Appendix B

Facility Description

Facility Description of the Environmental Safety Facility (ESF)

General Information

The University of Vermont and State Agricultural College (UVM) operates the Environmental Safety Facility (ESF), a hazardous waste treatment and storage facility, EPA ID# VTD000636563, located at 667 Spear Street in Burlington, Vermont. The ESF is owned and operated by UVM.

NAICS Code and Description	611310 - Colleges, Universities, and Professional Schools
SIC Code and Description	8221 - Colleges, Universities, and Professional Schools

ESF Operations

The primary function of the ESF is the management of hazardous waste generated by UVM. UVM may also manage waste at the ESF from UVM tenants and affiliates, as well as source generators as listed in Appendix D, "UVM Source Generators." Management policies are set forth in UVM's Environmental Management Plan (EMP).

Hazardous and other regulated wastes are transported from UVM campuses to the ESF in accordance with DOT, OSHA, and Vermont Hazardous Waste Management Regulations (VHWMR). Once at the ESF, wastes are stored, then bulked or lab packed with compatible wastes, then shipped off-site for disposal at permitted Treatment, Storage, and Disposal Facilities (TSDF). Hazardous wastes can be stored at the ESF for up to one year. Waste can be stored for greater than one year only if UVM can show that storage beyond one year is solely for the purpose of accumulating sufficient quantities necessary to facilitate proper recovery, treatment or disposal, or if there is no acceptable disposal outlet. Procedures for extending storage beyond one year are detailed in Appendix E, "Process Information and Container Management Plan."

ESF Site Description

The ESF is located in the City of Burlington at 667 Spear Street, approximately one mile South of UVM's athletic facilities within the UVM BioResearch Complex (BRC) on the West side of Spear Street. The land on which the ESF sits, is owned by UVM. The Burlington Country Club golf course forms the North and West boundaries of the site, approximately 300 feet from the ESF. The BRC is bounded by Spear Street on the East, approximately 1200 feet from the ESF. The Meadowbrook Condominium Association's multi-family housing, and the Roman Catholic Diocese's Rice High School, are located approximately 1000 feet to the South, and southwest respectively, of the ESF on the other side of a field cultivated by the UVM's Miller Research Farm.

The ESF is sited at the BRC to the West of the existing Large Animal Facility. The Large Animal Facility houses some UVM research activities as well as UVM's low-level radioactive waste storage area. These locations are not part of the ESF nor are they covered by this permit.

The land on which the ESF is built is approximately 3 acres in size. This parcel of land is defined by the golf course on the north, UVM's Large Animal Facility on the east, a UVM agricultural field to the south, and a hedgerow and drainage swale on the west. The ESF was built in 1993 and waste operations began in 1994. The land was previously used by UVM's College of Agriculture for small garden plots and as a test field for a study on the growth of hay. The field is not prime agricultural land because of poor drainage and wet conditions at various times of the year.

The ESF is located in close proximity to the main campus. This provides ease of transporting materials, as well as a quick response time for UVM Police Services to the ESF and a quick response time for the ESF staff to campus. Vehicles access Spear Street at the intersection of the BRC access road and Spear Street, located approximately 1/4 mile south of the UVM Dairy Farm on the west side of the road. The ESF site has been designed to handle tractor-trailer rigs and can accommodate a truck with a wheelbase of 50 feet.

Two access routes have been designed for emergency vehicles, one to the north and one to the south on the east side of the site. The paved drive all the way around the building is wide enough for emergency vehicles, including fire trucks. Most of the site is paved with asphalt; however, the truck bay and area directly in front of the truck bay are concrete.

Car traffic at the ESF site generally consists of privately owned vehicles of the people working in the building (approximately 6 to 9 people arriving and leaving work). The ESF has ten parking spaces including one handicap accessible space. The vehicles typically on site include one box-style truck and van, which are usually stored in the truck bay when not in use, and approximately seven ESF employee cars. Truck and van traffic consists of several daily trips by the ESF staff to the main campus. Typical delivery, maintenance and trash removal vehicles already serving the BRC also serve the ESF. Occasional traffic associated with training and meetings is also expected.

A security fence has been constructed around the ESF with access through a remote operated, automatic gate as well as a locked, manually operated gate. Exterior lighting has been installed for security and safety purposes.

The ESF site is elevated above the surrounding area. The entire site is pitched to drain into a moat along the Southern and Western sides to control runoff from the area and prevent run-on from outside the site. There is a subsurface drainage system outside along the north side of the building, adjacent to the waste storage rooms, to divert rain and snow water away from the ESF and into the moat.

Topographic maps of the site, ESF construction plans, a letter from the Vermont Agency of Natural Resources stating that the site is not within the 100-year flood plain and a wind rose are included as Attachments B-1, B-2, B-3, and B-4, respectively.

Description of the Environmental Safety Facility

The ESF consists of the site contained within a 6 foot chain-link fence that includes a 9,000 square foot main building; and a 59 square foot, prefabricated steel, Reactives Storage Building. Both buildings and all areas within the fence-line are considered the ESF and are managed in accordance with this permit.

The main building is constructed of non-combustible concrete block with a concrete floor slab on grade. It has 9000 sq. ft. of floor area on two levels. The building includes offices for the ESF staff, a QA/QC laboratory, loading dock, truck bay, work area, chemical storage rooms, a chemical distribution and exchange room, restroom, locker room and shower, storage, mechanical spaces, and corridors.

The restroom, shower, laboratory sink, and workroom sink are connected to the South Burlington public sewer system. There are no floor drains in the hazardous waste storage areas of the ESF. Hazardous chemicals are not discharged into the sanitary sewer system.

The ESF alarm systems include fire detection, sprinkler flow, and intruder alarms. The entire ESF is protected by a wet sprinkler system connected to the Champlain Water District water main. The alarm systems are supervised twenty-four hours a day by the UVM's Physical Plant and Police Services Departments at a central monitoring station on the main campus. All lights, switches, fans, and other electrical devices, in the areas where hazardous wastes are stored, are intrinsically safe, to guard against fire or explosion.

The Reactives Storage Building is located approximately 40 feet from the main building. The back of the Reactives Storage Building is approximately 5 feet from the 6 foot high, chain-link, perimeter fence, which borders on 200 feet of unused marsh area owned by UVM. It is used to store water reactive, air reactive, poly-nitrated compounds, and other reactive materials.

All hazardous wastes are stored inside either the ESF main building or the Reactives Storage Building.

Description of the Interior Spaces

Offices

The offices have fluorescent lighting and positive ventilation with respect to the rest of the building.

Laboratory

The laboratory is well lighted. A 6-foot chemical fume hood is located on one wall. There is a sink with connection to the sanitary sewer and a drench hose style eyewash. Limited quality assurance testing may be conducted in the fume hood. Office work area is also provided in the laboratory.

Work Area
This area is well lighted with explosion proof lighting. This area has a sink with a connection to the sanitary sewer, a safety shower/eyewash, and a pouring station to consolidate waste chemicals into bulk containers. The pouring station includes three stations with snorkel ventilation and an ABC, dry-chemical fire system.

Loading Dock
This area is located at the end of the truck bay and has easy access to the work area. The area includes a dock leveler, capable of serving all types of vehicles servicing the ESF, and a door from the truck bay for driver access. A containment sump is located below the dock leveler to contain a spill if one should occur at this transfer point.

Chemical Distribution and Exchange Room
This room is used to store stock chemicals for academic teaching labs and other campus users, and to store pre-owned chemicals for redistribution to campus users. It is well lighted with explosion proof lighting and equipped with explosion proof electrical outlets. Managing the distribution of stock chemicals and pre-owned chemicals is one part of UVM's waste minimization and toxics use reduction efforts required by law. Only non-waste chemicals are stored in this room.

Truck Bay
The truck bay is a fully-enclosed, roofed garage area with a concrete paved surface large enough to receive a 60 ft. long semi-tractor trailer. A 12-foot wide automatic overhead door serves as the entrance into the truck bay from the outside of the building. The truck bay serves as a garage for the ESF hazardous waste transportation box truck and other vehicles, as needed.

Waste Storage Areas - Main Building
The ESF has nine waste storage areas in the main building, each room measures approximately 21.5 feet by 8.5 feet and is designed to store up to twenty (20), 55-gallon drums or the equivalent capacity in variable sized containers. Only compatible materials are stored together in each room.

There are two separate ventilation systems; one for the four storage rooms on the West and the other for the five storage rooms on the East. Each room is ventilated above and below the floor grate to prevent a buildup of any fumes.

An access door from inside the building opens from the direction of egress out of each area. An emergency exit opening directly outside the building is located in each chamber.

The floors are constructed of epoxy coated fiberglass grate to allow any spilled material to fall into a ventilated sump area. The floor grates are removable. The capacity of the sump in each room is equal to the volume of all the drums (20 x 55 gallons =1,100 gallons) plus 20 minutes of fire sprinkler flow. The threshold at the emergency exit door of each room is 8 inches higher than the door into the building so in the event of a catastrophic release, the materials would overflow

into the building instead of to the exterior. Each sump measures approximately 21.5 feet by 8.5 feet (same footprint as the storage room) by 2 feet in depth. The floor and walls of each sump are constructed of epoxy-coated concrete; the joints are filled with non-shrink grout. The floor of each sump is sloped to the center of the sump/room.

The storage areas are constructed of two hour rated concrete block with one and one-half hour rated doors to meet the building code requirements for Type H (Hazardous) Occupancy rating of this building.

Waste Storage Area – Corridor
This area is well lighted with explosion proof lighting and equipped with three emergency eyewash and shower stations. Two emergency communication phones are located in the corridor. Wastes may be temporarily staged in the corridor in preparation for outbound shipments.

Description of Reactives Storage Building

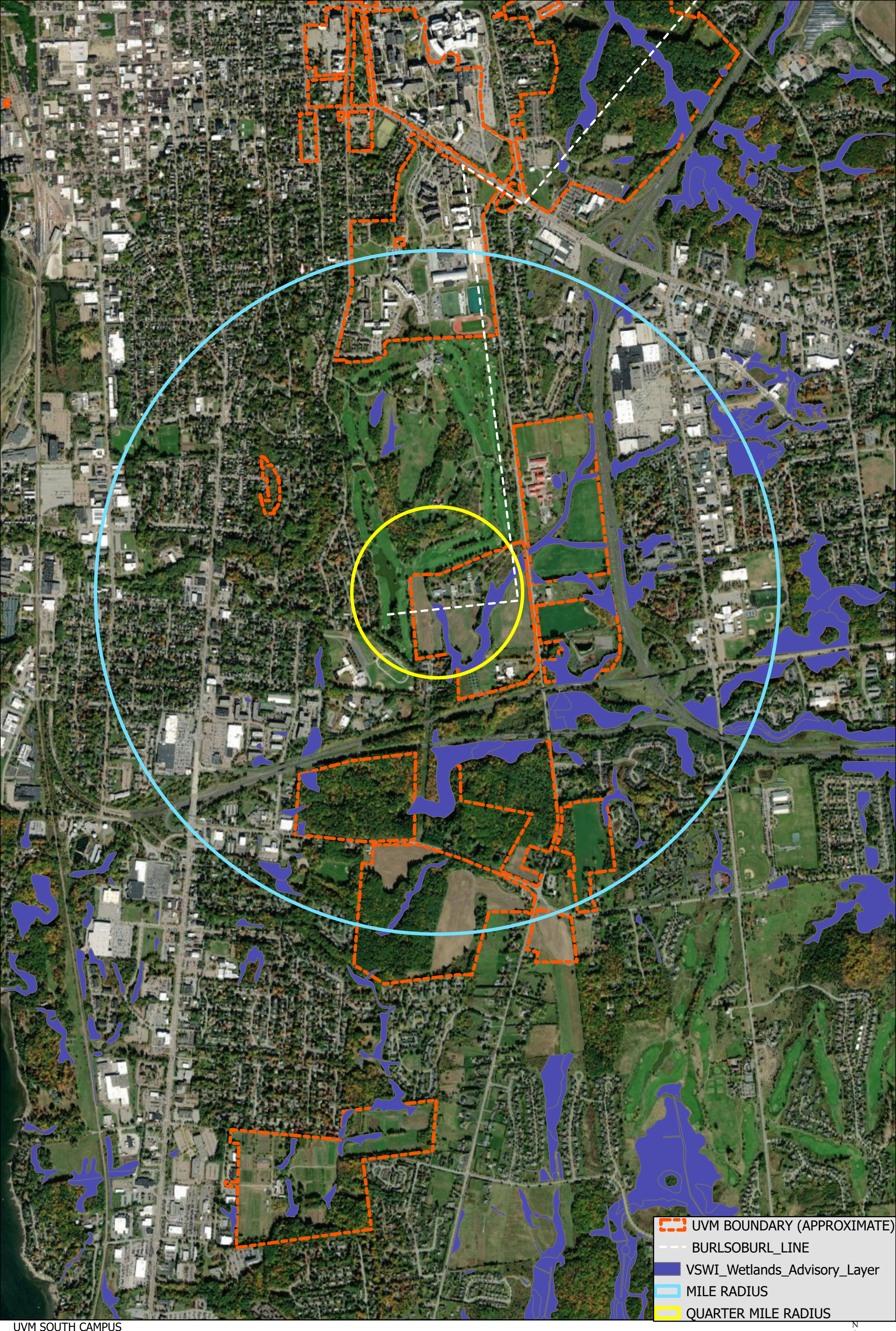
The ESF's reactive materials storage building has one waste storage area designed to store up to twelve (12), 55-gallon drums or the equivalent capacity in variable sized containers. Materials that may ignite, explode, generate toxic gases or otherwise react in a violent manner when in contact with air, water, or other initiating factor will be stored in this area. Each reactive material is contained within its laboratory container and packed within a secondary, DOT-rated shipping container. The Reactives Storage Building itself forms a third container. The building is commercially manufactured with the following safety features:

- Fire resistant wallboard and steel construction;
- Corrosion protected steel;
- UL listed, Group D, Division 1 electromechanical exhaust ventilation system;
- UL listed, Groups C and D, Division 1 lighting and electrical receptacle;
- Pressure release panel on rear wall (releases at 20 psi), safety chained to wall;
- 250-gallon capacity containment sump lined with 20 mils HDPE;
- UL listed and FM approved, Pre-engineered, dry chemical fire suppression system with exterior, audible alarm, fusible link detection for automatic activation and means for manual activation
- Door locked and keyed to ESF key set, explosion relief panel is equipped with security bars;
- Class 1, Groups C & D, Division 1 lighting, fan and electrical outlet; and
- Static grounding system.

The Reactives Storage Building is located 40 feet to the northeast of the main ESF building within the perimeter fence. As shown on maps in attachment B-1, the building is located greater than 15 meters (or greater than 50 feet) from UVM's property line.

Attachment B-1

Orthographic Site Maps



UVM SOUTH CAMPUS
2018 ESRI IMAGERY
Map Produced by UVM Planning, Design, & Construction

Attachment B-2

Environmental Safety Facility
Construction Drawings

CONTACT UVM–DIGSAFE PRIOR TO ANY EXCAVATION AT (802) 656–8344

LEGEND

- FENCE LINE
- 302 EXISTING CONTOUR
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING WATERLINE
- PROPOSED WATERLINE
- HYDRANT
- GATE VALVE
- SANITARY SEWER MANHOLE
- CONCRETE CURB
- DRAINAGE COURSE
- PROPOSED GRADE
- HAYBALE DAM
- EROSION SILT FENCE
- NO.102 MONITOR WELL
- WARNING SIGN MOUNTED ON FENCE
- E,T,G EXIST. ELECTRIC, TEL. OR GAS LINE
- E,T,G NEW ELECTRIC,TEL OR GAS LINE
- EDGE OF WETLAND (W–H–N)
- LP UDERGROUND PROPANE LINE

REMOVE FENCING AND CHICKEN COOPS

EXISTING HORSERING

INV.=301.5 G — G 2" NATURAL GAS (FUTURE) — G

INV.=301.2 G

NEW 12" ACCOMP

MINIMIZE DISTURBANCE WITHIN WETLAND AREAS

EDGE OF NEW PAVEMENT

PROVIDE 4" GAS CONDUIT UNDER THE NEW ROAD

NEW GRAVEL PARKING AREA

EXISTING GRAVEL DRIVE

SM-29

SM-16

CHAIN LINK FENCE

NO.105

TRANSFORMER INSTALLED AS PER PLAN

BOLLARDS SM-24

SM-11

EXTERIOR POLE LIGHT (TYP.)

CONCRETE CURB

REACTIVES STORAGE BUILDING

FIRE LANE

N 42.200

E 50,000

EXISTING PARKING BUMPER

EXISTING SEPTIC TANK

17" SECTION DROP CURB 1" REVEAL

SM-10

SAVE 24" POPLAR

PROPOSED ENVIRONMENTAL SAFETY FACILITY

F.F.ELEV. = 307.6

NEW BITUMINOUS DRIVE

SAVE EXISTING TREES

REMOVE TREES

LARGE ANIMAL FACILITY BUILDING NO.727

NEW MTC

EXISTING TRANSFORMER

CONDENSER PAD

PROVIDE CHECK VALVE FOR BACKFLOW PREVENTION PER MECH. DRAWING

4" CONDUIT FOR GAS INSTALLED AS PER PLAN

SEE AS BUILT 1-15-93

LP TANK FARM

DRAIN LINE FROM TRUCK BAY TRENCH DRAIN INV.=302.27

SM-28

SM-9

SLOPE TO MATCH RAMP

CLEANOUT

RAMP

DEPRESS

4" DUCTILE IRON INV.=300.00

NEW 6" DI WATER SERVICE

REST. RCH OFFICE

ENTOMOLOGY RESEARCH BUILDING NO.723

CONNECT NEW WATER LINE INTO EXISTING LINE SERVING HYDRANT

SM-6

REMOVE EXISTING TREES AS REQUIRED

METAL END SECTION INV.=300.00

EXISTING SEPTIC TANKS

ENTOMOLOGY BUILDING NO.726

GREENHOUSE

NEW 6" SDR 35 PVC

FIRE LANE (SEE DETAIL ON SHEET D-1)

SM-26

SM-4

SM-5

NEW 8" SDR 35 PVC SEWER S=0.005

NEW 12" D WATER MAIN

PROVIDE SEEPAGE COLLAR

DEPRESSED CURB BOLLARDS (TYP.)

NEW GENERATOR ON CONC. PAD SEE ELEC. FOR PAD DETAILS

NO.151

GATE VALVE

CONC. S.W.

LOADING BAY

BUILD NEW INVERTS INTO EXIST. WET WELL (SEE SHT. D-2) 4" IN @ INV. IN=298.07 8" INV. OUT=297.97

THE CONTRACTOR SHALL REMOVE THE PUMPS, FLOATS, AND FORCE MAIN PIPING FROM THE PUMP STATION AND FILL INTERIOR WITH 3500 PSI CONCRETE UP TO PIPE INVERTS. FORM INVERTS IN ACCORDANCE WITH MANHOLE DETAIL ON SHEET D-2.

INV.=300.3

TO M.H. #2 SEE SHEET P-1 FOR CONTINUATION

SM-8

NEW 6" SDR 35 PVC

EDGE OF EXISTING GRAVEL DRIVE

RIPRAP

6" INV.=299.00

CONCRETE SUMP BOTTOM ELEV.= 298.0

GATE VALVE

PROVIDE SEEPAGE COLLAR

NO.102

METAL END SECTION INV.=299.60

SM-12

TBM– TOP OF SURVEY POINT "DOG" = 320.56

MH #1 RIM =302.5 INV. IN = 298.77 INV. OUT= 298.67

BUILDING NO.721

BUILDING NO.722 (NO FUNCTIONAL PLUMBING)

SEE SHEET S-2 FOR PAVING LIMITS AND GRADING OF REMAINING DRIVE AREA

NEW GRAVEL PARKING AREA

REMOVE MANURE PILE

MOVE EXISTING BARN CLEANER TO SOUTH SIDE OF BLD. NO.721

EXISTING BARN CLEANER TO REMAIN

CONNECT INTO EXISTING SEWER PIPING WITHIN 2' OF EXTERIOR WALL

CLEANOUT

NEW 4" SDR 35 PVC SEWER MIN. S=1/8"/FT

EXISTING PIPE TO BE ABANDONED

ABANDON EXISTING SEPTIC TANK AND SEWAGE DISPOSAL SYSTEM

TOPSOIL STOCKPILE

EXISTING DRAINAGE SWALE

GRASS SWALE

NO. 103

NO.104

CITY OF BURLINGTON
CITY OF SOUTH BURLINGTON

CITY MONUMENT

SEE SHEET L-1 FOR LANDSCAPING DETAILS

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NOTES: TOPOGRAPHIC INFORMATION SHOWN WAS PROVIDED BY THE UNIVERSITY OF VERMONT FROM WORK PERFORMED BY HARRIS ABBOTT AND TERRY HARRIS.

PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL EXCAVATE TEST PITS TO DETERMINE LOCATION AND ELEVATION OF EXISTING WATER MAINS AND STORM PIPES AT ROAD CROSSING .

REGISTERED PROFESSIONAL ENGINEER — KENNETH M. STONE No. 3252 REGISTERED

date	revision	by
5-19/93	GENERAL	BJT
5-13-93	ADDED SM-3-5,8-12,15,18,19,23-26, & 29	MBW/DJG
4-7-93	REVISED HYDRANT AND WATER SERVICE LOCATION, REVISED BLDG. #721 SEWER SERVICE, ADDED CLEANOUT	DJG
9-15-92	ADDED CHECK VALVE ON WATER SERVICE	DJG
8-20-92	revision GENERAL REVISIONS	DJG

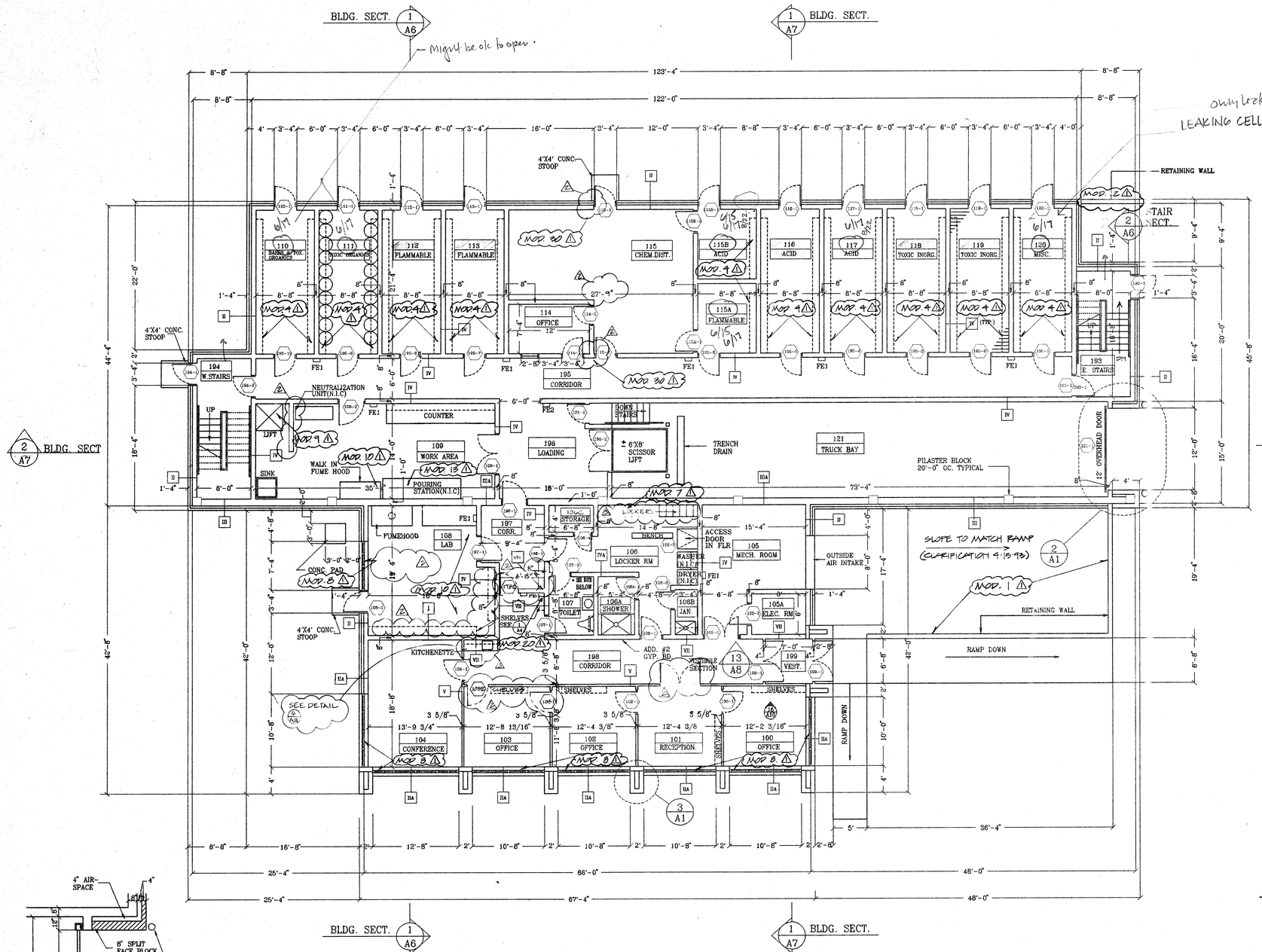
REVISIONS
NO. DATE
1 AS BUILT JDL

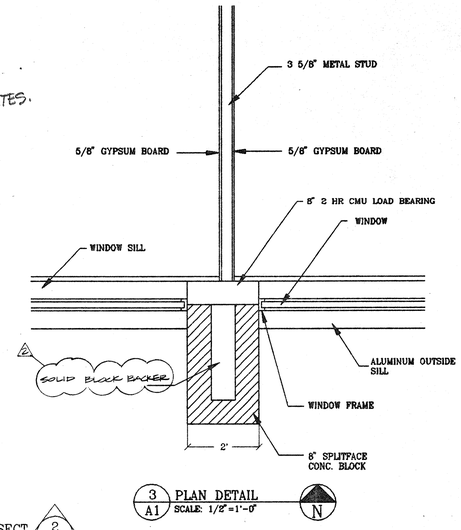
UNIVERSITY OF VERMONT
ENVIRONMENTAL SAFETY FACILITY
SPEAR STREET, BURLINGTON, VT.

SITE PLAN

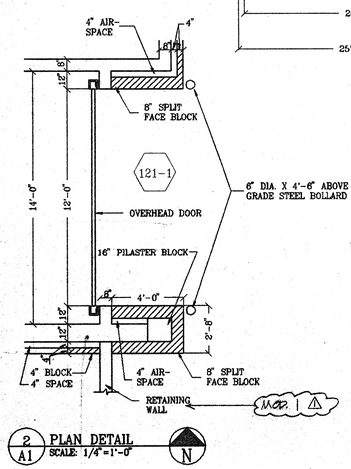
proj. no.	90-41
survey	UVM/AWH
design	DJG
drawn	DJG/LHA
checked	KMS
date	12-1-92
scale	1"=20'
dwg. no.	S-1

LAMOUREUX & STONE
14 Morse Drive
Essex Junction, Vermont 05452
(802) 878-4450
Consulting Engineers Inc.





3/A1 PLAN DETAIL
SCALE: 1/2"=1'-0"



2/A1 PLAN DETAIL
SCALE: 1/4"=1'-0"

1/A1 FIRST LEVEL FLOOR PLAN

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

NOTES AND LEGEND:

* URINAL AND SCREEN DELETED BY ADDENDUM

SEE A4 FOR 1/4"=1'-0" SCALE PLAN OF ROOMS AND STAIRS ON THIS LEVEL

FE1 FIRE EXTINGUISHER- CLASS 4A: 40 BC-DRY CHEMICAL

FE2 FIRE EXTINGUISHER- CLASS D: METAL FIRES — MOD-41

DOOR NUMBERS

SHELVES AND STANDARDS- (FOR SHELF AND HARDWARE SPECIFICATION AND SHELVES IN ROOM 100, 101, 102, 103 SEE: 16/A10

CODE CLASSIFICATIONS CONTINUED	FIRST LEVEL : ± 9000 S.F. SECOND LEVEL: ± 5025 S.F. (MEZZ.) WORK AREA: 109 & STORAGE 201 TO HAVE 1 HR. FIRE RATING DUE TO LIFT OPENING.

WALL TYPES LEGEND & SCHEDULE

(REFER TO DWG A2 & A4 ALSO)

SYMBOL	CONSTRUCTION DESCRIPTION	HEIGHT	DETAIL
I	8" THICK 2 HR CMU LOAD BEARING	TO BAR JOIST ROOF STRUCT.	1/A6
II	8" THICK 2 HR CMU INNER WYETH LOAD BEARING WITH 4" INSULATED AIR SPACE & 4" EXTERIOR CMU	TO BAR JOIST ROOF STRUCT.	1/A6
IIA	8" THICK 2 HR CMU INNER WYETH LOAD BEARING WITH 4" INSUL. AIR SPACE & 4" EXTERIOR CMU FUR INSIDE OF EXTERIOR WALLS WITH 1 1/2" CHANNELS AT 24" O.C WITH 1 1/2" POLYSTYRENE INSUL. & 5/8" TYPE X GYP. BD. TO CEILING HGT. IN ROOMS 100,101,102,103&104 PER ADDENDUM #2	TO BAR JOIST ROOF STRUCT.	16/A8
III	12" THICK 2 HR CMU INNER WYETH LOAD BEARING WITH 16" PILASTER BLOCKS, 4" INSUL. AIR SPACE & 4" EXTERIOR CMU	TO BAR JOIST ROOF STRUCT.	3/A6
IIIA	12" THICK 2 HR CMU WITH 16" PILASTER BLOCKS	TO BAR JOIST ROOF STRUCT.	4/A6
IV	8" THICK 2 HR CMU LOAD BEARING&NONLOAD BEARING	TO UNDERSIDE OF SLAB OR EVEN BLOCK TO GYP. BD. CEILING	1/A6
IVA	8" THICK 2 HR CMU NONLOAD BEARING	TO EVEN BLOCK COURSE ABOVE SUSP. CEILING	1/A2
V	3 5/8" 20 GAUGE METAL STUDS 16" O.C. WITH 1 LAYER 5/8" FIRERATED GYPSUM BOARD BOTH SIDES. INSULATE WITH SOUND ATTENUATION BLANKETS REFER TO NOTE BELOW	TO GYPSUM BOARD AT BAR JOISTS	1/A7
VI	3 5/8" 20 GAUGE METAL STUDS-16" O.C. WITH 1 LAYER 5/8" FIRERATED GYPSUM BOARD BOTH SIDES	TO GYPSUM BOARD AT BAR JOISTS	1/A6
VII	8" THICK 2 HR CMU LOAD BEARING & NON-LOADBEARING WITH 7/8" FURRING CHANNELS 16" O.C VERTICALLY WITH 1 LAYER OF 5/8" TYPE X GYP. BD. WALLS IN CORRIDOR 198 AND NORTH WALL OF VESTIBULE 199 PER ADDENDUM #2	TO 8 FT. AFF.	

NOTE: INSTALL A 3 1/2" X 8'-0" FIRE RETARDANT STUD INSIDE EACH METAL STUD ON WALLS SCHEDULED TO RECEIVE SHELVES. INSTALL RESILIENT CHANNEL 16" O.C. HORIZONTALLY ON THE EAST SIDE AND NORTHSIDE OF WALLS. CAULK TOP AND BOTTOM OF GYPSUM BOARD.

BUILDING CODE INFORMATION BLOCK

APPLICABLE CODES	1988 VERMONT FIRE PREVENTION AND BUILDING SAFETY CODE AS ACCEPTED BY THE CITY OF BURLINGTON, VERMONT INCLUDING 1987 BOCA BASIC BUILDING CODE AND 1988 BOCA SUPPLEMENT NFPA 101-LIFE SAFETY CODE ALL OTHER CODES REFERENCED IN THE STATE CODE
CODE ENFORCEMENT	CITY OF BURLINGTON DEPARTMENT OF PUBLIC WORKS, INSPECTION SERVICES DIVISION 33 KILBURN STREET P.O. BOX 849 BURLINGTON, VERMONT 05402 (802)863-9094
PERMIT REQUIREMENTS	THE CONTRACTOR SHALL BE RESPONSIBLE TO PAY FOR & SECURE FOR THE OWNER; ALL BUILDING, MECHANICAL, PLUMBING, AND ELECTRICAL PERMITS REQUIRED. COPIES OF THESE PERMITS SHALL BE DELIVERED TO THE OWNER BEFORE WORK BEGINS.
CODE CLASSIFICATIONS (HPE CLARIFICATION 4-15-93)	OCCUPANCY: H-HAZARDOUS CONSTRUCTION: TYPE 2A PROTECTED CORRIDORS: 1 HR EXIT ACCESS CORRIDORS STAIRWAYS: 2 HR ENCLOSURE CHEMICAL STORAGE ROOMS: 2 HR WALLS & CEILING (ROOMS 110 THROUGH 120 EXCEPT RM 114 CLARIFICATION 12/23/92) TRUCKBAY: 1 HR RATED WALLS AND ROOF (CLARIFICATION 12/23/92) ROOF: 1 HR (U.L. ASSEMBLY P230)(CLARIFICATION 12/23/92)

UNIVERSITY OF VERMONT
ARCHITECTURAL & ENGINEERING SERVICES
109 SOUTH PROSPECT STREET
BURLINGTON, VERMONT 05405-0016
TELEPHONE (802)656-3291

REGISTERED ARCHITECT ROBERT B. HOLDRIDGE NO. 261 STATE OF VERMONT

CONSULTANTS

LAMOUREUX AND STONE
CONSULTING ENGINEERS INC.
14 MORSE DRIVE
ESSEX JUNCTION, VERMONT 05452
(802)878-4450

CHAMPLAIN CONSULTING ENGINEERS P.C.
128 PRIM ROAD SUITE 1D
COLCHESTER, VERMONT 05446
(802)863-8060

HALLAM ASSOCIATES, P.C.
99 SWIFT STREET
SO. BURLINGTON, VERMONT 05403
(802)658-4891

WAGNER, HEINDEL & NOYES INC.
CONSULTING GEOLOGISTS
P.O. BOX 1629
BURLINGTON, VERMONT 05402
(802)658-0820

WILLIAM SCOTT, P.E.
345 US ROUTE 2
GRAND ISLE, VERMONT 05458
(802)372-5588

PROJECT

ENVIRONMENTAL SAFETY FACILITY
667 SPEAR STREET
BUILDING 728

PROJECT NO. ENSF89020
SCALE: 1/8" = 1'-0"
DRAWN BY CRF
CHECKED BY KB
DATE: 12-01-92

REVISIONS

DATE	BY	DESCRIPTION
12/23/92	CRF	ADDENDUM CHANGES
4/15/93	JRP	MODIFICATIONS 1
6/24/94	JRP	AS BUILTS 2
7/15/94	JDL	AS BUILTS 3

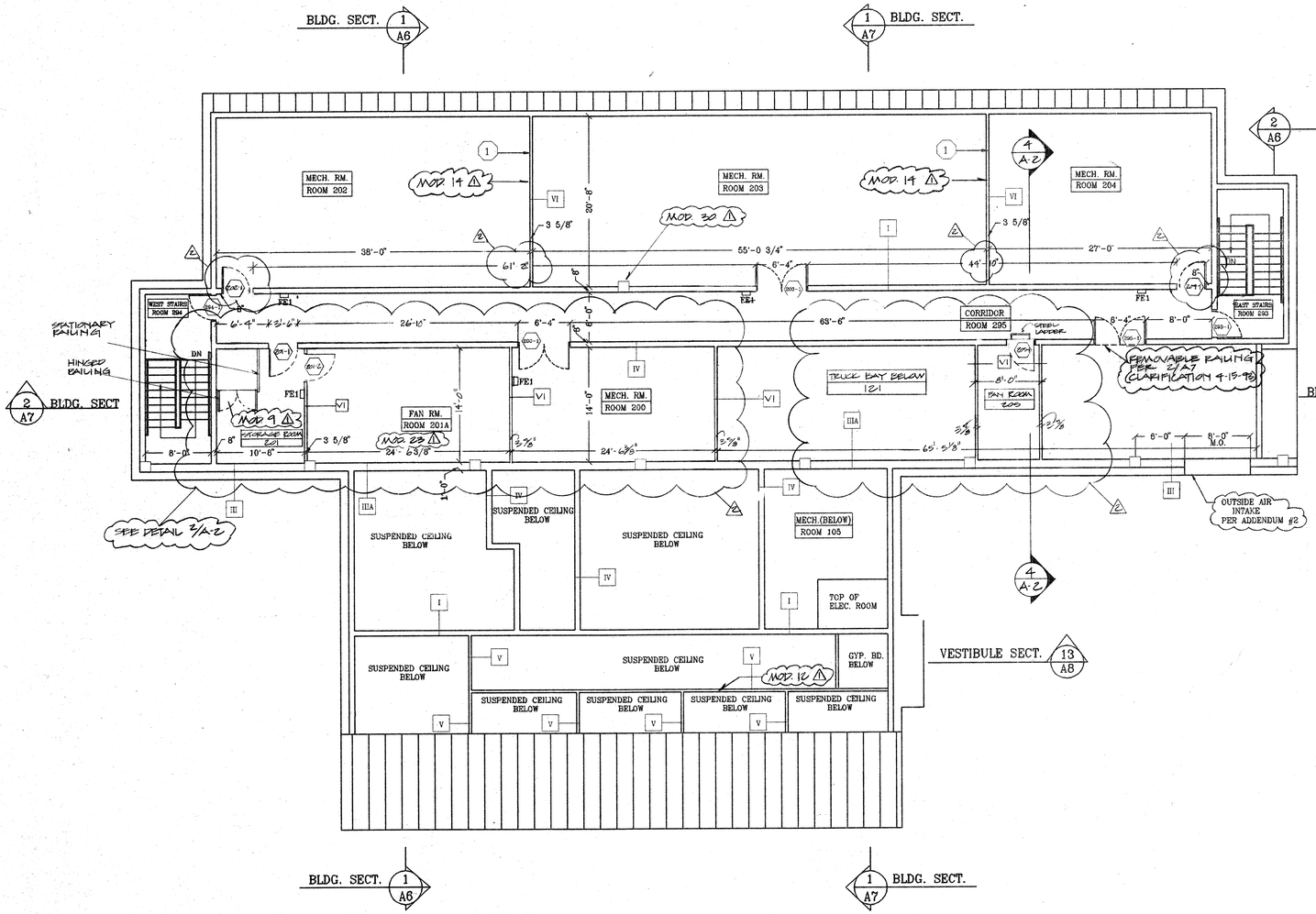
DRAWING TITLE

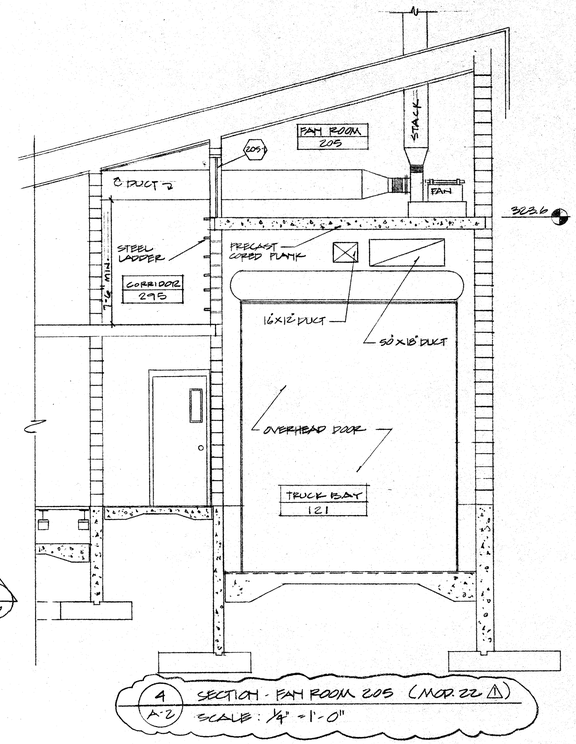
FIRST LEVEL FLOOR PLAN

DRAWING NO.

A1

CONSTRUCTION SET





4 A-2 SECTION - FAN ROOM 205 (MOD. 22)
SCALE: 1/8" = 1'-0"

1 A2 SECOND LEVEL FLOOR PLAN
SCALE: 1/8" = 1'-0"

N

NOTE (1): VERIFY ACTUAL LOCATION OF WALLS IN THE FIELD, TO COORDINATE WITH HVAC CONTRACTOR

SEE DRAWING A1 FOR FIRE EXTINGUISHERS

UNIVERSITY OF VERMONT
ARCHITECTURAL & ENGINEERING SERVICES
109 SOUTH PROSPECT STREET
BURLINGTON, VERMONT 05405-0016
TELEPHONE (802)656-3291

REGISTERED ARCHITECT ROBERT B. HOLDRIDGE NO. 923 STATE OF VERMONT

CONSULTANTS

LAMOUREUX AND STONE
CONSULTING ENGINEERS INC.
14 MORSE DRIVE
ESSEX JUNCTION, VERMONT 05452
(802)878-4450

CHAMPLAIN CONSULTING ENGINEERS P.C.
128 PRIM ROAD SUITE 1D
COLCHESTER, VERMONT 05446
(802)863-8060

HALLAM ASSOCIATES, P.C.
99 SWIFT STREET
SO. BURLINGTON, VERMONT 05403
(802)658-4891

WAGNER, HEINDEL & NOYES INC.
CONSULTING GEOLOGISTS
P.O. BOX 1629
BURLINGTON, VERMONT 05402
(802)658-0820

WILLIAM SCOTT, P.E.
345 US ROUTE 2
GRAND ISLE, VERMONT 05458
(802)372-5588

PROJECT

ENVIRONMENTAL SAFETY FACILITY
667 SPEAR STREET
BUILDING 728

PROJECT NO. ENSF89020
SCALE: 1/8" = 1'-0"
DRAWN BY CRF
CHECKED BY KB
DATE: 12-01-92

REVISIONS

DATE	BY	DESCRIPTION
12/22/92	CRF	ADDENDUM CHANGES
1/19/93	JRP	MODIFICATIONS 1
6/30/94	JRP	AS BUILTS 2

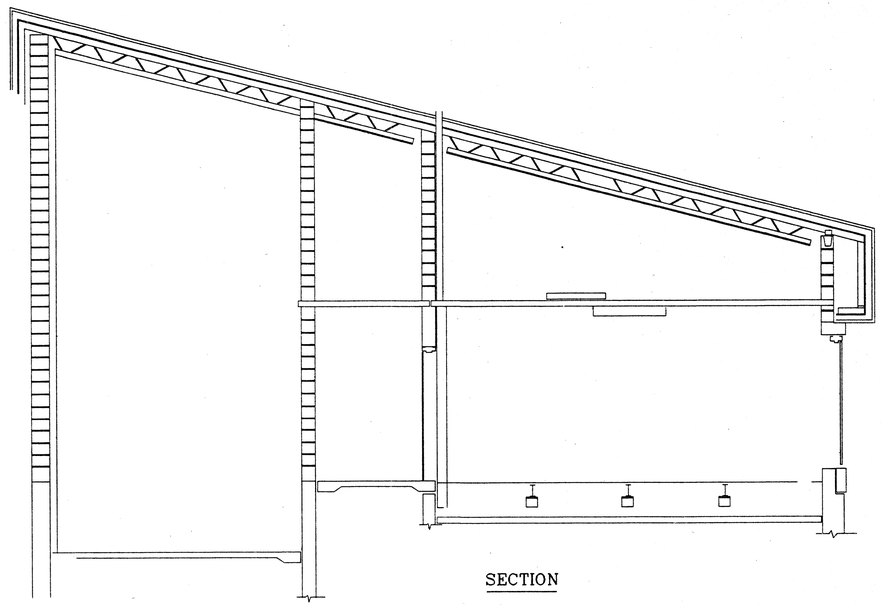
DRAWING TITLE

SECOND LEVEL FLOOR PLAN

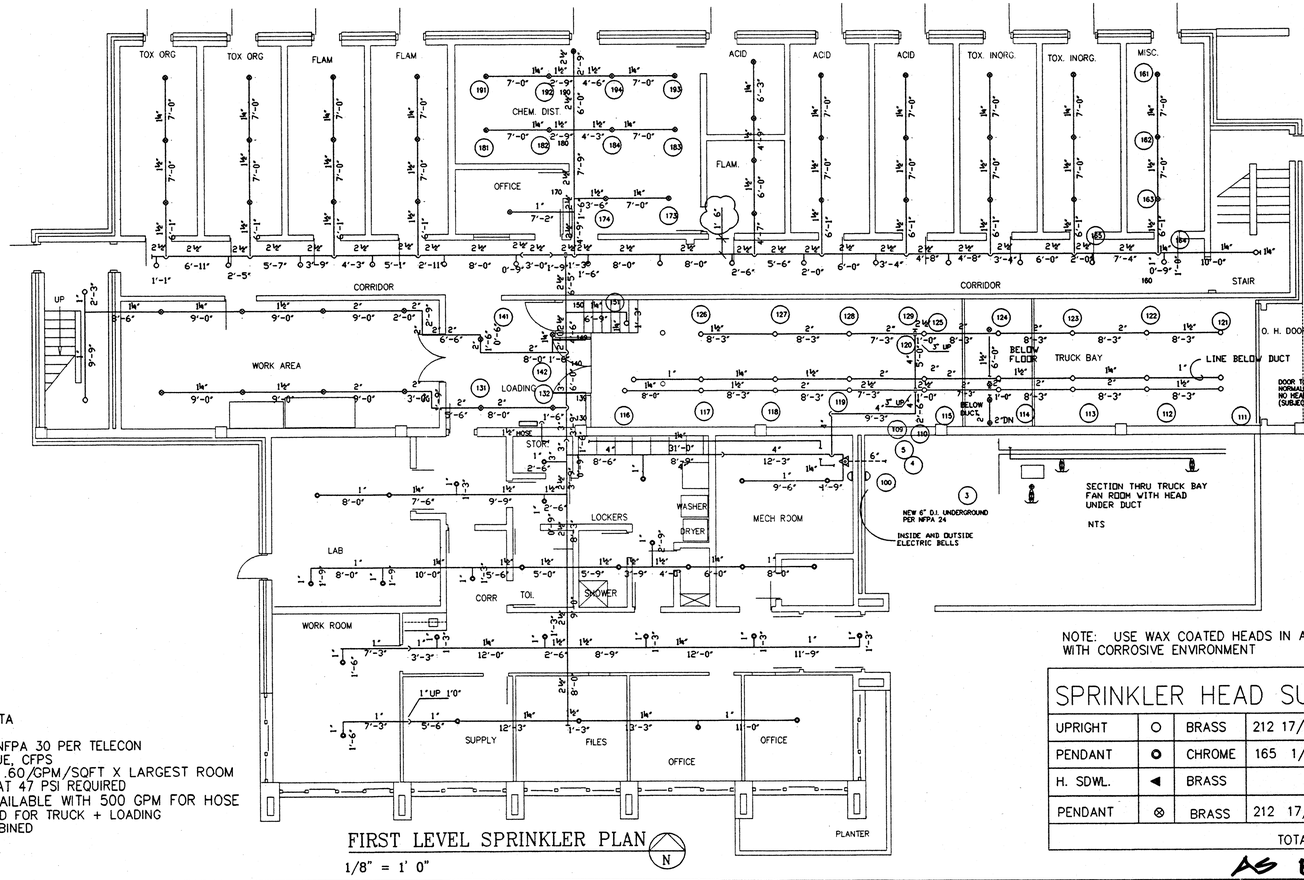
DRAWING NO.

A2

CONSTRUCTION SET

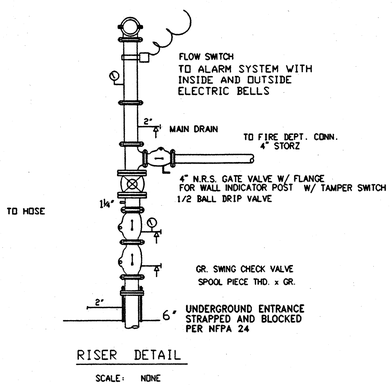


SECTION



FIRST LEVEL SPRINKLER PLAN

1/8" = 1' 0"



RISER DETAIL

SCALE: NONE

NOTES:

1. ALL MATERIALS SHALL BE U.L./F.M. APPROVED.
2. BRANCH LINE PIPING 1" TO 2" SHALL BE SCHEDULE 40 BLACK STEEL.
3. MAIN PIPING 2 1/2" AND LARGER SHALL BE SCHEDULE 10.
4. ALL PIPE AND FITTINGS PER NFPA 13.
5. ALL HANGERS PER NFPA 13, GENERALLY 3/8" CONCRETE INSERTS / C CLAMPS 3/8" THREADED ROD AND LOOP TYPE HANGERS.

DEMAND DATA

BASED ON NFPA 30 PER TELECON
TED SPRAGUE, CFPS
DENSITY: .60/GPM/SQFT X LARGEST ROOM
1360 GPM AT 47 PSI REQUIRED
53 PSI AVAILABLE WITH 500 GPM FOR HOSE
MAX DEMAND FOR TRUCK + LOADING
AREAS COMBINED

NOTE: USE WAX COATED HEADS IN AREAS WITH CORROSIVE ENVIRONMENT

SPRINKLER HEAD SUMMARY				
UPRIGHT	○	BRASS	212 17/32"	41
PENDANT	●	CHROME	165 1/2"	28
H. SDWL.	◀	BRASS		0
PENDANT	⊗	BRASS	212 17/32"	58
			TOTAL	127

AS BUILT

STATE OF VERMONT
WILLIAM R. SCOTT
No. 3821
PROFESSIONAL ENGINEER

NORTH COUNTRY FIRE PROTECTION
P.O. BOX 2004
COLCHESTER, VERMONT 05449
(802)878-6594

Consultants
HALLAM ASSOCIATES, P.C.
99 SWIFT STREET
SOUTH BURLINGTON, VERMONT 05403

Fire Protection
WILLIAM R. SCOTT, P.E.
CONSULTING ENGINEER
345 U.S. ROUTE 2
GRAND ISLE, VERMONT 05458
(802) 372-5588

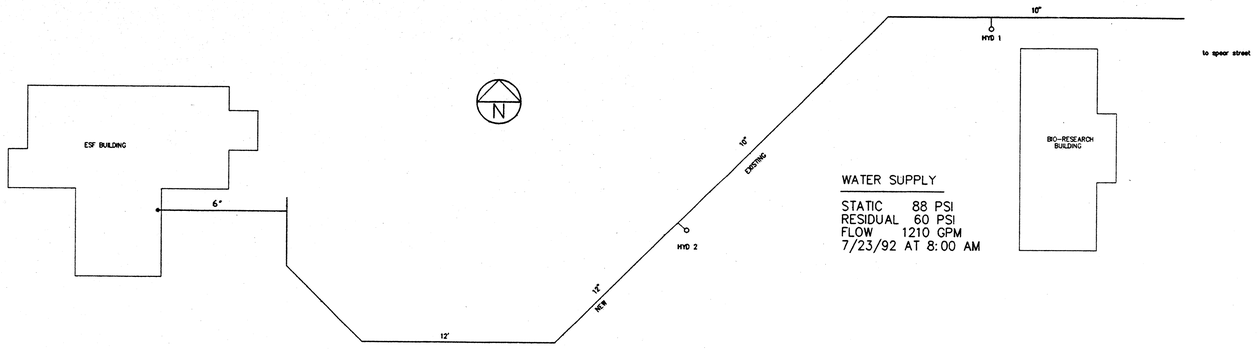
Project
ENVIRONMENTAL SAFETY FACILITY AT UVM BURLINGTON, VT

Project No. 1818
Scale AS SHOWN
Drawn by WRS
Checked by
Date 12-10-92

Revisions No.	Date	
1	12/30	ADD 4HDS BELOW DUCT
		1 1/4" OUTLET FOR HOSE
2	4/23	MOD 22 - ADD TWO HEADS
3	7/1	COORD MAIN LOCATION
4	11/1	AS BUILT

Drawing Title
FIRE PROTECTION SPRINKLER

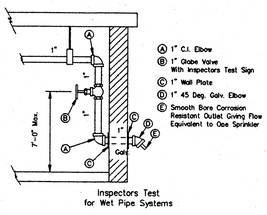
Drawing No.
FP-1



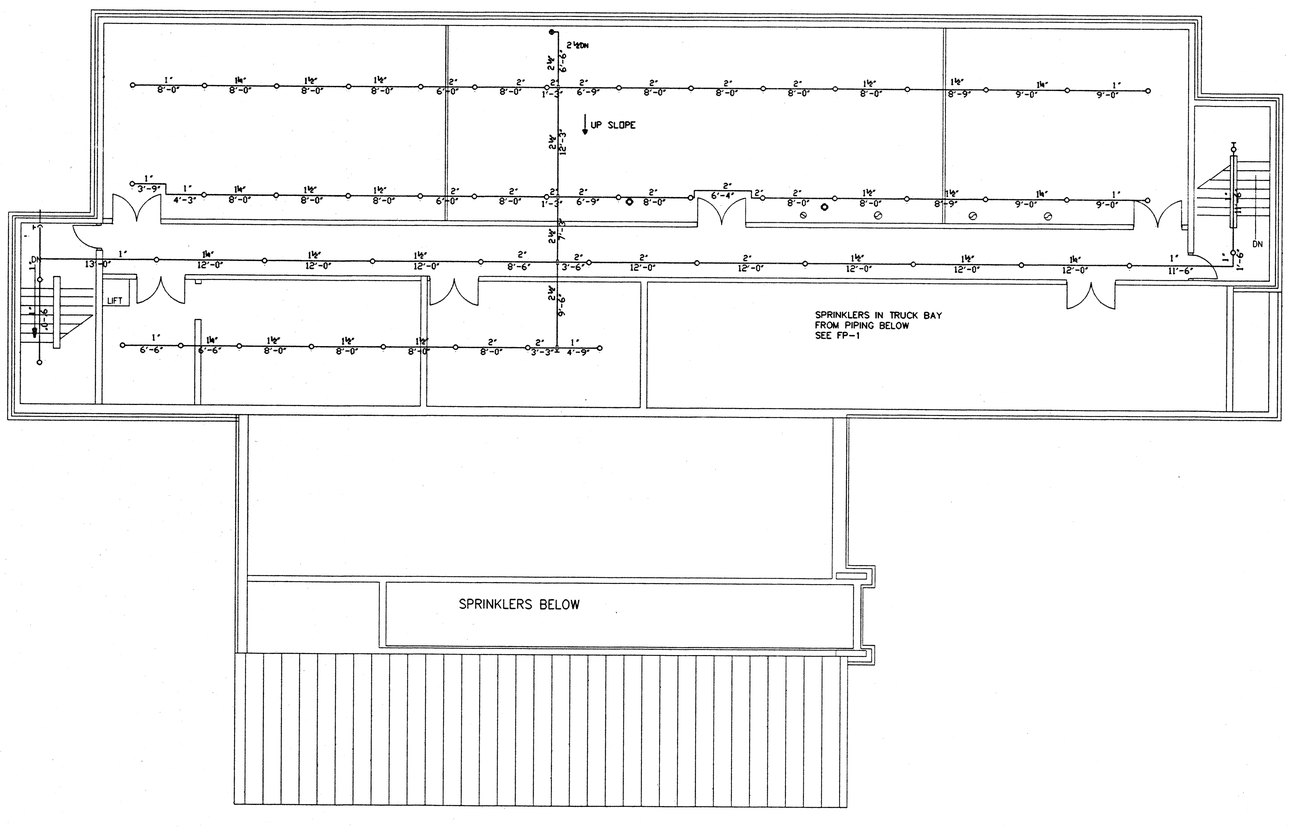
WATER SUPPLY

STATIC 88 PSI
RESIDUAL 60 PSI
FLOW 1210 GPM
7/23/92 AT 8:00 AM

SITE PLAN
NTS



Inspectors Test
for Wet Pipe Systems



SECOND FLOOR SPRINKLER PLAN
SCALE: 1/8" = 1'-0"

DESIGN DATA

ORDINARY HAZARD GROUP 1
.15 GPM/SQFT X 1500 SQFT
821 GPM AT 35 PSI REQ'D
74 PSI AVAILABLE
INCLUDES 500 GPM HOSE

SPRINKLER HEAD SUMMARY

UPRIGHT	○	BRASS	212 1/2"	50
PENDANT	◘	CHROME		0
H. SDWL.	◁	BRASS		0
			TOTAL	50

AS BUILT

STATE OF VERMONT
WILLIAM R. SCOTT
No. 3821
PROFESSIONAL ENGINEER

NORTH COUNTRY FIRE PROTECTION
P.O. BOX 2004
COLCHESTER, VERMONT 05449
(802)878-6594

Consultants
HALLAM ASSOCIATES, P.C.
99 SWIFT STREET
SOUTH BURLINGTON, VERMONT 05403

Fire Protection
WILLIAM R. SCOTT, P.E.
CONSULTING ENGINEER
345 U.S. ROUTE 2
GRAND ISLE, VERMONT 05458
(802) 372-5588

Project
ENVIRONMENTAL SAFETY FACILITY AT UVM
BURLINGTON, VT

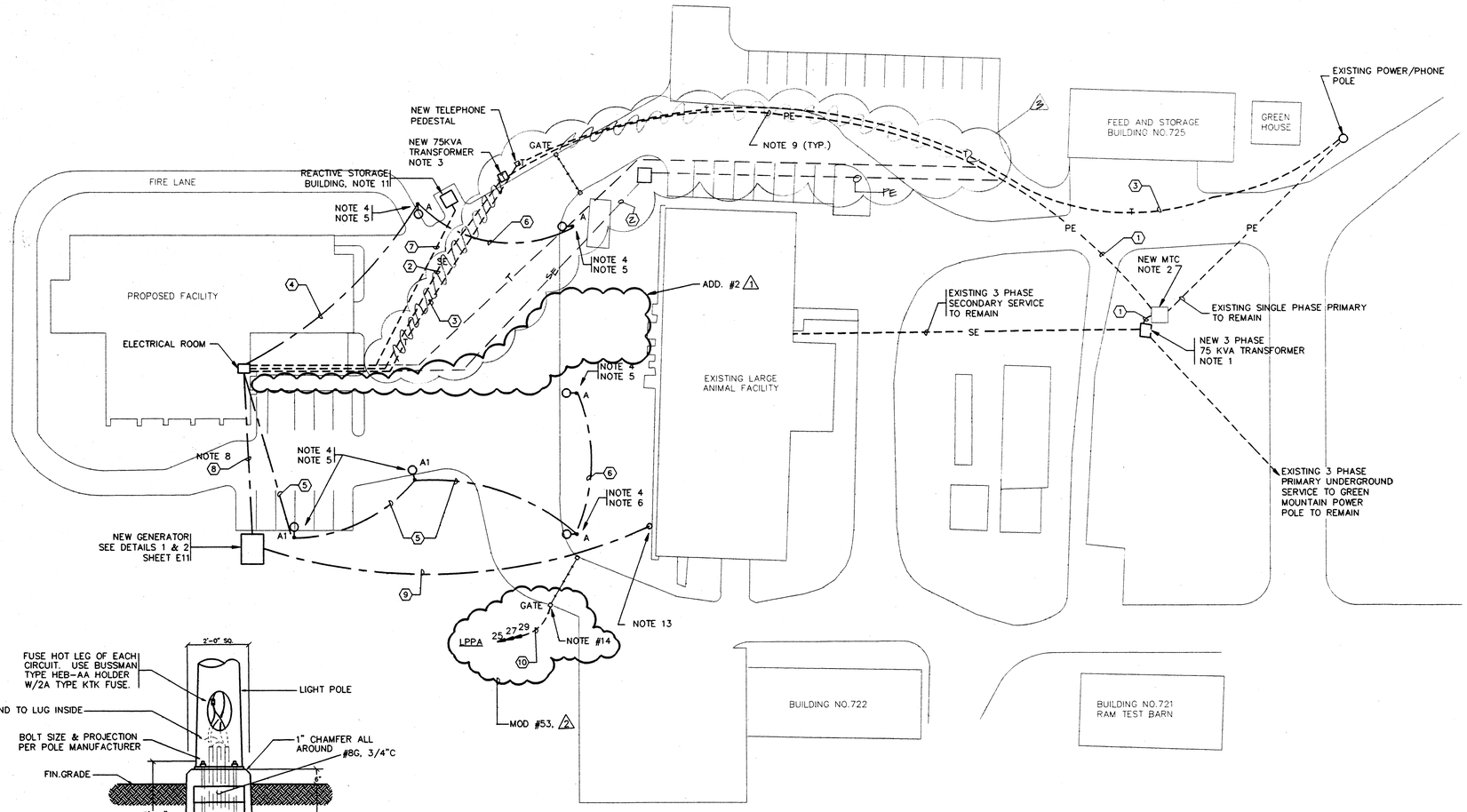
Project No. 1818
Scale AS SHOWN
Drawn by WRS
Checked by
Date 12-10-92

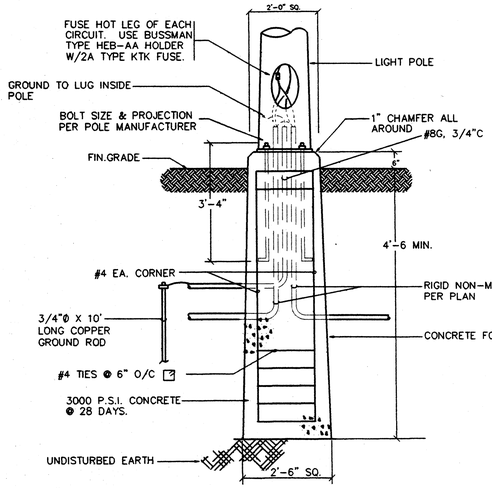
Revisions

No.	Date	
1	12/30	INSP TST - LESS BHDS TRUCK BAY
2	4/23	MOD 18
3	7/1	COORD MTG/INSP TEST,RISER
4	11/1	AS BUILTS

Drawing Title
FIRE PROTECTION SPRINKLER

Drawing No.
FP-2





LIGHT POLE BASE DETAIL
NO SCALE — A / E1

ELECTRICAL SITE PLAN
SCALE: 1" = 30'-0"

CONDUIT AND CABLE SCHEDULE

1. (2) 5"C (PRIMARY POWER)
2. SECONDARY POWER
3. (1) 4"C (TELEPHONE)
4. (2) #8, (1) #8G, 1"C
5. (4) #8, (1) #8G, 1"C
6. (2) #10, (1) #10G, 3/4"C
7. (1) 2"C (POWER),(1) 1 1/2"C (CONTROL), (1) 1"C CONTROL
8. (4) #1/0, (1)#6G, 2"C; (2)#10, (1)#10G, 3/4"C; (2) #14, (1)#14G, 3/4"C
9. (1) 3"C, (1) 1"C (FUTURE)
10. (3) #12, (1) #12G, 1/2"C
11. (2)#10, (1)#10G, 1/2"C

NOTES: (• = GENERAL NOTES)

1) EXISTING TRANSFORMER TO BE REPLACED WITH NEW 75KVA, 3 PHASE, 13,800 VAC PRIMARY DELTA– 120/208 VAC SECONDARY DEADFRONT, FEED THROUGH TRANSFORMER. REUSE EXISTING CONCRETE TRANFORMER PAD AND WELL. SEE SPECIFICATION FOR DETAILS.
2) NEW MTC TO BE INSTALLED IN PRIMARY SERVICE SYSTEM. LOCATE IN EXISTING 1 PHASE PRIMARY, SEE BLOCK DIAGRAM DETAIL 1 SHEET E9. FURNISH AND INSTALL NEW CONCRETE TRANSFORMER BASE, SEE DETAIL 2 SHEET E9.
3) NEW 75KVA, 3 PHASE, 13,800 VAC PRIMARY DELTA– 120/208 VAC SECONDARY, DEADFRONT, FEED THROUGH TRANSFORMER. SEE SPECIFICATION FOR DETAILS FURNISH AND INSTALL NEW CONCRETE TRANSFORMER BASE, SEE DETAIL 2 SHEET E9.
4) LIGHTING CONTROLLED FROM LIGHTING CONTACTOR LOCATED IN ELECTRICAL ROOM. SEE DETAIL 3 SHEET E9.
5) LIGHT FIXTURE POWERED FROM LIGHTING CONTACTOR C–1.
6) LIGHT FIXTURE POWERED FROM LIGHTING CONTACTOR C–2.
• 7) USE LONG RADIUS BENDS ON ALL UNDERGROUND CONDUIT RUNS.
• 8) SEE GENERATOR BLOCK DIAGRAM DETAIL 2, SHEET E11.
• 9) PORTIONS OF PRIMARY UNDERGROUND LOCATED UNDER PAVED AREA SHALL BE ENCASED IN CONCRETE, SEE DETAIL 5, SHEET E9.
• 10) SEE DETAIL 4 SHEET E9 FOR UNDERGROUND TRENCH DETAIL.
11) FIELD COORDINATE CONDUIT TERMINATION AT REACTIVE STORAGE BUILDING.
• 12) CONTRACTOR TO CARRY PRICE FOR INSTALLATION OF INTERCOM CONDUIT SYSTEM. REFER TO BID FORMS AND INSTRUCTIONS. INTERCOM SYSTEM COMPONENTS (ie. HANDSETS, SPEAKERS, TELEPHONE INTERFACE MODULES) ARE NOT PART OF THIS CONTRACT.
13) STUB CONDUIT 2' ABOVE FINISHED GRADE AND CAP.
14) STUB UP CONDUIT AND CABLE TO NEW ELECTRICALLY OPERATED GATE. — MOD #53, 2

LEGEND (REFER TO SPECIFICATIONS)

- PC — PHOTOCELL
- TC — TIME CLOCK
- P — PUSH BUTTON
- BMCP — BUILDING MANAGEMENT CONTROL PANEL
- LDCP — LEAK DETECTION CONTROL PANEL
- COMBINATION MOTOR STARTER/SAFETY SWITCH
- FUSIBLE DISCONNECT SWITCH
- EXIT LIGHT, WALL MOUNTED, LETTER DENOTES TYPE
- EXIT LIGHT, CEILING MOUNTED, LETTER DENOTES TYPE
- RECESSED FLUORESCENT FIXTURE, LETTER DENOTES TYPE, SMALL LETTER DENOTES SWITCH LOOP
- NL — EMERGENCY LIGHT FIXTURE (NL DENOTES NIGHT LIGHT)
- EXTERIOR POLE LIGHT
- STRIP LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE, LETTER DENOTES TYPE, SMALL LETTER DENOTES SWITCH LOOP
- SINGLE POLE SWITCH, "E" DESIGNATES EXPLOSION PROOF
- THREE–WAY SWITCH, "E" DESIGNATES EXPLOSION PROOF
- MOTOR SENTINEL SWITCH, "E" DESIGNATES EXPLOSION PROOF
- FOUR–WAY SWITCH, "E" DESIGNATES EXPLOSION PROOF
- DUPLEX RECEPTACLE
- DUPLEX OUTLET, GROUND FAULT TYPE
- DUPLEX RECEPTACLE, GROUND FAULT TYPE WITH WEATHERPROOF COVER
- SINGLE OUTLET, EXPLOSION PROOF
- POWER OUTLET
- DOUBLE DUPLEX COUNTER MOUNTED RECEPTS, REFER TO SPECIFICATIONS
- FACP — FIRE ALARM CONTROL PANEL
- F — FIRE ALARM MANUAL PULL STATION
- F_E — FIRE ALARM MANUAL PULL STATION, EXPLOSION PROOF
- H_E — HEAT DETECTOR, FIXED TEMPERATURE/RATE OF RISE TYPE, EXPLOSION PROOF
- H^E_F — HEAT DETECTOR, FIXED TEMPERATURE TYPE, E DENOTES EXPLOSION PROOF
- S — SMOKE DETECTOR
- S_D — DUCT MOUNTED SMOKE DETECTOR
- L — FIRE ALARM LIGHT
- HL — FIRE ALARM HORN–LIGHT COMBINATION
- HL_E — FIRE ALARM HORN–LIGHT COMBINATION, EXPLOSION PROOF
- HL_{WP} — FIRE ALARM HORN–LIGHT COMBINATION, WEATHERPROOF
- B_S — SPRINKLER FLOW BELL
- H_S — SECURITY ALARM HORN
- ∇^E — INTERCOM PHONE, "E" INDICATES EXPOLSION PROOF, NOTE 12
- ▼ — TELEPHONE OUTLET
- G — GAS SENSOR (CARBON MONOXIDE)
- SAP — SECURITY ALARM PANEL
- KB — KNOX BOX
- KP — SECURITY KEY PAD
- DS — SECURITY ALARM DOOR SWITCH
- DS_E — SECURITY ALARM DOOR SWITCH, EXPLOSION PROOF
- M — SECURITY ALARM MOTION DETECTOR
- — — PE — — UNDERGROUND PRIMARY FEEDER, NOTE 7, NOTE 9
- — — T — — UNDERGROUND TELEPHONE SERVICE, NOTE 7
- — — SE — — UNDERGROUND SECONDARY FEEDER, NOTE 7
- S^E — SPEAKER, WALL MOUNTED, "E" DESIGNATES EXPLOSION PROOF, NOTE 12
- DATA OUTLET
- T — TRANSFORMER
- MTC — MODULAR TERMINATING CABINET
- BRANCH CIRCUIT
- BRANCH CIRCUIT HOMERUN TO PANELBOARD
- BRANCH CIRCUIT BELOW GRADE OR SLAB, NOTE 7
- SURFACE RACEWAY
- FS — FUME HOOD FLOW SENSOR
- AFAM — AIR FLOW ALARM MODULE
- FUME HOOD ALARM LIGHT
- CT — CURRENT TRANSFORMER

University of Vermont
ARCHITECTURAL & ENGINEERING SERVICES
109 SOUTH PROSPECT STREET
BURLINGTON, VERMONT 05405–0016
(802) 656–3291

STATE OF VERMONT — MICHAEL P. KIRICK NO. 5008 REGISTERED PROFESSIONAL ENGINEER

Consultants

HALLAM ASSOCIATES, P.C.
CONSULTING ENGINEERS
99 SWIFT ST.
So. BURLINGTON, VERMONT 05403

Project
UVM ENVIRONMENTAL SAFETY FACILITY
667 SPEAR STREET
BUILDING 728

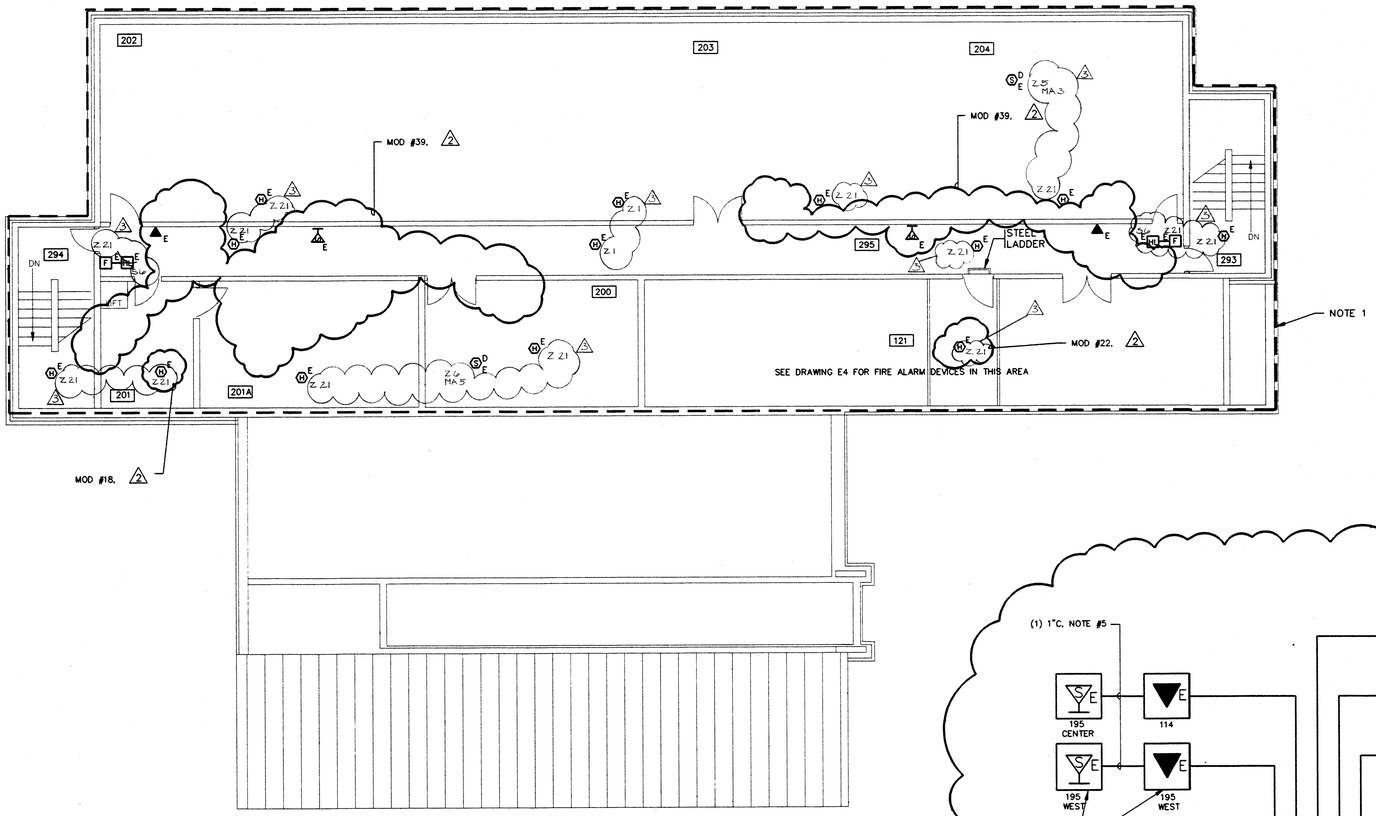
Project No. ENSF 89020 (1818)
Scale AS SHOWN
Drawn by MEB
Checked by DBM
DATE: 12/1/92

Revisions

No.	Date	
1	3/25/93	ADDENDA 1 & 2
2	4/30/93	DRAWING MODIFICATIONS
3	7/16/94	AS BUILTS JDL

Drawing Title
ELECTRICAL SITE PLAN

Drawing No.
E1



PROPOSED SECOND FLOOR PLAN - FIRE ALARM, SECURITY + INTERCOM

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

NOTE:

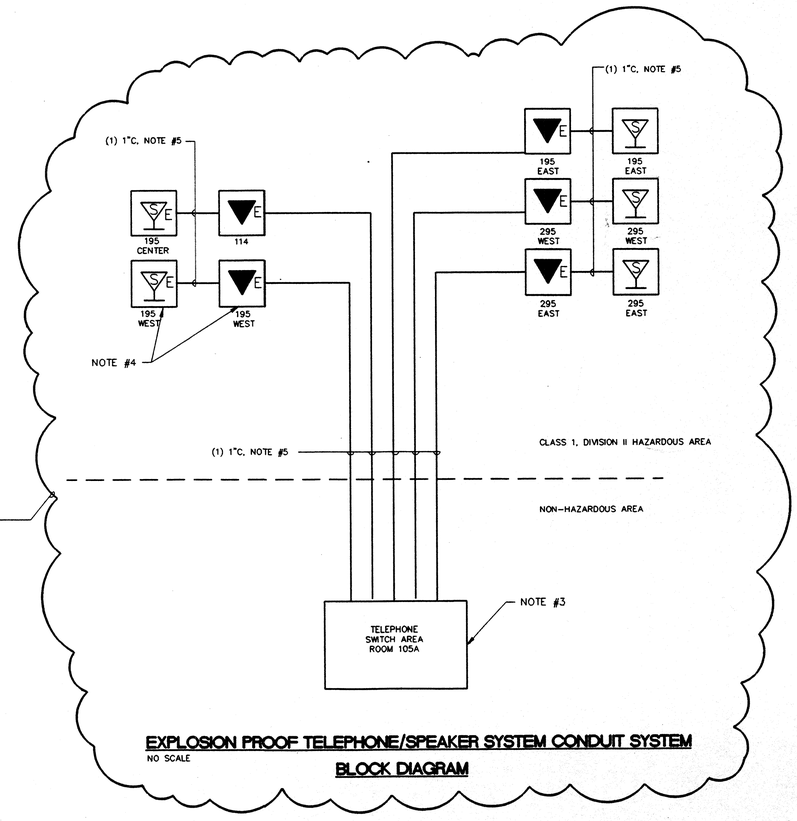
1) AREA OUTLINED BY DASHED LINE IS A CLASS 1 DIVISION 2 HAZARDOUS AREA. ALL ELECTRICAL EQUIPMENT, DEVICES, ETC. INSTALLED IN THIS AREA SHALL BE RATED FOR CLASS 1 DIVISION 2. ALL CONDUITS ENTERING THIS AREA ARE TO BE SEALED WITH EYS TYPE SEALING FITTINGS.

2) LEGEND LOCATED ON SHEET E1.

3) DROP CONDUITS DOWN WALL IN ELECTRICAL ROOM ADJACENT TO TELEPHONE SWITCH.

4) FURNISH AND INSTALL JUNCTION BOXES WHICH MATCH AND MATE WITH TELEPHONE AND SPEAKER DEVICES. COORDINATE EXACT REQUIREMENTS WITH UVM COMMUNICATIONS DEPARTMENT AND EQUIPMENT SUPPLIER.

5) INSTALL PULL LINES IN CONDUITS FOR FUTURE INSTALLATION OF CABLES.



EXPLOSION PROOF TELEPHONE/SPEAKER SYSTEM CONDUIT SYSTEM BLOCK DIAGRAM

NO SCALE

MOD #39.

University of Vermont
ARCHITECTURAL & ENGINEERING SERVICES
109 SOUTH PROSPECT STREET
BURLINGTON, VERMONT 05405-0016
(802) 656-3291

STATE OF VERMONT — MICHAEL P. KIRICK NO. 5006 REGISTERED PROFESSIONAL ENGINEER

Consultants

HALLAM ASSOCIATES, P.C.
CONSULTING ENGINEERS
99 SWIFT ST.
So. BURLINGTON, VERMONT 05403

Project

UVM ENVIRONMENTAL SAFETY FACILITY
667 SPEAR STREET
BUILDING 728

Project No. ENSF 89020 (1818)
Scale AS SHOWN
Drawn by MEB
Checked by DBM
DATE: 12/1/92

Revisions

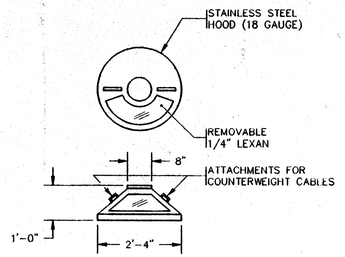
No.	Date	
1	3/25/93	ADDENDA 1 & 2
2	4/30/93	DRAWING MODIFICATIONS
3	7/15/94	AS BUILTS JDL

Drawing Title

SECOND LEVEL ALARM SYSTEMS PLAN

Drawing No.

E7



EXHAUST DROP DETAIL
SCALE: 1/2"=1'-0"

REGISTER SCHEDULE

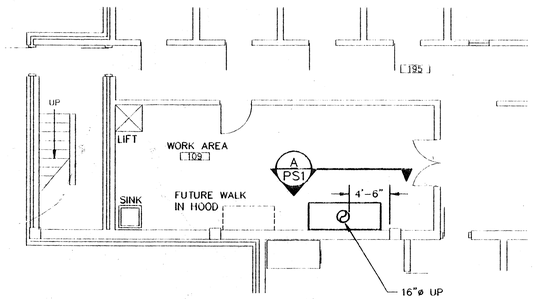
PLAN SYMBOL	DESCRIPTION	MANUFACTURER & MODEL #	SIZE	CFM	MATERIAL	NOTES
A	EXHAUST AIR REGISTER	CARNES RTRAV	24"x24"	600	STAINLESS STEEL	WITH KEY OPERATED DAMPER

EXHAUST FAN SCHEDULE

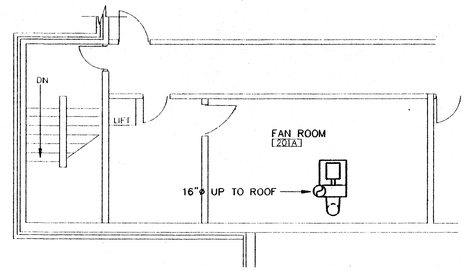
PLAN SYMBOL	DESCRIPTION	MANUFACTURER & MODEL #	CHARACTERISTICS	ELECTRIC	NOTES
EF 7	POURING STATION EXHAUST FAN	BUFFALO-FORGE SIZE 50 FRPMW	3000CFM @ 1.8" S.P., 428 RPM, W/ DRAIN CONNECTION, VIBRATION ISOLATION, BELT GUARD, FIBERGLASS REINFORCED PLASTIC CONSTRUCTION	208/3/60 2.0 HP	NEC CLASS 1 DIV 2 EXPLOSION PROOF, SPARK PROOF. SUBMIT SHOP DRAWINGS

GENERAL NOTES:

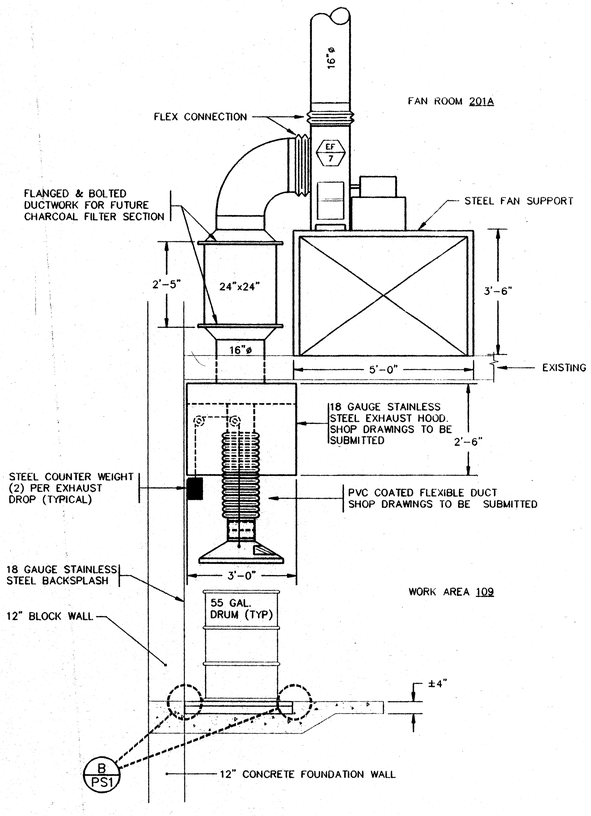
1. EF-7 TO BE MOUNTED ON VIBRATION ISOLATORS PROPERLY SIZED FOR THE WEIGHT OF THE EXHAUST FAN.
2. EXHAUST STACK TO EXTEND 10'-0" ABOVE THE ROOF PEAK.
3. PROVIDE SHOP DRAWINGS.
4. FIELD VERIFY ALL EXISTING CONDITIONS
5. ANSUL SYSTEM HEAT DETECTORS & SPRAY NOZZLES TO BE INSTALLED PER MANUFACTURERS INSTRUCTIONS. ANSUL SYSTEM TO BE LOCATED IN THE LAB (RM.69). ANSUL SYSTEM IS TO BE SUPPLIED WITH A SET OF CONTACTS THESE CONTACTS ARE TO BE USED TO SHUT DOWN FAN EF-7 UPON ACTIVATION THROUGH THE HONEYWELL CONTROL SYSTEM.



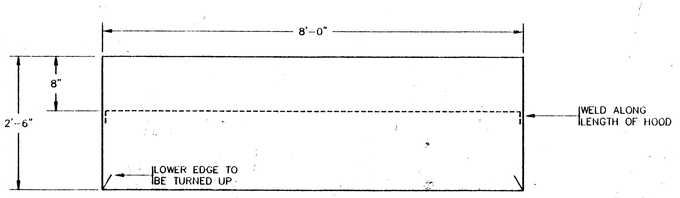
FIRST FLOOR - PARTIAL PLAN
SCALE: 1/8" = 1'-0"



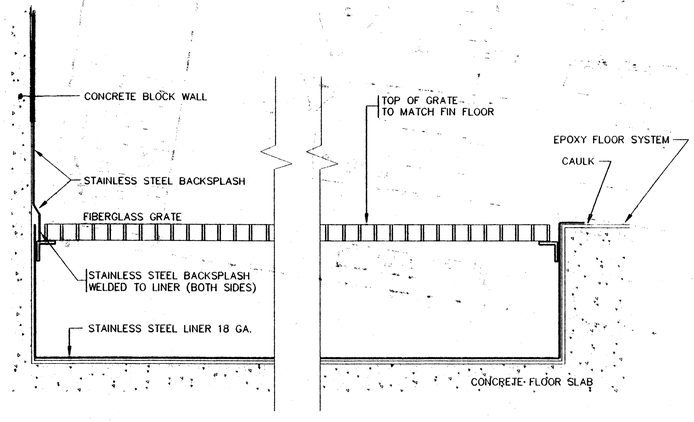
SECOND FLOOR - PARTIAL PLAN
SCALE: 1/8" = 1'-0"



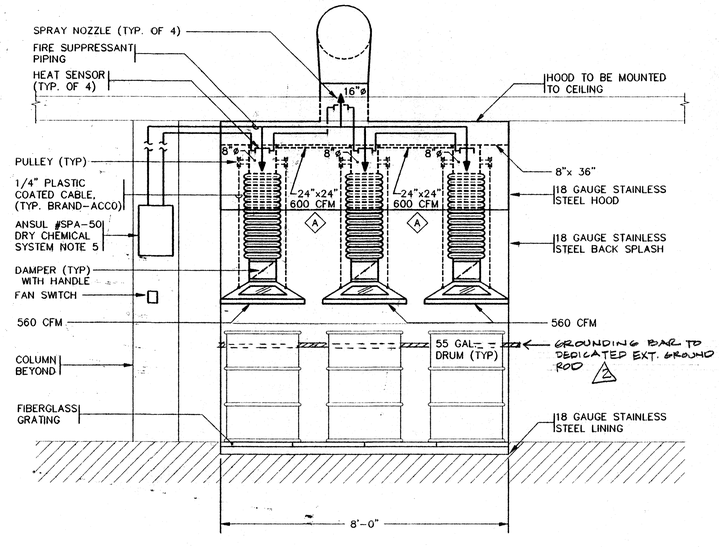
POURING STATION SECTION SIDE VIEW
SCALE: 1/2"=1'-0"



HOOD DETAIL
SCALE: NONE



LIQUID CONTAINMENT ASSEMBLY
NO SCALE
B / PS1



POURING STATION ELEVATION
SCALE: 1/2"=1'-0"
A / PS1

University of Vermont
ARCHITECTURAL & ENGINEERING SERVICES
109 SOUTH PROSPECT STREET
BURLINGTON, VERMONT 05405-0016
(802) 656-3291

Consultants

HALLAM ASSOCIATES, P.C.
CONSULTING ENGINEERS
99 SWIFT ST.
So. BURLINGTON, VERMONT 05403

Project

UVM ENVIRONMENTAL SAFETY FACILITY
667 SPEAR STREET
BUILDING 728

Project No. ENSF 89020 (1818)
Scale AS NOTED
Drawn by RHG
Checked by MVB
DATE: 08/11/93

Revisions

No.	Date	
1	8/26/93	DRAWING CHANGES
2	3/4/93	ADD GROUND BAR

Drawing Title

POURING STATION

Drawing No.

PS1

Attachment B-3

Flood Plain Certification

State of Vermont

...ment of Fish and Wildlife
...ent of Forests, Parks and Recreation
...ment of Environmental Conservation
State Geologist
Natural Resources Conservation Council

AGENCY OF NATURAL RESOURCES
103 SOUTH MAIN STREET
Waterbury, Vermont 05676

Department of Environmental Conservation

FLOOD PLAIN MANAGEMENT
10 North Building
(802) 244-6951

October 25, 1988

PROJECT ENVIRON. SAFETY FACILITY
FEAS / DES / CONST.
CLIENT A IN
EQUIP. B OUT
CONSUL.

Mr. Ken Bean
University of Vermont
Architectural and Engineering Services
107 South Prospect Street
Burlington, VT 05405-0016

Dear Mr. Bean:

Subject: Flood Plain Site Investigation

The site of a proposed University hazardous waste storage building to be located in the field south of the Ram Test Barn at the Bioresearch Complex off Spear Street is not within the 100-year flood plain of the small tributary of Potash Brook.

If this does not meet with your needs, please give me a call at 244-6951.

Sincerely,

Roy Gaffney

Roy Gaffney
Flood Plain Management

vld

ATTATCHMENT

RECEIVED
OCT 27 1988
Architectural &
Engineering Services

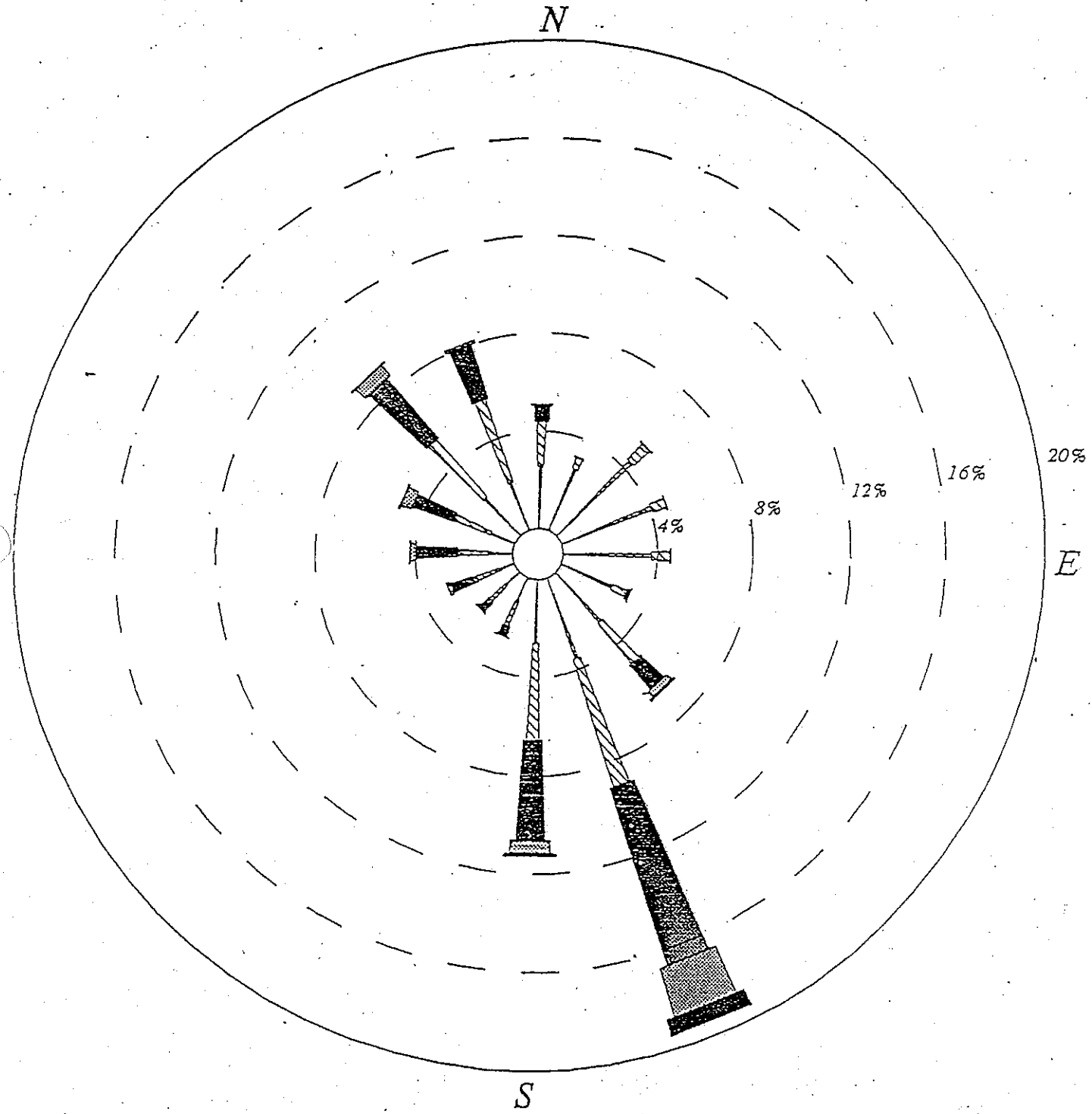
Attachment B-4

Wind Rose

FIGURE B-3 - WIND ROSE

Burlington, VT 1989

January 1-December 31; Midnight-11 PM



CALM WINDS 2.07%

NOTE: Frequencies indicate direction from which the wind is blowing.

WIND SPEED (KNOTS)