James E Tasch
DATE: 2/14/91 TITLE: Asst. Branch Supt.

CREDIT UNION FACILITY

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD LAUREL, MARYLAND 20707

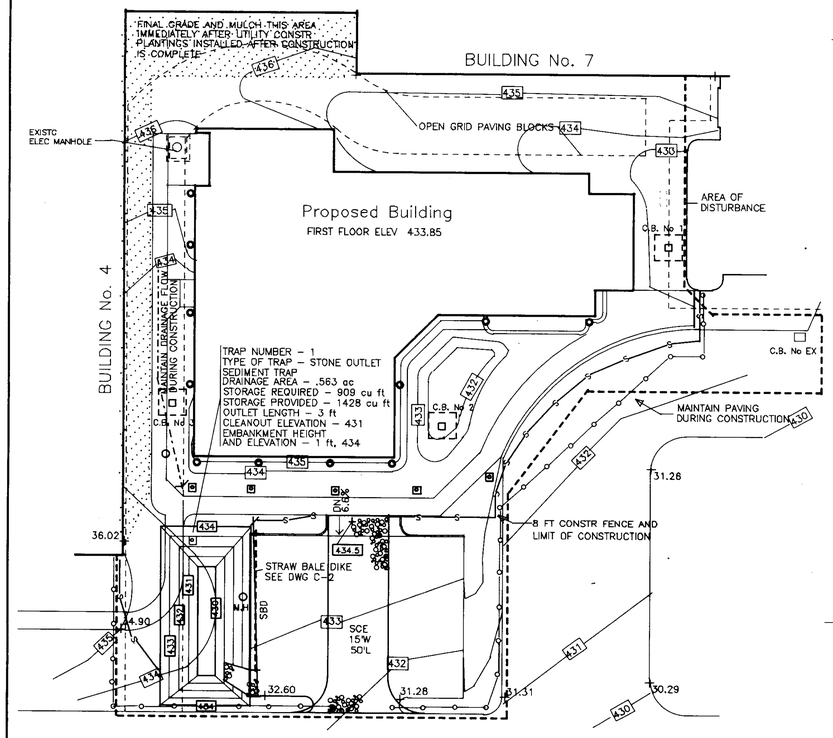
SITE LAYOUT PLAN

REVISIONS
20 SEPT 90
16 NOV 90
28 JAN 91
7 FEB 91

SCALE: AS NOTED
DATE: 21 SEPT 90

SHEET C 2 of 7

SDP 91-21

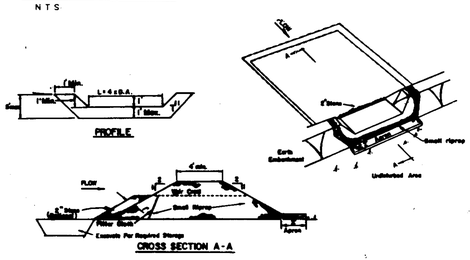


Erosion and Sediment Control Plan

SCALE 1" = 20' 0"

STONE OUTLET SEDIMENT TRAP

NTS



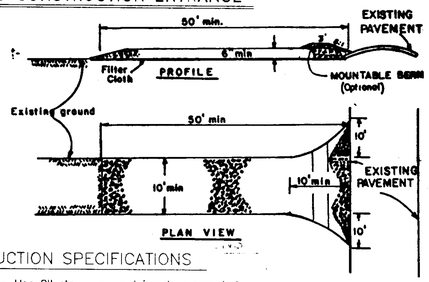
OPTION: A one foot layer of 2" stone may be placed on the upstream side of the riprap in place of the embedded filter cloth.

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 oversized stones, rocks, organic material or other objectional 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 upgrade side on the small riprap or embed filtex cloth in the riprap.
5. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to 1/2 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 established.

STABILIZED CONSTRUCTION ENTRANCE

NTS



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 and egress occurs.
5. Filter cloth – Will be placed over the entire area prior to placing of stone.
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 permited.
7. Maintenance – The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public right-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.

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
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, 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) sod (Sec. 54), temporary seeding (see 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germion 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 Use Analysis

TOTAL SITE AREA	24522 SF
DISTURBED AREA	24522 SF
EXISTING PAVED AREA (To Be Removed)	9590 SF
PROPOSED PAVED AREA	4656 SF
PROPOSED ROOF AREA	7655 SF
PROPOSED OPEN GRID PAVING BLOCK AREA	4200 SF
LAWNS/PLANTING	8011 SF
TOTAL CUT	805 CY
TOTAL FILL	114 CY

Off Site Waste/ Borrow Area Location – JOHNS HOPKINS UNIVERSITY CAMPUS SITE w/Erosion control measures in place.

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 DLIP sediment control inspector.
10. Not applicable site less than 2 acre min.

SEQUENCE OF CONSTRUCTION

1. Obtain Grading Permit.
2. Install Silt Fence, Catch Basin Silt Barrier and Construction Fence.
3. Construct SCE.
4. Remove Paving, Plantings, Light Fixtures.
5. Complete underground utility relocation and new utility taps.
6. Install temporary retention basin.
7. Rough grade site and final grade/mulch shaded areas.
8. Obtain Building Permit
9. Construct building site improvement and complete utilities.
10. Install storm drainage system and fine grade and seed lawn areas.
11. Remove construction fence and install pavements.
12. Remove soil erosion control fence, basin, etc. and restore site in accordance with Howard County Soil Conservation.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas which are subject to erosion for a period of 14 days or more.

1. Site Preporation:
   A. Prior to seeding, install needed erosion and sediment control practices such as diversion, grade stabilization structures, berms, dikes, grassed waterways and sediment traps
   B. Final grading and shaping has usually not been completed for temporary seeding.
2. Soil Amendments: For temporary seedings, fertilizer shall be applied at the rate of 600 lbs/ac or 15 lbs/1000 SF or equivalent.
3. Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.
4. Seeding: Apply seeding uniformaly with a cyclone seeder, drill, cultipacker seeder or hydroseeder (slurry includes seed and fertilizer). For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2 1/2 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.
5. Mulching: Material shall be unrotted small grain straw applied at the rate of 1 1/2 to 2 tons per acre or 70 to 90 (two bales) lbs per 1000 SF. Mulch material shall be relatively free of all kinds of prohibited noxious weeds such as : thistles, johnson grass and quackgrass. Anchor mulch immediately after application using mulch anchoring tool or 218 gal per acre (5 gal/1000 SF) of emulsified asphalt on flat areas. On slopes, 8 ft or higher use 348 gal per acre (8 gal/1000 SF) for anchoring.

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

IMPERVIOUS AREA COMPUTATIONS

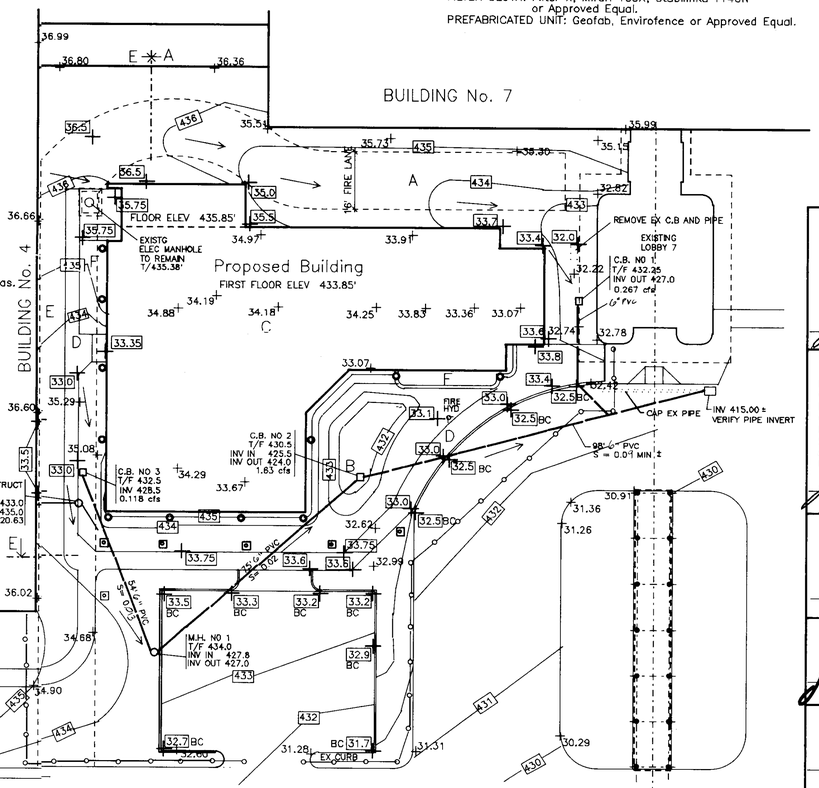
Existing Paved 9,590 + 4,406 = 13,996 SF.

Proposed Paved	4656 SF.
Open Grid (50%)	1915 SF.
Roof Area	7655 SF.
Total	14,226 SF.
	−13,996 SF.

Net Increase Impervious Area 230 SF.

Net Increase Less Than 5,000 SF.
Therefore No Storm Water Management Required.

This area was built prior to storm water management regulations and plan, therefore none required.



Site Grading Plan

SCALE 1" = 20' 0"

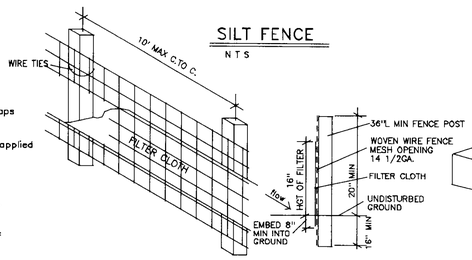
LEGEND:

ALL SPOT GRADES ARE REFERENCED TO 400' +

BC	BOTTOM OF CURB
33.0 +	EXISTING SPOT GRADE
434	EXISTING CONTOUR
33.0	PROPOSED SPOT ELEV
434	PROPOSED CONTOUR
→	WATER FLOW
C.B. No –	CATCH BASIN
M.H. No –	MANHOLE
S	SILT FENCE
	CATCH BASIN SILT PROTECTION
SBD	STRAW BALE DIKE

SILT FENCE

NTS



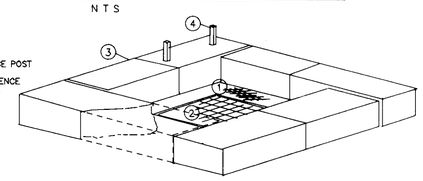
CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

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 overlapped by 6" 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, 14 1/2GA, 6" Mesh Opening
FILTER CLOTH: Fliter X, Mirafi 100X, Stabilinka T140N or Approved Equal.
PREFABRICATED UNIT: Geofab, Envirofence or Approved Equal.

CATCH BASIN SILT BARRIER

NTS



1. Catch Basin Grate or Temp. Wood Grate.
2. Filter Cloth – Filter "X" Mirafi 100X, Turn Down Edge of Sturcture 8".
3. Hay Bale
4. Wood Stake. 1" Hardwood x 36"L. Driven Flush With Top of Bales.

ENGINEER'S CERTIFICATE

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

James E. Leach P.E. 2/14/91
SIGNATURE OF DEVELOPER DATE

DEVELOPER'S CERTIFICATE

I,WE CERTIFY THAT ALL DEVELOPMENTS 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 CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

James E. Leach
SIGNATURE OF DEVELOPER DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL AND SEDIMENT CONTROL

James M. Helm 3/12/91
USDA SOIL CONSERVATION SERVICE DATE

THESE PLANS FOR SOIL AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT

John R. Robertson 3/11/91
HOWARD SOIL CONSERVATION DISTRICT DATE

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

Joseph Boyle 3/4/91
COUNTY HEALTH OFFICER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 4/10/91
PLANNING DIRECTOR DATE

David V. D'Angelo 3/2/91
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

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

[signature] 4 3 91
DIRECTOR DATE

[signature] 4-3-91
CHIEF, BUREAU OF ENGINEERING MK DATE

Charles P. Guariglia Architect
13537 Barrett Parkway Drive Suite 215 Manchester, Missouri
Area Code 314 821 2265
One Univac Lane Windsor, Connecticut 06095
Area Code 203 688 7209

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
JOHNS HOPKINS ROAD
HOWARD COUNTY MARYLAND
APPROVED FOR THE UNIVERSITY BY James E. Leach
DATE: 2/14/91 TITLE: Assist. Branch Supv.

CREDIT UNION FACILITY

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD LAUREL, MARYLAND 20707

SITE GRADING AND EROSION/SEDIMENT CONTROL PLAN

28 SEPT 90
16 NOV 90
28 JAN 91
7 FEB 91
REVISIONS

SCALE: AS NOTED
DATE: 21 SEPT 90

SHEET C.3 of 7

SDP 90-21

SITEWORK SPECIFICATIONS

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities.

B. Temporary Controls.

C. Construction Facilities.

1.02 TEMPORARY UTILITIES

A. Connect to existing power service provided by Owner. Power consumption shall not disrupt Owner's need for continuous service. Coordinate with Owner, when using equipment, which may disrupt Owner's data processing equipment's power requirements. Owner will pay cost of utilities used. Exercise measures to conserve energy and resources.

B. Sub-contractors to provide extensions and supplements for their own uses of temporary utilities.

C. Owner will provide and maintain suitable quality water service required for construction operations.

D. Construction Manager will provide separate temporary sanitary facilities.

1.03 CONSTRUCTION MANAGER PROVIDED BARRIERS

A. Provide chain link fence with lockable swing gates to prevent unauthorized entry to construction areas, to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.

B. Provide barricades and pedestrian walkways required by governing authorities for public rights-of-way and for public access to existing building.

1.04 WATER CONTROL

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Protect site from puddling or running water.

1.05 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification Sections.

B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.

C. Prohibit traffic from landscaped areas unless authorized by Construction Manager.

1.06 SECURITY

A. The Owner shall be responsible for security and protection of the Owner's existing or Owner-installed property against theft and vandalism, and shall provide watchman services or other necessary protective measures.

1.07 CONSULTANT SAFETY EQUIPMENT

A. Construction Manager to provide and make available at all times, at site a minimum of four clean hard hats for use by Owner, Architect/Engineer, or their consultants or visitors.

1.08 ACCESS ROADS/PARKING

A. Construction Manager to coordinate with Owner and construct and maintain temporary roads accessing public thoroughfares to serve construction area.

B. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.

C. Designated existing on-site roads may be used for construction traffic.

D. When site space is not adequate, park in areas designated by Owner.

1.09 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove waste materials, debris, and rubbish from site periodically. Properly remove and dispose off-site in accordance with local codes and regulations.

1.10 PROJECT IDENTIFICATION

A. Construction Manager will provide and maintain all site and building construction signage. List title of Project, names of Owner, Construction Manager, Architect/Engineer, and Consultants.

B. No other signs are allowed without Owner permission except those required by law.

PART 2 PRODUCTS
\\Not Used

PART 3 EXECUTION
\\Not Used

END OF SECTION

SECTION 02110

SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Remove surface debris.

B. Remove paving, curbs, and walks.

C. Clear site of plant life and grass.

D. Remove trees and shrubs.

E. Remove root system of trees and shrubs.

1.02 RELATED SECTIONS

A. Section 02200 - Earthwork: Topsoil excavation.

1.03 REGULATORY REQUIREMENTS

A. Conform to applicable local codes for disposal of debris.

B. Coordinate clearing Work with OWNER REPRESENTATIVE.

PART 2 PRODUCTS
//Not Used

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that existing plant life and features designated to remain are tagged or identified.

3.02 PROTECTION

A. Protect utilities that remain, from damage.

B. Protect trees, plant growth, and features designated to remain as final landscaping.

C. Protect bench marks and existing structures from damage or displacement.

3.03 CLEARING

A. Clear areas required for access to site and execution of Work.

B. Remove paving, curbs, and walk indicated

C. Remove trees and shrubs indicated. Remove stumps, main root ball, and root system to a depth of 8 inches.

3.04 REMOVAL

A. Remove ORGANIC ~~and extracted~~ plant life from site.

B. OWNER SHALL PROVIDE SITE FOR EXCESS INORGANIC MATERIAL.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 GENERAL

1.01 WORK INCLUDED

A. Remove topsoil and stockpile, remove excess from site.

B. Excavate subsoil and stockpile, remove excess from site and disposal in accordance with Owner's requirements.

C. Grade and rough contour site.

D. Building and utility line excavation, trenching, shoring and bracing, and backfilling.

E. Compaction requirements.

1.02 RELATED WORK

A. Section 02110 - Site Clearing.

B. Divisions 15 and 16 - Mechanical and Electrical: Requirements for trenching, backfilling, and compacting underground utilities.

1.03 REFERENCES

A. ANSI/ASTM C136 - Sieve Analysis of Fine and Coarse Aggregates.

B. ANSI/ASTM D698 - Moisture-Density Relations of Soils and Soil-Aggregate Mixture Using 5.5 lb Hammer and 12 inch Drop (Standard Proctor).

C. ANSI/ASTM D2922 - Density of Soil and Soil Aggregrate in Place by Nuclear Methods. (Shallow Method)

D. ANSI/ASTM D3017 - Moisture Content of Soils and Soil-Aggregate in Place by Nuclear Methods. (Shallow Method)

1.04 TESTS

A. Tests and analysis of fill materials will be performed in the laboratory in accordance with ANSI/ASTM D698, and in the field using ANSI/ASTM D2922 and D3017. Testing services will be contracted by Construction Manager.

B. Testing will be performed as directed by Construction Manager.

1.05 PROJECT RECORD DOCUMENTS

A. Accurately record location of utilities remaining, rerouted utilities, new utilities by horizontal dimensions, elevations of inverts, and slope gradients.

1.06 PROTECTION

A. Protect trees, shrubs, lawns, rock outcropping, and other features remaining as portion of final landscaping.

B. Protect bench marks, existing structures, fences, roads, sidewalks and paving and curbs.

C. Protect above or below grade utilities which are to remain.

D. Repair damage.

E. Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in or loose soil from falling into excavation.

F. Underpin adjacent structures which may be damaged by excavation work, including service utilities and pipe chases.

G. Protect bottom of excavations and soil adjacent to and beneath foundations from frost.

H. Grade excavation top perimeter to prevent surface water run-off into excavation.

PART 2 PRODUCTS

2.01 COMMON FILL MATERIALS

A. (Type A) Topsoil: Excavated, friable loam; free of subsoil, roots, grass, excessive amount of weeds, stone, and foreign matter; acidity range (pH) of 5.5 to 7.5; containing a minimum of 4 percent and a maximum of 25 percent organic matter.

B. (Type B) Subsoil: Excavated material, graded free of lumps larger than 6 inches, rocks larger than 3 inches, and debris.

2.02 SELECT FILL MATERIALS

A. (Type C) Coarse Stone: Angular, crushed, natural stone; free of shale, clay, friable materials and debris; graded in accordance with ANSI/ASTM C136 within the following limits:

Sieve Size	Percent Passing
2 inches	100
One inch	95
3/4 inch	95 to 100
5/8 inch	75 to 100
3/8 inch	55 to 85
No. 4	35 to 60
No. 16	15 to 35
No. 40	10 to 25
No. 200	5 to 10

PART 3 EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Identify known below grade utilities. Stake and flag locations.

C. Identify and flag above grade utilities.

D. Maintain and protect existing utilities remaining which pass through work area.

E. Notify utility company to remove and relocate utilities.

F. Upon discovery of unknown utility or concealed conditions, discontinue affected work; notify Architect/Engineer.

3.02 SITE EXCAVATION

A. Excavate topsoil and subsoil from areas to be further excavated, relandscaped, or regraded, or marked areas and stockpile in area designated on site, remove excess material not being reused from site.

B. Do not excavate wet soils.

C. Stockpile topsoil separately from subsoils. Stockpile to depth not exceeding 8 feet. Cover to protect from erosion.

D. When excavation through roots is necessary, perform work by hand and cut roots with a sharp axe.

3.03 UTILITY EXCAVATION

A. Excavate subsoil required for utility removal operations, and other work.

B. Machine slope banks to angle of repose or less until shored.

C. Excavation shall not interfere with normal 45 degree bearing splay of any foundation.

D. Hand trim excavation and leave free of loose matter.

E. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume.

F. Correct unauthorized excavation at no cost to Owner.

G. Fill over-excavated areas under structure bearing surfaces in accordance with direction by Architect/Engineer.

3.04 BACKFILLING PREPARATION

A. Verify stockpiled fill to be reused is approved.

B. Verify foundation or basement walls are braced to support surcharge forces imposed by backfilling operations.

C. Verify areas to be backfilled are properly compacted, free of debris, snow, ice, or water, and ground surfaces are not frozen.

D. Proof-roll subgrade surfaces. Cut out soft areas of subgrade not readily capable of in- site compaction. Backfill with subsoil and compact to density equal to requirements for subsequent backfill material.

E. When necessary, compact subgrade surfaces to density requirements for backfill material with sheepsfoot roller.

3.05 BACKFILLING

A. Backfill areas and trenches to contours and elevations. Use unfrozen materials.

B. Backfill systematically, as early as possible, to allow maximum time for natural settlement. Do not backfill over porous, wet, or spongy subgrade surfaces.

C. Support pipe and conduit during placement and compaction of bedding fill. Backfill utility trenches to equal adjacent undisturbed soils' heights, profiles, compaction density, and contours. Backfill trenches within outline of building's foundation with select fill materials; compact layers to 95 percent standard Proctor.

D. Place and compact select fill materials in continuous layers not exceeding 8 inches loose depth.

E. Place and compact common fill material in continuous layers not exceeding 12 inches loose depth.

F. Employ a placement method so not to disturb or damage work performed in other Sections.

G. Maintain optimum moisture content of backfill materials to attain required compaction density.

H. Backfill against supported foundation walls, or simultaneously on each side of unsupported foundation walls until supports are in place.

3.06 FIELD QUALITY CONTROL

A. Provide for visual inspection of bearing surfaces.

B. Compaction testing will be performed in accordance with ANSI/ASTM D2922 and D3017.

C. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

END OF SECTION

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

COUNTY HEALTH OFFICER — 3/21/91 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

PLANNING DIRECTOR — 4/10/91 DATE

CHIEF, DIVISION OF COMMUNITY PLANNING & LAND DEVELOPMENT — 4/8/91 DATE

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

DIRECTOR — 4/3/91 DATE

CHIEF, BUREAU OF ENGINEERING — 4.3.91 DATE

Charles P. Guariglia Architect
3800 S. Geyer Road • P.O. Box 8880-A • St. Louis, Missouri • Area Code 314 821-8865
One Univas Lane • Windsor, Connecticut 06095 • Area Code 689-7280

APPLIED PHYSICS LABORATORY
THE JOHNS HOPKINS UNIVERSITY
JOHNS HOPKINS ROAD HOWARD COUNTY MARYLAND
APPROVED FOR THE UNIVERSITY BY: James E. Loeck
DATE: 2/14/91 TITLE: Unit Branch Sup.

CREDIT UNION FACILITY

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD LAUREL, MARYLAND 20707

SITEWORK SPECIFICATIONS

REVISIONS: 28 SEPT 90; 7 FEB 91

SCALE:

DATE: 21 SEPT 90

SHEET: C 4 of 7

SDP 91-211

DRAWING NOTES:

(A) NEW 4" P.I.V. WITH OUTLET CAPPED FOR FUTURE EXTENSION TO CORNER INSIDE NEW BUILDING

(B) NOT USED

(C) NEW STORM LINE; SEE DRAWING C2

(D) NEW 2" HEATING WATER & 2" CONDENSER WATER SERVICE VALVES CAPPED FOR FUTURE EXTENSION TO NEW BUILDING

(E) CONTRACTOR SHALL VERIFY IF EXIST. ELECTRICAL CONDUITS ARE ABOVE OR BELOW EXIST. HEATING WATER & CONDENSER WATER PIPING; IF PIPING IS ABOVE CONDUITS, REMOVE PIPING AS INDICATED; IF PIPING IS BELOW CONDUITS, CUT PIPING OFF & ABANDON IN PLACE ONLY FOR LENGTH THAT CONDUIT IS ABOVE PIPING

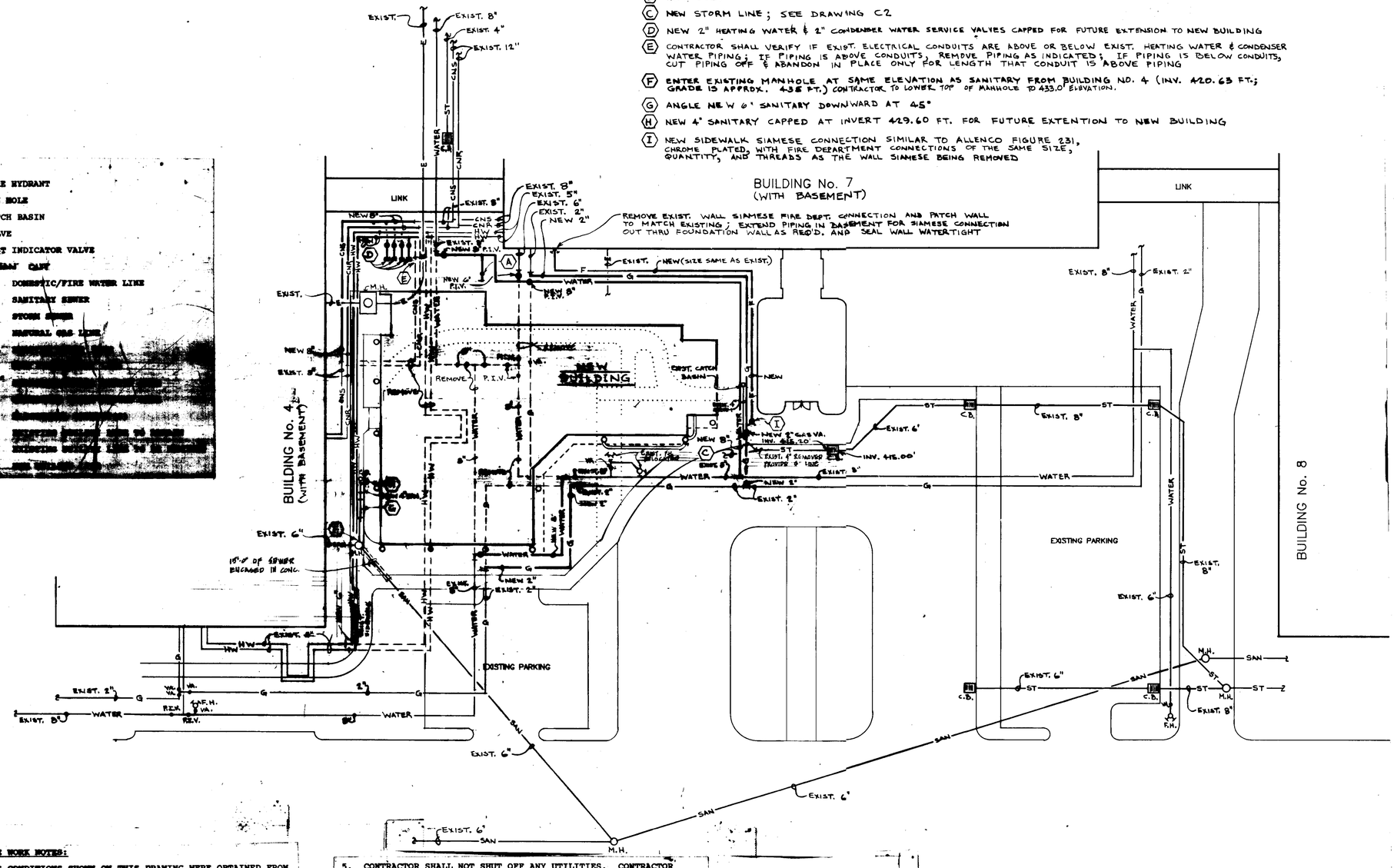
(F) ENTER EXISTING MANHOLE AT SAME ELEVATION AS SANITARY FROM BUILDING NO. 4 (INV. 420.63 FT.; GRADE IS APPROX. 438 FT.) CONTRACTOR TO LOWER TOP OF MANHOLE TO 433.0 ELEVATION.

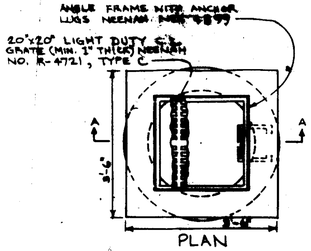
(G) ANGLE NEW 6" SANITARY DOWNWARD AT 45°

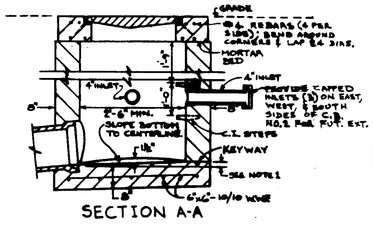
(H) NEW 4" SANITARY CAPPED AT INVERT 429.60 FT. FOR FUTURE EXTENTION TO NEW BUILDING

(I) NEW SIDEWALK SIAMESE CONNECTION SIMILAR TO ALLENCO FIGURE 231, CHROME PLATED, WITH FIRE DEPARTMENT CONNECTIONS OF THE SAME SIZE, QUANTITY, AND THREADS AS THE WALL SIAMESE BEING REMOVED

SYMBOLS	
F.H.	FIRE HYDRANT
M.H.	MAN HOLE
C.B.	CATCH BASIN
VA.	VALVE
P.I.V.	POST INDICATOR VALVE
C.O.	CLEAN OUT
—WATER—	DOMESTIC/FIRE WATER LINE
—SAN—	SANITARY SEWER
—ST—	STORM SEWER
—G—	NATURAL GAS LINE







NOTES:

1. SLOPE BOTTOM 3".
2. WALLS OF CATCH BASIN TO BE OF BRICK WITH A CEMENT MORTAR PLASTER ON INSIDE FACE OR OF REINFORCED CONCRETE WITH VERTICAL #3 BARS @ 12" O.C.
3. FOR SITE DRAINAGE WORK SEE DRAWING CE.

CATCH BASIN DETAIL
NO SCALE

GENERAL SITE WORK NOTES:

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE OBTAINED FROM DRAWING PRINTS ON FILE WITH THE UNIVERSITY. ACCURACY OF THIS INFORMATION IS NOT GUARANTEED.
2. ALL BIDDERS SHALL VISIT SITE PRIOR TO SUBMITTING BID.
3. ALL ITEMS SHOWN ON DRAWING ARE EXISTING UNLESS CALLED OUT AS NEW.
4. SEE ARCHITECTURAL SITE PLAN AND ELECTRICAL SITE UTILITIES PLAN FOR ADDITIONAL INFORMATION REGARDING THIS SITE. COORDINATE WITH NEW WORK AND EXISTING CONDITIONS SHOWN ON THESE PLANS AND WITH ALL OTHER CONTRACTORS WORKING ON SITE.

"The professional engineer whose signature and personal seal appear below assumes responsibility for only what appears on this page and disclaims any responsibility for all other plans, specifications, estimates, reports or other documents or instruments not sealed by the undersigned professional engineer"

5. CONTRACTOR SHALL NOT SHUT OFF ANY UTILITIES. CONTRACTOR SHALL PROVIDE A WRITTEN REQUEST FOR UTILITY SHUT OFF TO MR. ARTHUR STUCKI, UNIVERSITY PLAN ENGINEER, WITH A COPY TO MR. JIM LOESCH, GROUP SUPERVISOR OF BUILDING CONSTRUCTION FOR THE UNIVERSITY, A MINIMUM OF 5 DAYS IN ADVANCE OF REQUESTED SHUT OFF DATE. CONTRACTOR SHALL SCHEDULE WORK SO THAT UTILITY DOWN TIME IS KEPT TO AN ABSOLUTE MINIMUM. CONTRACTORS ESTIMATE OF DOWN TIME SHALL BE SUBMITTED WITH REQUEST FOR UTILITY SHUT OFF. THE CONTRACTOR SHALL SCHEDULE SHUT DOWN AND TIE-IN TO THE EXISTING UTILITIES ONLY AFTER NORMAL WORKING HOURS AT JHU-APL. NORMAL WORKING HOURS ARE 8:30 AM TO 5:00 PM MONDAY THROUGH FRIDAY.
6. SEE SPECIFICATIONS FOR PIPE MATERIALS, INSTALLATION, ETC.
7. UNLESS SPECIFICALLY INDICATED OTHERWISE ON THIS DRAWING, UTILITY LINES INDICATED FOR REMOVAL SHALL BE EXCAVATED AND REMOVED FROM THE GROUND INCLUDING ANY SANDY OR OTHER "SOFT" BEDDING MATERIAL USED TO LAY PIPE. CONTRACTOR SHALL REMOVE ALL SUCH PIPE AND EXCAVATED BEDDING MATERIALS FROM SITE.
8. ALL TRENCHING IN VICINITY OF ELECTRICAL CONDUITS SHALL BE DONE BY HAND. THESE CONDUITS MUST NOT BE DISTURBED.
9. THE CONTRACTOR SHALL PROVIDE A JOINT IN ALL NEW SEWER PIPING WITHIN 2'-0" OF MANHOLES AND CATCH BASIN EXTERIOR WALLS.

North

Mechanical Site Utilities Plan
SCALE 1" = 20'-0"

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER — DATE 3/21/91

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
PLANNING DIRECTOR — DATE 4/10/91
CHIEF, DIVISION OF COMMUNITY PLANNING & LAND DEVELOPMENT — DATE 4/8/91

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DIRECTOR — DATE 4/3/91
CHIEF, BUREAU OF ENGINEERING — DATE 4-3-91

Charles P. Gusriglia — Architect
3600 S. Gear Road • P.O. Box 6828-A • St. Louis, Missouri • Area Code (314) 894-6868
One Union Land • Windsor, Connecticut 06095 • Area Code (203) 688-7999

APPLIED PHYSICS LABORATORY
THE JOHNS HOPKINS UNIVERSITY
JOHNS HOPKINS ROAD HOWARD COUNTY MARYLAND
APPROVED FOR THE UNIVERSITY BY: James E. Leach
DATE: 2/14/91 TITLE: Asst. Branch Supv.

CREDIT UNION FACILITY
THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD LAUREL, MARYLAND 20707

MECHANICAL SITE UTILITIES PLAN

28 SEPT 90
7 FEB 91
REVISIONS

SCALE: AS NOTED
DATE: 21 SEPT 90

SHEET: C-5 of

SDP 90-211

DIVISION 15 - MECHANICAL

SECTION 15000 - GENERAL MECHANICAL REQUIREMENTS

GENERAL:

Applicable provisions of the General Conditions, Supplementary General Conditions, and the General Requirements of Division 1 govern work under this section.

Related Sections are:

Section 15100 - Heating/Ventilating/Air Conditioning Systems

Section 15200 - Plumbing and Drainage Systems

Section 15300 - Fire Protection Systems

Section 15500 - Site Utilities

It is the intent of the Construction Documents to provide mechanical systems that comply with the requirements of "ASHRAE Standards 90A-1980 - Energy Conservation in New Building Design". All materials and equipment are to comply where applicable. When local codes have more stringent requirements than Standard 90A-1980, comply with the local code.

The mechanical drawings show the general arrangement of all piping, ductwork, equipment, etc., and shall be followed as closely as actual building construction and work of other trades will permit. The Architectural and Structural Drawings shall be considered as part of the work insofar as this information furnishes the Contractor with details relating to design and construction of the building. Architectural drawings shall take precedence over the mechanical drawings. Because of the small scale of the Mechanical Drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall investigate the structural and finish conditions affecting the work and shall arrange his work accordingly, providing such fittings, valves, and accessories as may be required to meet such conditions. Should conditions necessitate a rearrangement of piping, such departures and the reasons therefor shall be submitted by the Contractor to the Architect for approval in the form of detailed drawings showing the proposed changes. No such changes shall be made without the prior written approval of the Architect. All changes shall be marked on a set of drawings which shall subsequently be turned over to the Architect.

Shop drawings, product data, samples:

Shop drawings not submitted in accordance with substitution paragraphs under Division 1 - General Conditions will not be considered for approval.

MATERIALS:

Materials and equipment to be as specified and indicated on drawings. When specification or drawings conflict with local codes, comply with codes.

All material, other than concrete, to be furnished and erected under this division of specifications unless indicated otherwise. Concrete work to be furnished under Division 3 - Concrete, unless specifically called out otherwise.

Motors, Starters, Disconnects and Control Devices:

Furnish all motors, starters, control devices, and other electrical equipment required for operation of equipment. Disconnects are to be furnished by Division - 16 electrical contractor unless they are provided as a part of the mechanical equipment.

Motors with inductive reactance load component are limited to 85% minimum power factor. When a motor has less than 85% power factor, provide capacitor to correct power factor 90% minimum.

In general, motors over 1 HP + ABOVE TO BE 3 PHASE, 60HZ., 480V., except where indicated otherwise.

Motors UNDER 1 HP to be single-phase, 60 hz., except where indicated otherwise. Single-phase motors shall have thermal overload protection.

Starters.

Type of starting device to be as required to suit equipment indicated on drawings and remote control or interlocks as specified.

Starters for three-phase motors to be magnetic type, equipped with non-adjustable thermal overloads, sizes as recommended by the motor manufacturer.

Starters for single-phase motors UNDER 1HP, to be manual type.

Starters for equipment located outside, or where subject to water, to be weatherproof.

Starters to have nameplates of black laminated plastic with white engraved lettering to indicate what they control. Nameplate to be fastened to front of starter.

INSTALLATION:

Examine areas and conditions under which work is to be done. Do not proceed with work until unsatisfactory conditions have been corrected.

All equipment is to be installed in a neat and workmanlike manner. Manufacturer's recommendations to be followed in all installation procedures.

Equipment to be installed on 4 inch thick reinforced concrete housekeeping pads.

Where supports, foundations and stands are indicated, specified or required, design and construct supporting structures of sufficient strength to safely withstand the loads to which they may be subjected and properly distribute the load and impact. Consult and follow the equipment manufacturer's recommendations.

Hangers and supports to be fastened to building structure. Hangers and supports for pipework shall provide for expansion and contraction and prevent vibration. Maintain required grading by proper adjustment and placement.

All electrical work specified as part of the Division 15 Mechanical Sections shall have materials, wiring, conduit, boxes, and installation done in accordance with the Division 16 Electrical Sections.

Cooperation with other Trades:

Contractors shall be responsible for work fitting in place without conflict with other trades where proper planning will avoid interference. Work installed without regard for others work, or if conflict results, must be changed if directed by Architect without additional cost to Owner.

Tests and Inspections:

Furnish all labor and materials for all tests and inspections.

Contractor to test and inspect work as required by local codes and regulations, and as required by these specifications. Provide labor and materials for such tests. Pay fees (if any) required by local authorities for testing and inspection.

Inspect and test all equipment for proper operation. Lubricate moving equipment as required. Check motors for proper rotation, belts for proper tension, etc. Check all ductwork and piping for leakage.

Gages, valves, controls, thermometers and other instruments to be calibrated and checked for operation.

Make tests in presence of Building Department Official and Architect's Representative. Give 3 day advance notice to Building Department Official and Architect before tests are made.

Do not paint, cover, or conceal piping or units before testing and obtaining approval.

Submit two copies of complete test report to Architect for review and approval.

Labeling:

Equipment, starters, switches, dampers, valves, control devices, gages, thermometers, to be permanently labeled. Numerical identification shall correspond to that shown on drawings.

Mark piping systems with Brady B-350 thin film pipe markers, 1-1/8 inch high, indicating type service and direction of flow. Locate pipe markers at - equipment connections, access doors, branch mains, valves, 75 foot intervals on accessible pipe.

Operating Instructions:

Upon Completion, instruct owner in operation of equipment and systems. Provide two complete sets of operating and maintenance instructions, including equipment manufacturer's instructions, wiring diagrams and parts lists, and names of authorized service representatives. Submit operating and maintenance instruction to Architect for review and approval.

Cleaning:

Dirt and debris to be cleaned and blown out of piping and removed from interior of ductwork and equipment upon completion of installation and before starting systems in operation.

Clean exposed surfaces of duct systems, piping, wiring, equipment, equipment casings, plumbing fixtures, fittings and trim after all construction is complete.

Repair dents, scratches and other damage to equipment housing and casings.

Warranties and Guarantees:

Work and material to be guaranteed and corrected when required as provided in General Conditions.

Special extended guarantee or warranty on specific pieces of equipment to be turned over to Owner.

Maintenance:

Furnish full maintenance on work performed under this section for period of one year from date of substantial completion. Maintenance to be performed to keep work in proper operation. Include four planned inspections during year.

Owner is responsible for operating the system in accordance with Contractor's instructions and to advise the Contractor of defects immediately. The Contractor is not responsible for damage or defects caused by unauthorized alterations to the system, improper operation of the system, or other circumstances beyond his control.

END OF SECTION

DIVISION 15 - MECHANICAL

SECTION 15500 - SITE UTILITIES

GENERAL:

System Responsibility and Coordination:

Provide supervision, coordination, materials and labor to complete the utilities relocation work as specified and as indicated on the drawings.

All associated demolition work as indicated on the mechanical site utility drawing is included as work of this section.

Refer to Section 15000 for General Mechanical Requirements.

Refer to Division 2 for general requirements pertaining to demolition work.

The following site utility systems are included as work under this section of the specifications:

Domestic/fire water piping

Sanitary sewer

Storm sewer

Natural gas piping

Heating water piping

Condenser water piping

Codes and Standards:

The systems shall comply with all applicable state and local codes and ordinances. When these codes and ordinances have more stringent requirements than the standards listed herein, comply with their requirements.

Permits and Fees:

Obtain and pay for the required permits, inspection fees, tapping fees, connection charges and utility company service charges.

Submittals:

Shop drawings for piping and valves to include certified manufacturer's data sheets.

Testing:

Conduct preliminary and final acceptance tests as specified and as required by local agencies having jurisdiction. Furnish labor and materials for such tests. Pay fees (if any) required by local authorities for testing and inspection.

Work to be tested and inspected as required by local codes and regulations, and as required by this specification; tests to be made in the presence of plumbing official, utility company official, university building department official, and Architect's representative.

Cleaning:

All scale and dirt to be cleaned out of piping on completion of installation and before starting pipe system in operation.

Guarantee:

Material, equipment and installation shall be guaranteed and corrected when required, as provided in general conditions and as specified for each system and unit.

PRODUCTS AND MATERIALS:

Materials and equipment shall be as specified and indicated on drawings; when the specification or schedule conflicts with local codes, comply with code.

Provide piping materials and piping products of sizes, types, pressure ratings, and capacities as indicated. Provide fittings of materials which match pipe materials used in piping systems. Where more than 1 type of materials or products are indicated, selection is Installer's option.

Piping:

Domestic/fire water pipe and fittings to be Class 52 ductile iron with cement morter lining and push on joints.

Sanitary sewer piping to be Howard County schedule 35 (minimum) PVC.

Storm sewer piping to be ABS sewer pipe and fittings (ASTM D2751) or PVC sewer pipe and fittings (ASTM 2665), schedule 80.

Condenser water pipe and fittings to be schedule 40 black steel with wrought-steel buttwelding fittings (ASTM 120). Pipe to be machine wrapped using 50% overlap wrap, with polyvinyl tape.

Heating water pipe and fittings to be Ricwil (Intergy, Inc.; Brecksville, OH; 216-526-1600) Steel-Gard or approved equal. Pipe shall be black steel, ASTM A-53, schedule 40 in nominal 20 foot and 40 foot lengths. Pipe shall be insulated with closed cell polyurethane 1.7" thick having a thermal conductivity of .14 BTU/Hr-Sq.Ft.- F/inch. Jacket shall be Type 1, Grade 1, polyvinyl chloride with a minimum thickness of .10 inch. System shall be suitable for water temperatures to 250 degrees F. Joints shall be made with couplings of machined steel grooved for O-Ring seals which shall allow movement for expansion and contraction of pipe. All fittings shall be coated with Rip-Coat in the field by the installing contractor. Installation shop drawings shall be provided to the Architect indicating all fittings and showing how expansion and contraction will be accommodated in all lengths and directions of pipe.

Natural gas pipe and fittings to be schedule 40 black steel with wrought-steel buttwelding fittings (ASTM 120). Pipe to be machine wrapped using 50% overlap wrap with polyvinyl tape. Gas piping system materials to be as required by NFPA-54, ANSI B31.2, local codes, and utility company requirements and standards.

Valves:

All valves shall open counterclockwise.

Post indicator valves (P.I.V.) shall be Nibco or approved equal Model M-609 (mechanical joint) or F-609 (flanged joint), 175 lb., U.L. listed, FM approved, cast iron body, bronze fitted, non-rising stem, indicator post pattern gate valve with Nibco Model NIP-1, U.L. listed, FM approved, indicator post having "OPEN" and "SHUT" indicator signs and an angle type operating wrench that can be locked to prevent unauthorized operation.

Water service valves 3" and under (for domestic water, heating water, and condenser water) shall be bronze Nibco or approved equal S-113 with solder ends or T-113 with threaded ends.

Gas cocks 2 inches and smaller shall be 150 psi non-shock WOG, bronze straightway cock, flat or square head, threaded ends.

Gas cocks 2-1/2 inch and larger shall be 125 psi non-shock WOG, iron body bronze mounted, straightway cock, square head, flanged ends.

INSTALLATION:

Equipment and materials shall be installed in neat and workmanlike manner. Manufacturer's recommendations shall be followed in all installation procedures.

Plug each outlet, including valves, with plug or cap immediately after installation and remain until continuing piping connections are compeleted.

Improperly Installed Work:

This contractor shall be responsible for planning his work to fit in place without conflict with work of other trades; work installed without regard for other work, or in conflict with other work, must be changed at contractor's expense, if directed by Architect.

Excavation and Backfill:

Excavate for underground work. Remove surplus excavated material that is not used for backfill, grading or other purpose. Correct disturbances to existing pavement, sidewalks, and other existing work which is indicated on the drawing to remain to correspond to original condition.

Underground piping to be installed below frost line. Trenches for underground piping to be straight and to have required slope to permit drainage by gravity and connection to existing piping as required.

Piping to be continuously supported by trench floor. Floor of trench to be devoid of lumps or irregularities. When floor of trench at proper grade is of hard, or rocky material, excavate to four inches below grade and backfill to grade.

Lay each section of pipe to line and grade.

Backfill and compaction within the area of the new building line and five foot beyond this area shall not be done by this contractor but shall be done by the contractor performing Section 02200 "Earthwork".

Backfill and compaction of the area outside of the new building plus five foot beyond, shall be by this contractor.

Backfill trench immediately after piping is tested and approved. Backfill by hand in thin layers to one foot above top of pipe. Tamp each layer and compact to avoid pipe shifting and joint damage. From one foot above top of pipe to top of trench, backfill in 8 inch layers and compact each layer with mechanical tampers to consistancy of surrounding soils. Compaction by water inundation or water settling methods not permitted.

Domestic/Fire Water Piping:

All water main construction shall conform to the requirements contained in the current issue of the "Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction", Article 10 except as modified herein.

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.

For water pipe with push-on joints, dig hub holes at proper intervals so that no weight is supported by hub. Center each spigot and pipe to hub to form close concentric joint. Hubs to be upstream.

For underground water pipe 3 inches and larger, provide concrete thrust blocks poured to virgin soil in direction of thrust at all changes of piping direction.

Install post indicator valves per manufacturers directions.

Sanitary Sewer and Storm Sewer Piping:

For pipe with hub and spigot joints, dig hub holes at proper intervals so that no weight is supported by hub. Center each spigot and pipe to hub to form close concentric joint. Hubs to be upstream.

Condenser Water Piping:

Condenser water piping shall be welded.

In corrosive soils, install magnesium anodes for underground steel pipe, one 5 pound anode for up to 100 feet in length and one 5 pound anode for each additional 100 feet.

After pipe pressure testing, all joints shall be wrapped with polyvinyl chloride tape.

Hand wrap joint fittings using 100% overlap wrap (2 separate layers of 50% overlap wrap applied in same direction with each tape joint staggered 50% of tape width from layer of tape above and below) extending 6" beyond fitting onto wrapped pipe. Comply with tape manufacturer's installation instructions.

Heating Water Piping:

Heating water piping, joints, and fittings shall be per pipe manufacturer's written installation instructions. Concrete thrust blocks poured to virgin soil in direction of thrust must be provided at all changes of piping direction.

In corrosive soils, install magnesium anodes for underground steel pipe, one 5 pound anode for up to 100 feet in length and one 5 pound anode for each additional 100 feet.

Natural Gas Piping:

Gas piping and accessories installation, testing procedure, and system purging to be as required by NFPA-54, ANSI B31.2, local codes, and utility company requirements.

Gas piping underground to be welded.

Minimum depth of gas piping to be 36 inches except where indicated otherwise.

In corrosive soils, install magnesium anodes for underground steel pipe, one 5 pound anode for up to 100 feet in length and one 5 pound anode for each additional 100 feet.

Wrapping: Hand wrap fittings and joints using a 100% overlap wrap (2 separate layers of 50% overlap wrap applied in same direction with each tape joint staggered 50% of tape width from layer of tape above and below) of polyvinyl chloride tape extending 6" beyond fitting onto wrapped pipe. Comply with tape manufacturer's installation instructions.

Service Valves:

Service valves for domestic water, heating water, condenser water, and natural gas shall be installed upright in a valve box with removable cover extended to grade. Cover shall have type of service permanently engraved or molded into it.

Domestic/Fire, Heating, and Condenser Water Pipe Testing:

Test water piping system and prove tight under pressure not less than 150% of working pressure under which it is to be used. Test may be made by sections or of entire water supply system. Water used for tests to be obtained from potable source of supply.

Natural Gas Pipe Testing:

Make air test by attaching air-compressor testing apparatus to any opening, and after closing other inlets and outlets to system, force air into system until there is uniform gauge pressure of 150% of the proposed maximum working pressure but not less than 5 PSIG. Hold pressure without introduction of any additional air for 30 minutes.

Sterilizing Domestic/Fire Water Piping:

After water piping is complete and system flushed out completely, a solution of Sodium Hypochlorite shall be introduced. The solution to consist of 1 gallon of 5% Sodium Hypochlorite, Chlorox, Purex, or Energy Bleach to 200 gallons of water.

Solution to be introduced by means of a pump until an Orthotolidin test at each outlet shows residual chlorine. The solution to remain in the system 24 hours after which, entire system of water piping to be flushed.

END OF SECTION

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

COUNTY HEALTH OFFICER — 3/21/91 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

PLANNING DIRECTOR — 4/10/91 DATE

CHIEF, DIVISION OF COMMUNITY PLANNING & LAND DEVELOPMENT — 4/8/91 DATE

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

DIRECTOR — 4/3/91 DATE

CHIEF, BUREAU OF ENGINEERING — 4.3.91 DATE

"The professional engineer whose signature and personal seal appear below assumes responsibility for only what appears on this page and disclaims any responsibility for all other plans, specifications, estimates, reports or other documents or instruments not sealed by the undersigned professional engineer. . ."

Charles P. Guariglia Architect
3800 S. Geyer Road • P.O. Box 8880-A • St. Louis, Missouri • Area Code 314 821-8885
One Univas Lane • Windsor, Connecticut 06095 • Area Code 860-7200

APPLIED PHYSICS LABORATORY
THE JOHNS HOPKINS UNIVERSITY
JOHNS HOPKINS ROAD HOWARD COUNTY MARYLAND
APPROVED FOR THE UNIVERSITY BY: James E. Leach
DATE: 2/14/91 TITLE Asst. Branch Sup.

CREDIT UNION FACILITY

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD LAUREL, MARYLAND 20707

MECHANICAL SITE
UTILITY SPECIFICATIONS

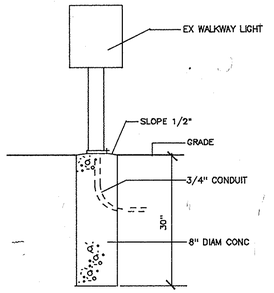
REVISIONS: 28 SEPT 90; 7 FEB 91

SCALE:

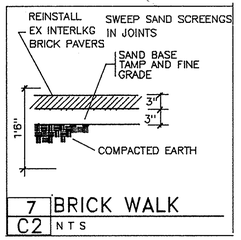
DATE: 21 SEPT 90

SHEET: C 6 of 7

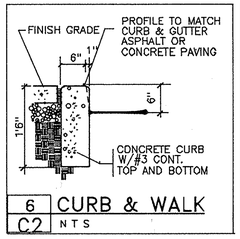
SDP 90-211



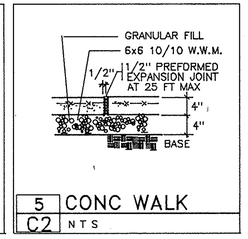
8 C2 WALK LIGHT BASE



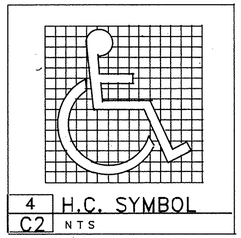
7 C2 BRICK WALK NTS



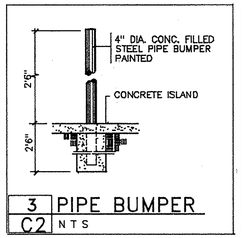
6 C2 CURB & WALK NTS



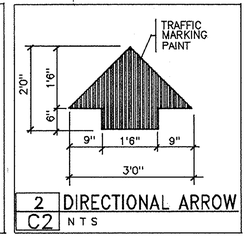
5 C2 CONC WALK NTS



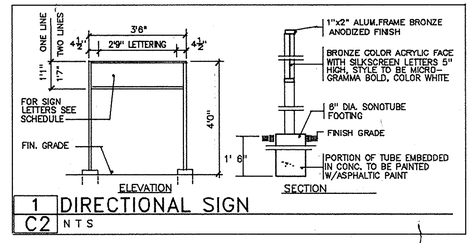
4 C2 H.C. SYMBOL NTS



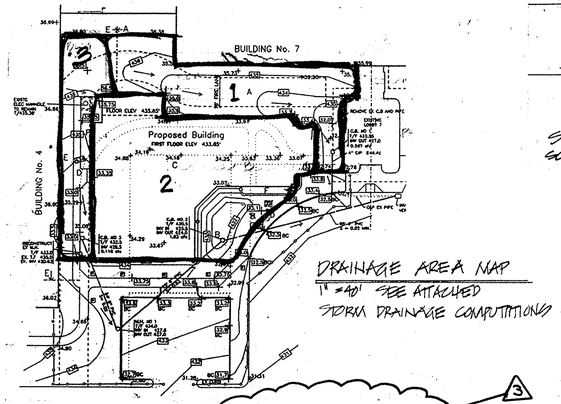
3 C2 PIPE BUMPER NTS



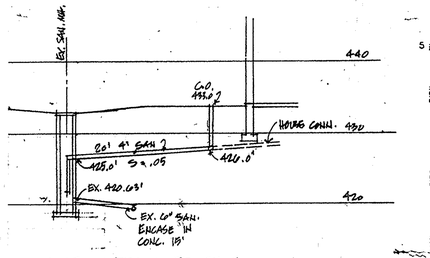
2 C2 DIRECTIONAL ARROW NTS



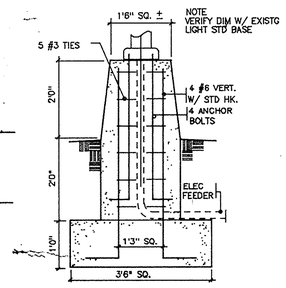
1 C2 DIRECTIONAL SIGN NTS



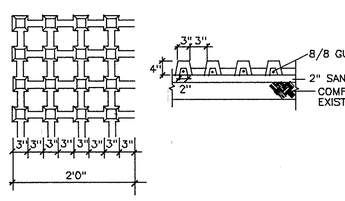
DRAINAGE AREA MAP
1" = 40' SEE ATTACHED
STORM DRAINAGE COMPUTATIONS



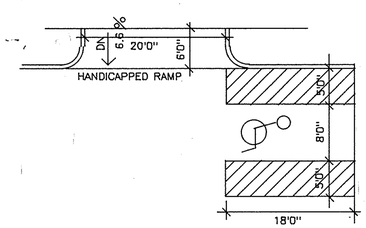
SANITARY DRAIN PROFILE
SCALE 1" = 20'



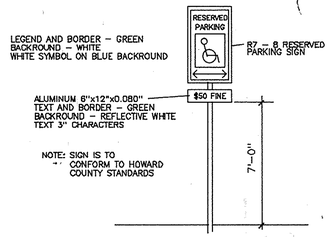
9 C2 LIGHT STANDARD 3/8"=1'0"



10 C2 OPEN GRID PAVING BLOCK NTS FIRE LANE

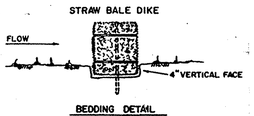


11 C2 HANDICAPPED AREA NTS FOR SPOT GRADES SEE C-3

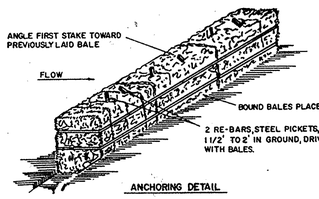


12 C2 HANDICAPPED SIGN NTS

STRAW BALE DIKE & SPECIFICATIONS
NO SCALE



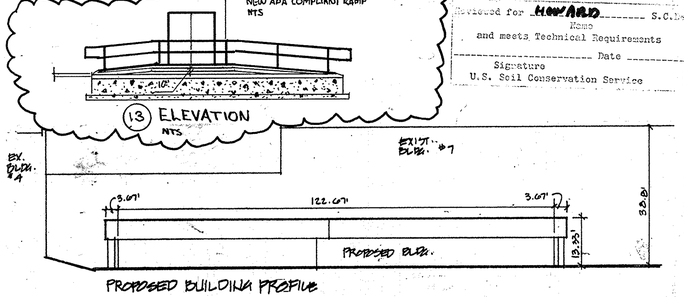
BEDDING DETAIL



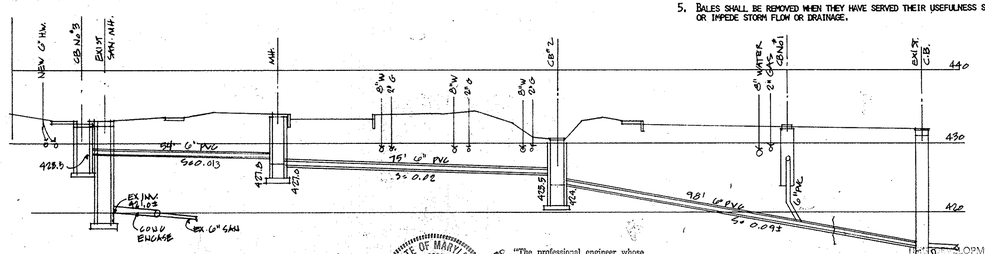
ANCHORING DETAIL

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.



PROPOSED BUILDING PROFILE



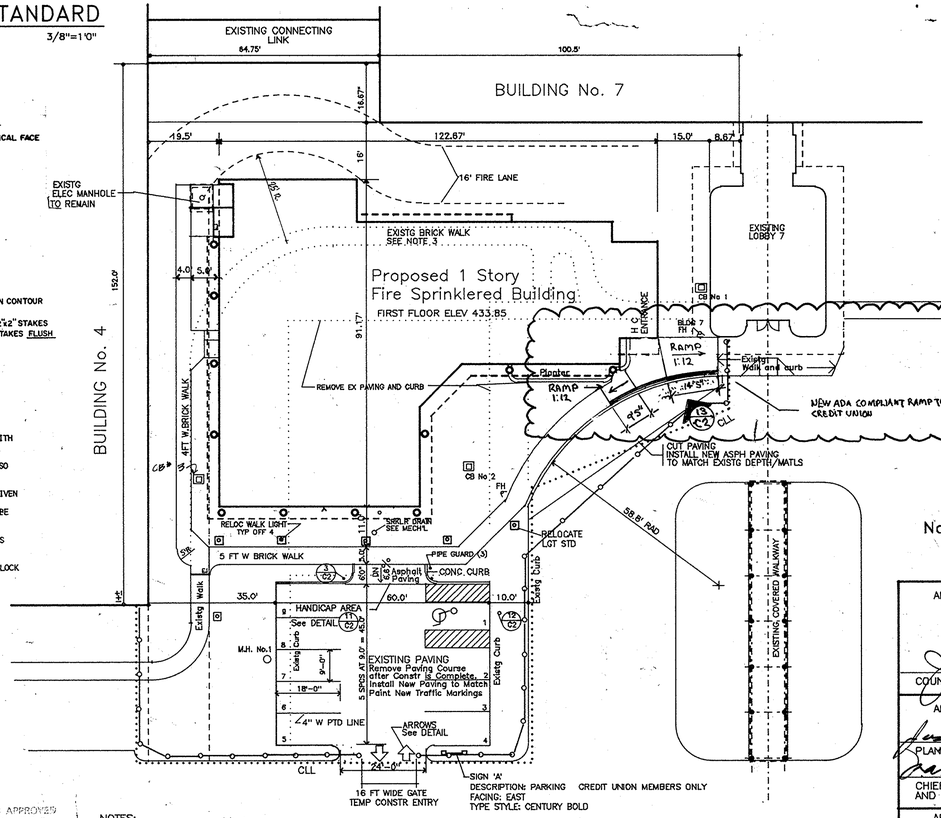
STORM DRAIN PROFILE
SCALE: 1"=20' HORIZ.
1"=10' VERT.

Reviewed for HOWARD Scd. and meets Technical Requirements
Date
Signature
U.S. Soil Conservation Service

"The professional engineer whose signature and personal seal appear below assumes responsibility for only what appears on this page and disclaims . . . any responsibility for all other plans, specifications, estimates, reports or other documents or instruments not sealed by the undersigned professional engineer. . . ."

Raymond A. Reisler, Jr. — STATE OF MARYLAND — No. 11,599 — REGISTERED PROFESSIONAL ENGINEER

DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
Approved Howard S.C.D. Date 2/14/91



NOTES:
1. SEE UTILITY DRAWINGS FOR UNDERGROUND PIPING AND ELECTRICAL WORK
2. ALL WALKS TO HAVE 1/8" PER FT CROSS SLOPE
3. REMOVE AND STORE FOR REUSE ALL BRICK PAVERS
4. ALL LANDSCAPE PLANTINGS (SRHUBS, TREES,ETC) TO BE REMOVED AND REPLANTED BY OWNER (N.I.C.)

Site Layout Plan
SCALE 1" = 20' 0"

LEGEND

1. HANDICAPPED PARKING SYMBOL
2. CLL CONTRACT LIMIT LINE
3. DEMOLITION
4. NEW CONSTRUCTION
5. EXISTING CONSTRUCTION
6. 8' HIGH TEMPORARY CONSTRUCTION FENCE
7. CB No CATCH BASIN
8. FH FIRE HYDRANT
9. WALK LIGHT
10. M.H. No.1 MANHOLE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER — DATE 3/21/91

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
PLANNING DIRECTOR — DATE 4/10/91
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT — DATE 4/5/91

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DIRECTOR — DATE 4/3/91
CHIEF, BUREAU OF ENGINEERING MK — DATE 4-3-91

Glenn M. Cary — STATE OF MARYLAND — No. 11599 — REGISTERED PROFESSIONAL ENGINEER

Charles P. Guariglia Architect
13537 Barrett Parkway Drive Suite 215 Manchester, Missouri
Area Code 314 821 2265
One Univac Lane Windsor, Connecticut 06095
Area Code 203 688 7209

BOARD OF EXAMINERS AND REGISTRATION OF ARCHITECTS — 1837-R — STATE OF MARYLAND

THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
JOHNS HOPKINS ROAD
HOWARD COUNTY MARYLAND
APPROVED FOR THE UNIVERSITY BY James C. Leach
DATE: 2/14/91 TITLE: Asst. Branch Supt.

CREDIT UNION FACILITY

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
11100 JOHNS HOPKINS ROAD LAURELL, MARYLAND 20707

SITE LAYOUT PLAN

REVISIONS
20 SEPT 90
16 NOV 90
28 JAN 91
7 FEB 91
3 8 AUG 15 GC

SCALE: AS NOTED
DATE: 21 SEPT 90

SHEET C 2 of 7

SDP 90-211