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WORK PLAN AND HEALTH AND SAFETY PLAN FOR BLUFF EROSION CONTROL, SOUTH OF BUILDING 52 CONTAINMENT BASIN 4500 NTC GREAT LAKES IL

4/1/1999

TOLTEST INC

ENVIRONMENTAL ASSESSMENT FOR HULL TECHNICIAN "A", HULL TECHNICIAN "C", AND DAMAGE CONTROL "A" SCHOOLS NAVAL TRAINING CENTER GREAT LAKES, ILLINOIS

PREPARED FOR:

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NORTHERN DIVISION

DECEMBER 1993

ENVIRONMENTAL ASSESSMENT
FOR
HULL TECHNICIAN "A", HULL TECHNICIAN "C" AND DAMAGE CONTROL "A" SCHOOLS
NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

DECEMBER 1993

PREPARED BY:

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PREPARED FOR:

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NORTHERN DIVISION

SUMMARY

This Environmental Assessment (EA) was prepared in accordance with the regulations of the National Environmental Policy Act (NEPA). This EA describes the proposed action and its relationship to the existing natural and man-made environment and pertinent laws and regulations. Alternatives to the proposed action are identified and evaluated and the environmental impacts of the proposed action are analyzed.

Proposed Action

The proposed action is the relocation of: the Hull Technician "A" (HT"A") School from Naval Station, Philadelphia; the Damage Control "A" (DC"A") School from the Naval Technical Training Center (NTTC), San Francisco and; the Hull Technician "C" (HT"C") School from the Naval Training Center, San Diego to the Naval Training Center (NTC), Great Lakes Illinois. These activities are initiatives of the Defense Base Closure and Realignment Act (BRAC).

The HT"A" and HT"C" Schools will occupy Building 520 at NTC. These schools provide classroom and laboratory training for Hull Maintenance Technicians. The HT"C" provides advanced training in ship repair through the C1 Weld School and the Non-Destructive Testing School. The principal hands-on activity associated with these schools is the welding of vessels in disrepair.

The DC"A" School will relocate to the site of Building 512 at NTC which is adjacent to Building 520. Because Building 512 cannot be renovated to accommodate the DC"A" School and because it is currently underutilized, the structure will be demolished for the construction of a new Operational Training Facility (OTF). The DC"A" School provides training in fire fighting and water damage control, utilizing two operational trainers which simulate on-board ship environments: the Fire Fighting Training Unit 19F3C (FFTU) and the Damage Control Trainer (DCT). The FFTU is an environmentally enclosed and controlled structure for realistic hands-on fire fighting training as well as year-round classroom instruction. The fuel used in fire simulation is propane, a clean burning material that emits little pollution. Various additives for smoke simulation and extinguishing agents are used in the fire fighting simulation exercises.

Propane will be stored in two 12,000 gallon tanks placed across the street from Building 512. These tanks are designed in accordance with the strict safety measures stipulated by the National Fire Protection Association (NFPA) and guidelines outlined in MIL-HDBK-1027/1.

Alternatives Considered

Alternatives sites at the NTC were considered during the preliminary planning stages of this project. Two sites near the 22nd Street gate were considered but the sites were deemed incompatible with surrounding land uses and functional objectives, and, therefore, were unacceptable.

Potential Impacts and Mitigative Measures

Impacts to the natural environment are expected to be minimal. The area of the NTC in and around Buildings 512 and 520 is almost fully developed with various Service School buildings, barracks, and other structures. There is very little ecological value associated with the project site.

Air emissions from the FFTU should not negatively affect the local air quality because propane is the fuel being used in fire simulation. Only trace amounts of particulates, carbon dioxide, and methane are produced from the fire training exercises.

Sanitary sewerage generated from the three schools should not negatively affect water quality. All effluent at NTC is piped to a North Shore Sanitary District (NSSD) treatment facility where it is treated and discharged to Lake Michigan. Wastewater from the FFTU will be pretreated prior to discharge to the sewer system. The effluent has been tested and is acceptable for discharge to the NSSD system. Wastewater from the DCT, which is maintained by chlorination and filtration, will be of a quality directly compatible with sanitary wastewater. Process wastewater from Building 520 will be pretreated and sludge will be disposed of as hazardous material. Wastewater effluent will be of a quality suitable for discharge to the sanitary system.

There will be an increase in the amount of hazardous material generated as a result of the proposed action. Hazardous waste generated by the three schools will be brought to a collection area and removed by the DRMO within 90 days, in accordance with current IEPA permit regulations.

Impacts to the man-made environment are also expected to be minimal. There will be a net increase of approximately 2231 students per year and an additional 90 military and 29 civilian personnel. The Navy is in the process of downsizing and the annual number of throughput trainees is declining. Downsizing will result in decreased size of classes at NTC, so the anticipated increase of students at the training schools at NTC will not be matched by an associated population increase. As a result, it is expected that the annual addition of 2231 students will be within the normal fluctuation of the NTC.

Because students attending the training facilities will not be accompanied by families, the only demand on the local school system would be from the approximately 90 permanent military personnel. Most, if not all, 29 civilian staff required will come from the local community. There will be a minimal number of school-age children introduced to the local school system.

There will be an overall positive, albeit small, benefit to the local economy with the addition of new students and personnel. Housing needs of the students can be adequately met at the NTC. No impacts to local traffic are expected because the 2231 students will be walking to and from the three schools.

Existing utility systems are deemed adequate to support the three schools with some minor modifications. No cultural or historic resources will be affected by the proposed action and the project is consistent with surrounding land uses.

ENVIRONMENTAL ASSESSMENT FOR HULL TECHNICIAN "A", HULL TECHNICIAN "C" AND DAMAGE CONTROL "A" SCHOOLS NAVAL TRAINING CENTER GREAT LAKES, ILLINOIS

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List of Acronyms

ACOE	Army Corps of Engineers
AOB	Average On Board
BEAP	Base Exterior Architecture Plan
BRAC	Base Closure and Realignment Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DC"A"	Damage Control "A"
DCT	Damage Control Trainer (Wet Trainer)
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EIS	Environmental Impact Statement
FFTU	Fire Fighting Training Unit
HAZMAT	Hazardous Material
HT"A"	Hull Technician "A"
HT"C"	Hull Technician "C" (Advanced)
HRO	Human Resources Office
IEPA	Illinois Environmental Protection Agency
IHPA	Illinois Historic Preservation Agency
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NDT	Non-Destructive Testing
NRC	Nuclear Regulatory Commission
NTC	Naval Training Center Great Lakes
NSSD	North Shore Sanitary District
OTF	Operational Training Facility
RCRA	Resource Conservation and Recovery Act
SHPO	Illinois State Historic Preservation Officer
SIP	State Implementation Plan

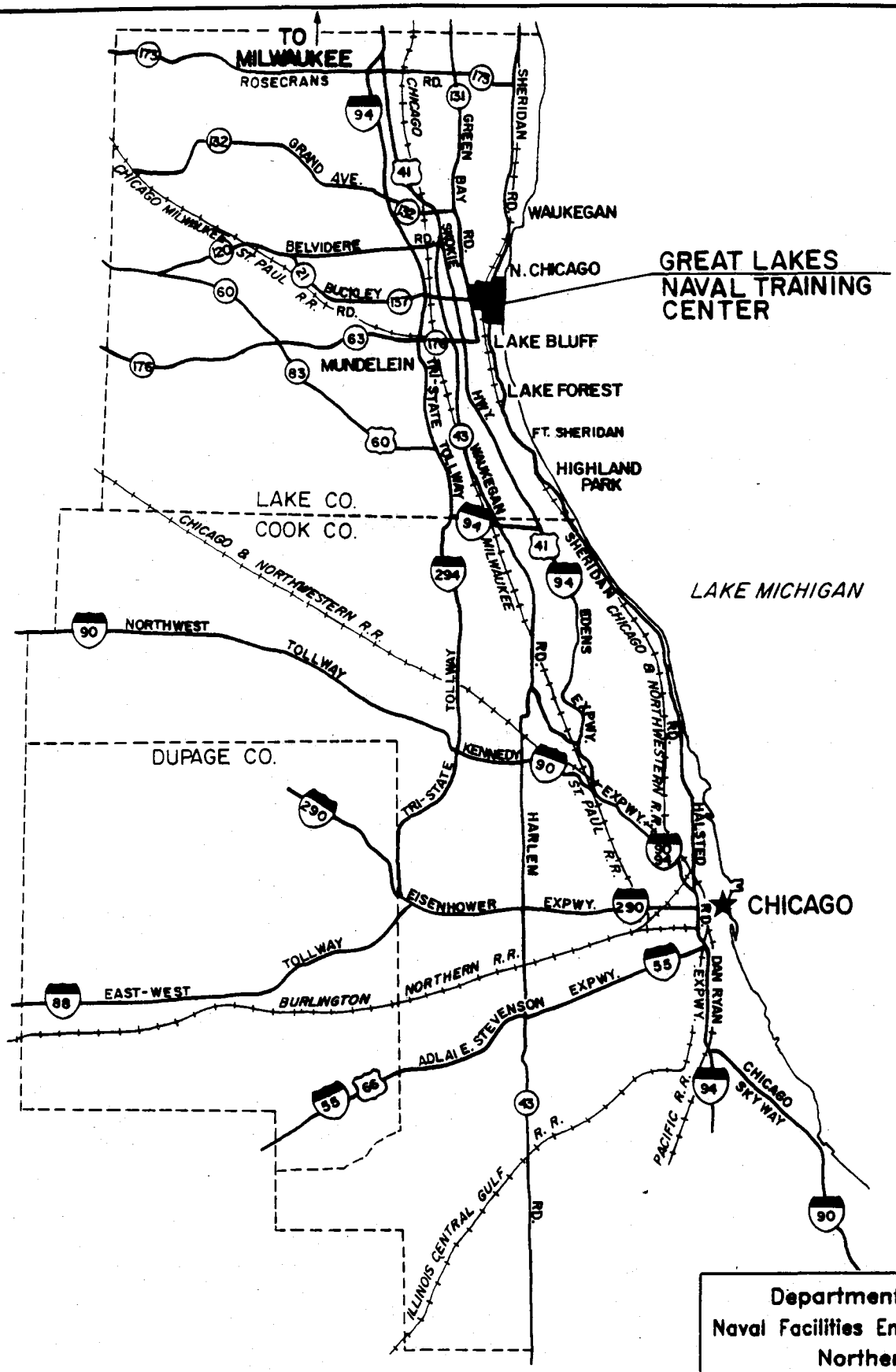
I. INTRODUCTION

A. Background

The Naval Training Center Great Lakes (NTC) is located on 1640 acres on the Illinois shore of Lake Michigan, as shown on Figure I-1. Since its dedication in 1911, the NTC has provided recruit indoctrination and advanced training of Naval personnel. Currently, there are approximately 22,000 military personnel stationed at NTC, with average on board (AOB) recruits fluctuating from less than 4,000 in the winter to over 8,000 in summer.

The Defense Base Closure and Realignment Act (BRAC) initiatives of 1991 (BRAC II) directed the relocation of the Hull Technician "A" (HT"A") School to NTC from Naval Station, Philadelphia, and the BRAC recommendations of 1993 (BRAC III) call for the relocation of the Damage Control "A" (DC"A") School to NTC from the Naval Technical Training Center (NTTC), San Francisco, and the Hull Technician "C" (HT"C") School from the Naval Training Center, San Diego. This Environmental Assessment (EA) documents the impacts of the proposed action to relocate the HT"A" School (MILCON Project P-557S), the HT"C" School (MILCON Project P-608), and the DC"A" School (MILCON Project P-600) to NTC.

Project P-557S was originally initiated to provide facilities at NTC for the HT"A" School presently at Philadelphia, which includes surface vessel fire fighter and damage control wet trainer facilities. Prior to 1989, occupational standards for hull technicians included fire fighting and damage control. Updated draft standards as of June 1993, however, no longer require these skills. As a result, the trainer facilities are no longer a part of the HT"A" School. These trainers will be constructed much as originally planned, in a single Operational Training Facility (OTF), but will accommodate the DC"A" School from the NTTC Treasure Island, San Francisco, which requires both trainers. The collocation of the



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Relocation of HT"A", HT"C" And DC"A" Schools

Vicinity Map

Not to Scale | Figure: I-1

HT"A" and HT"C" Schools will consolidate Hull Technician and related training at Great Lakes, making efficient use of space for training requirements that utilize the same or similar types of equipment and materials. Because of the close relationship of the facilities and their placement on the same overall site, the relocations of the three schools are considered one action for this Environmental Assessment (EA), and the contiguous area within which the proposed facilities would be located is considered the project site.

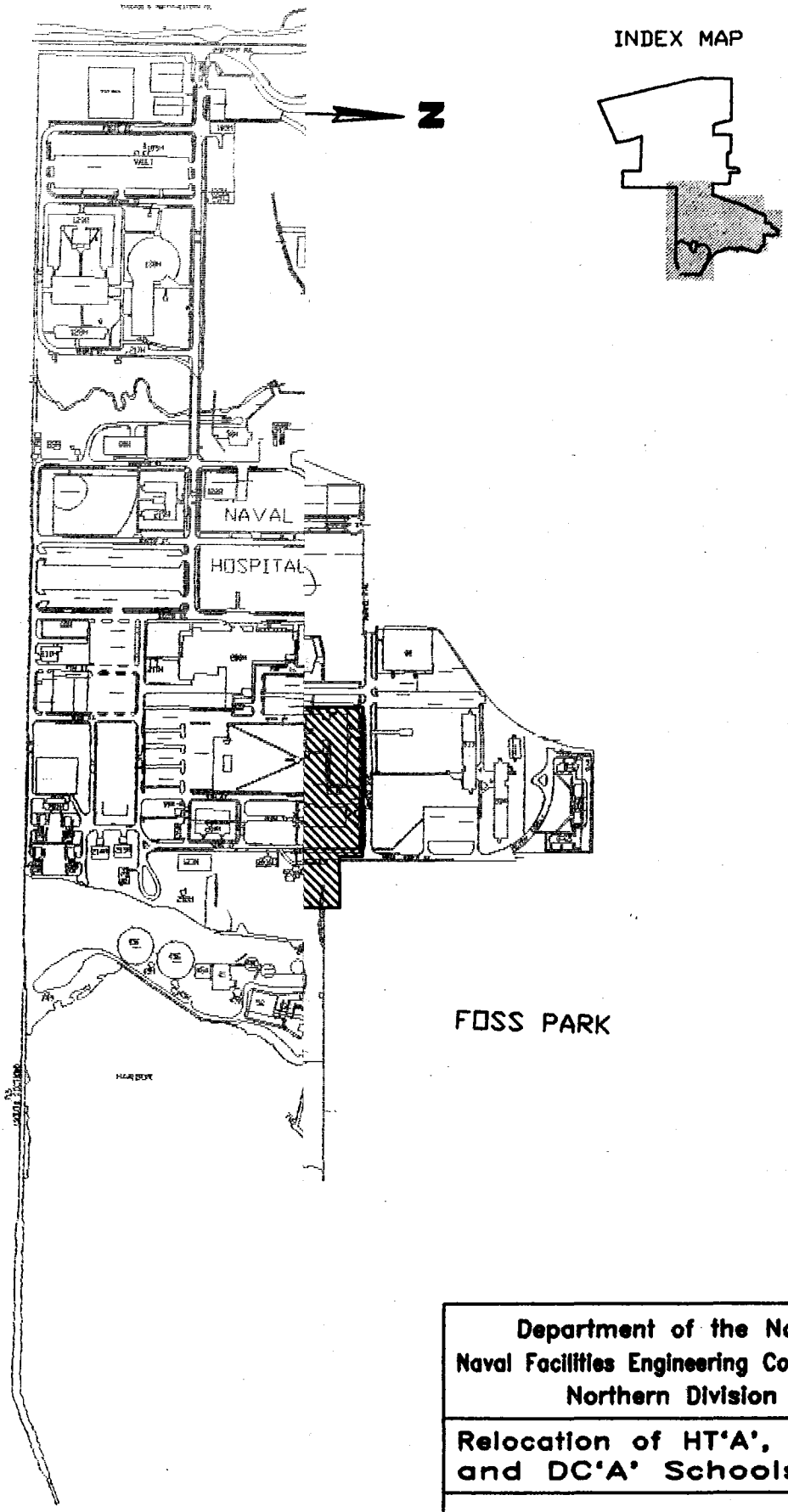
B. Description of the Proposed Action

The proposed action is to alter and renovate the existing Building 520 for use by the HT"A" and HT"C" Schools, and to demolish Building 512 and construct, in its place, an Operational Training Facility (OTF) for the DC"A" School. In addition to renovation, demolition, and construction of buildings, the project would establish support facilities, utility connections, parking, and landscaping. The proposed project site is in the northeast corner of the NTC, southwest of the intersection of Nimitz Avenue and Paul Jones Street, as shown on Figure I-2. Once constructed and occupied, the HT"A" School will train approximately 660 people annually in hull repair and maintenance, the HT"C" School will train approximately 1150 people annually in advanced welding and non-destructive testing skills, and the DC"A" School will train approximately 525 people annually in fire fighting and water damage control techniques.

The Site Plan showing the major features of the proposed facilities is presented in Figure I-3. Two additions to Building 520 will be utilized by both HT"A" and HT"C" Schools. The large addition will serve as the utility area and will house chillers and emergency generators, and similar elements. The smaller addition, referred to as the Material Handling Area, will house incoming supplies and stored materials and will enclose the shear machine.

1. Hull Technician "A" School

The Hull Technician "A" (HT"A") School provides classroom and laboratory training for Hull Maintenance Technicians. The projected annual throughput for Fiscal Year (FY) 1995, the first full year during which the facility is expected to be occupied, is 661 students (C. White, personal communication), with an Average-On-Board (AOB) of 112. A new class begins each week, with classes lasting 8 to 9 weeks. The Navy is considering scaling back, however, to one class beginning every two weeks, in order to utilize staff and facilities more



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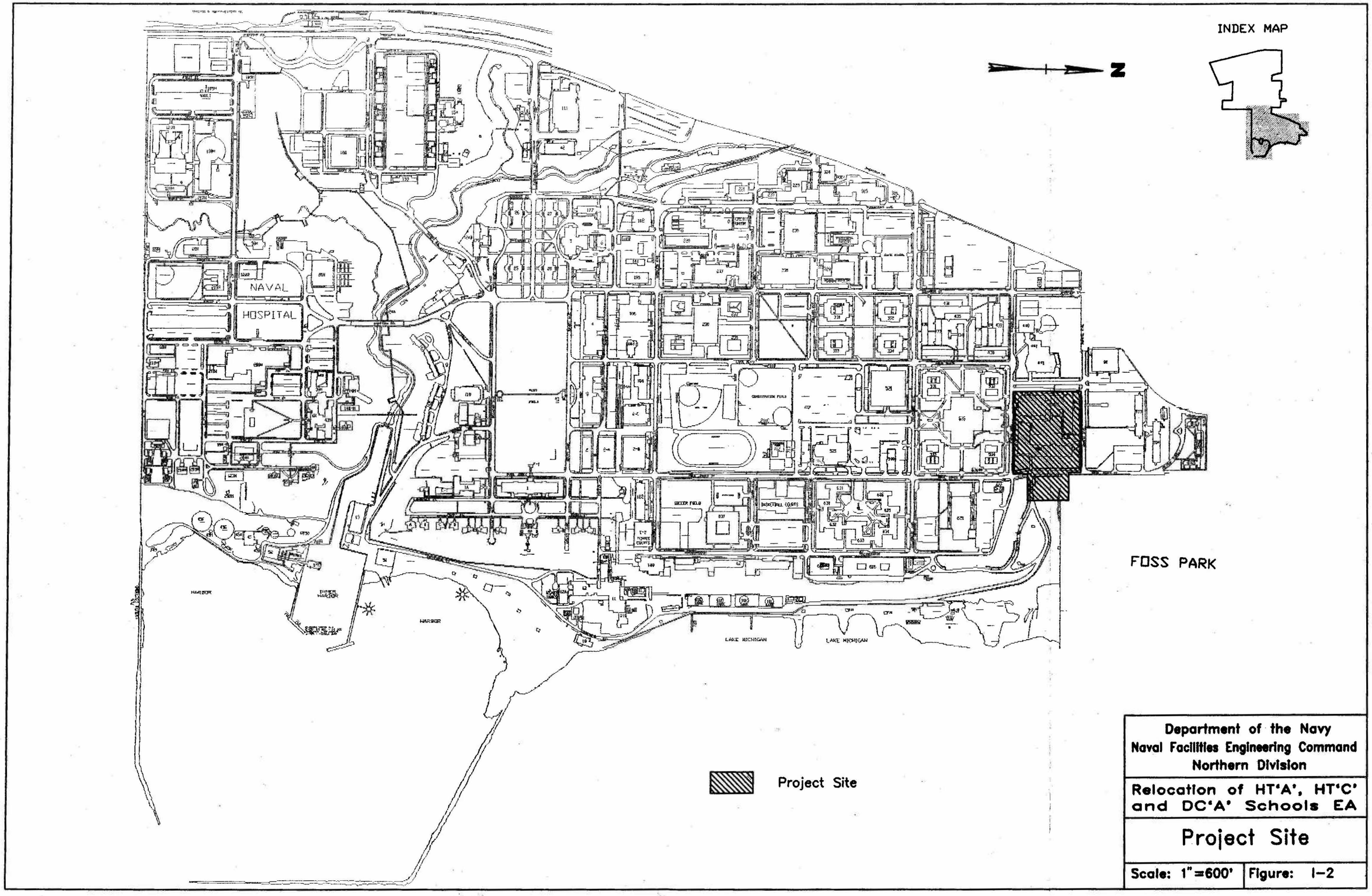
Relocation of HT'A', HT'C' and DC'A' Schools EA

Project Site

Scale: 1"=600' | Figure: 1-2


INDEX MAP
N
NAVAL
HOSPITAL
FOSS PARK
HARBOR
HARBOR
LAKE MICHIGAN
LAKE MICHIGAN
Project Site
Department of the Navy
Naval Facilities Engineering Command
Northern Division
Relocation of HT'A', HT'C' and DC'A' Schools EA
Project Site
Scale: 1"=600'
Figure: 1-2

efficiently. The number of staff needed is expected to be 36, all military, including officers, instructors, and personnel for supply, administration, and student tracking duties.

The HT"A" School has eight training modules, as follows:

Module 1	Drafting/Sheet Metal
Module 2	Gas Welding
Module 3	Arc Welding
Module 4	Pipe Fitting
Module 5	Boat Repair
Module 6	Valve Repair
Module 7	Lagging
Module 8	Sewage Treatment

The HT"A" School will occupy Building 520, which will be renovated to meet facility requirements. The facility will consist of laboratories and classrooms, requiring a total of 88,900 square feet (SF) within the 154,800 gross square foot (GSF) building. The school will occupy 90% of the first floor and 50% of the second floor area available in Building 520. Use of the basement floor will not be required, but some renovations will be necessary to accommodate new mechanical, electrical, and receiving area space needs.

Interior alterations will include non-structural partition demolition and reconstruction as necessary, to configure the required rooms. Major building areas such as corridors, stairs and lobbies will remain in the same locations. Interior renovations will include replacing or upgrading floor, ceiling and wall finishes, new doors and door frames, new and/or replacement toilet room fixtures, and new signage. Where encountered during alterations, asbestos will be removed or abated.

Facility design criteria allow for up to 1500 students per year and an AOB of 275 students. The 1992 count indicated an annual total of approximately 1200, with an average class size of 30. The instructor:student ratio is 1:20 in the classroom and 1:10 in the shop or lab.

Downsizing in the Navy, however, will result in a decrease in throughput, so the facility will have some amount of excess capacity.

Exterior renovations will include repair of the roof and masonry walls, and replacement of the deteriorating glazed window wall system. The new window wall system will be insulated and glazed, restoring the original architectural appearance of the building while improving thermal efficiency. In addition, substantial utility upgrades, elevator repair, loading dock improvements, paving and site improvements will be accomplished. Schematic drawings of the proposed renovations are included in Appendix A.

The renovated building will be heated via an existing underground steam loop and selected areas will be cooled by a chilled water plant. Electricity will be provided via an extension of the existing 34.5 Kv site distribution system. Fire protection systems will be installed according to National Fire Protection Association (NFPA) 13 codes and Military Handbook (MIL-HDBK) 1008A specifications.

Specialized facilities, equipment, and materials used at the HT"A" School are as follows:

- Process Piping Systems

There are gas welding and arc welding stations in the welding training laboratories, as well as gas welding stations associated with the piping training laboratories. The number of welding stations per laboratory are shown below:

Laboratory	No. Welding Stations
Gas Welding	34
Arc Welding I	30
Arc Welding II	30
Piping I	8
Piping II	4

Gas welding activities require the use of oxygen and acetylene, and arc welding training will require argon. Compressed air is used throughout the lab, mechanical equipment and maintenance areas. Process system distribution piping shall be routed through the basement of the building from the sources to each welding lab, with compressed air distributed to additional locations. All process pipes shall be terminated with a lockable valve at approximately 7 feet above the floor in each lab. Process piping systems for the gases will consist of the following:

Oxygen and argon will be stored cryogenically (refrigerated and pressurized) as liquids in bulk storage tanks, with atmospheric vaporizer assemblies and all safety valves and regulators in accordance with NFPA 50 and Factory Mutual 7-52 (oxygen) and 7-50 (argon.) Bulk storage will be accomplished within a gas storage yard separated, as required, from the acetylene manifold area. The yard enclosure is a secured area.

Acetylene (C_2H_2) will be stored in a secured exterior storage facility with a multi-cylinder manifold assembly complete with ill safety valves and regulators in accordance with NFPA 51 and Factory Mutual 7-50 and 7-51.

Compressed air, receiver, and dryer assembly are to be relocated from the Philadelphia HT"A" School and reinstalled in the basement of Building 520.

Storage tanks were sized to minimize handling so that change-out of tanks would only be necessary once per month. HT"A" School requirements would indicate the need for one 500-gallon argon tank and one 500-gallon oxygen tank, but these tank sizes may be increased to serve the additional needs of HT"C" School. Acetylene will be stored in the typical 9" diameter, 55" tall bottles. Liquid gases will be vaporized, then distributed by a central piped system through manifolds located outside the building. A shed or roof structure will be placed over the manifolds to keep weather off of pressure regulators.

Based on the estimated use of 500 gallons of argon and 500 gallons of oxygen per month at the HT"A" School, annual consumption of each amounts to 6,000 gallons. Oxygen and acetylene are each estimated to be consumed at a rate of 10 cubic feet per hour on the torch.

- Hazardous Materials

There will be external hazardous material storage for paints and other shop materials. The storage unit will be a roofed masonry enclosure or similar shed-type structure placed west of the cooling tower platform, within the yard enclosure.

Internally, the Boat Repair Lab will provide an explosion-proof refrigerator to store the resin hardener used for fiberglass boat repair, and the shop itself will be built as an explosion-proof room.

- Exhaust and Ventilation

Building 520 will have extensive exhaust and ventilation systems. All classrooms and laboratories will be ventilated. An industrial ventilation system will be provided at each welding station, to vent gas vapors, and wherever noxious materials are used, such as in the Boat Repair Lab and in the Valve Repair Lab, where a tank of citric acid is used to clean valve parts. Exhaust fans at the welding stations and at the lagging lab will be fitted with high efficiency particulate air filters (HEPAFs), which are over 99.9% effective against particles 0.3 micron or larger. The building is currently equipped with five (5) Variable Air Volume (VAV) handlers; it is expected that two more would be needed to provide sufficient make-up air for the necessary exhaust hoods at the HT"A" School.

Exhaust fans will be fitted with noise attenuators to protect occupants of the building. Noise levels outside are not expected to be elevated above average institutional building levels.

2. Hull Technician "C" School

The Hull Technician "C" (HT"C") School consists of two advanced training schools, the C1 Weld School and the Non-Destructive Testing (NDT) School. The C1 Weld School provides advanced training in general maintenance welding, nuclear welding, and non-nuclear welding. The NDT school offers a core course in weld inspection and two additional courses, radiographic operator/inspector and ultrasonic eddy current operator/inspector. Courses are taken primarily by Hull Technician and Machinist rates (skill specialties.) Classes start approximately every two weeks and, depending on the course, run for 9 to 14 weeks. Facility utilization in 1997, when the facility is ready for occupation, is expected to be similar to Fiscal Year 1993, with an annual throughput of 1150, and an AOB of 300. Approximately 63 staff will be required to run the HT"C" School, consisting of 34 military and 29 civilian personnel.

The HT"C" School will be collocated with the HT"A" School in Building 520, which has sufficient space to house both schools. The HT"C" School will require a total of 136 welding stations. Preliminary design evaluations have determined that the HT"C" School will share the gas welding lab used by the HT"A" School, with the addition of 18 welding booths equipped for the advanced training. This arrangement will make efficient use of space for classes with common requirements and will minimize the piping needed for the acetylene and oxygen used by both schools. All other HT"C" School requirements will be met by separate facilities within the remaining portions of the building.

Like the HT"A" School, welding instruction will involve the use of acetylene, oxygen, argon, and compressed air. The silver brazing lab will use oxygen and acetylene, but 65% of the welding is shielded metal arc welding with industrial electrode welding equipment, 25% of the welding is gas tungsten arc welding using a 2% thoriated tungsten electrode and argon as a shield. Nuclear welding instruction involves techniques used on nuclear submarines,

such as pipe repair on reactors and does not involve or generate radiation. The non-nuclear component involves more advanced instruction in the techniques taught in the general maintenance welder.

Specialized equipment, facilities and processes required by the HT"C" School are described below.

- Piping Process Systems and Ventilation/Exhaust Systems

The HT"C" School will have similar requirements for piping process systems as the HT"A" School, but will involve a different number of welding stations. A total need for 240 welding stations is expected, with 18 gas welding booths to be located in the HT"A" gas welding laboratory. Bulk storage of gases will utilize the same facility planned for the HT"A" School, so tank sizes or number of tanks, in the case of acetylene, may need to be increased to reflect the additional demand. The proposed storage area is sufficient to accommodate the additions.

Similarly, the HT"C" labs will require extensive ventilation and exhaust equipment. Type of equipment and installation will be similar to the HT"A" School, with an associated increase in numbers of vents, fans, and HEPAFs.

- Radiographic Equipment and Silver Recovery

Radiographic equipment will be utilized by the Radiographic Operator/Inspector class and the Quality Assurance Lab in the NDT School. Specialized equipment will consist of nine (9) X-ray booths and two (2) gamma-ray booths located in lead-lined vaults in the basement. This equipment will be used for radiographic inspection and evaluation of welds. The X-ray machines will be manufactured by the DATEC Corporation. Gamma ray machines are likely to be of a type manufactured by Amersham Corporation. The use of gamma ray machines is taught because such machines, powered by artificial radioactive isotopes, are

used in the Navy in remote locations with no electric power source, such as on submarines.

No radioactive waste is generated by the equipment, which is set up and operated in full conformance with Nuclear Regulatory Commission (NRC) standards and OSHA regulations. However, a permit, issued by the Radiological Affairs Support Office (RASO), will be required to operate the equipment, pursuant to NRC regulations. In addition, RASO must approve the design and construction of the facility for use of radiographic equipment.

Radiographic equipment will be fitted with automatic film processors, which process fixer solution internally and include self-contained silver recovery units. Automatic processors cannot be used on ships, however, because they do not operate unless they are level, so manual processing is also taught. Manual processing will be performed in darkrooms. Fixer from manual processing will be collected in a chemical-resistant sump or tank and processed through a chemical treatment and filtering process, during which silver will be recovered. A permit will be required from the Illinois Environmental Protection Agency (IEPA) for this silver recovery unit. Silver will be removed from the facility quarterly by a licensed contractor.

- Hazardous Material Storage and Hazardous Waste

Hazardous materials (HAZMAT) will be located in special storage facilities. HAZMAT used in the Heavy Equipment Shop include lubricating oil, cutting fluid, hydraulic fluid and grease. The Nuclear Welder course will require separate storage for penetrant solution, penetrant testing developer, and acetone. The Radiographic Operator/Inspector course will require storage of photographic chemicals. The VT/MT/PT Inspector course will require storage of penetrant materials.

Empty containers from these products, oily rags, and spent aerosol cans are treated as HAZMAT. Uncontaminated oils are recycled. Grease and any oil that contains

polychlorinated biphenyls are put into drums and disposed of as HAZMAT.

- Central Collection of Welding Laboratory Wastewater

There is potential for sludge from the welding labs to be considered hazardous due to the concentration of dust, chips, and other grindings collected in the floor drains. In addition, the cleansing tanks for welds may concentrate metals such that discharge would exceed water quality standards. Provisions, therefore, will be made to have common collection from floor drains and effluents of all welding laboratories. The sludge could be collected and disposed of as hazardous waste, rather than being discharged directly into the sanitary sewer. Once the sludge is removed, the typical wastewater released to the sewer contains negligible amounts of potential pollutants.

3. Damage Control "A" School

The Damage Control "A" (DC"A") School provides training in fire fighting and water damage control. The facility proposed to house the DC"A" School at NTC would combine two operational trainers which simulate the on-board ship environment: the Fire Fighting Training Unit 19F3C (FFTU) and the Damage Control Trainer (DCT). These trainers and necessary support areas would be constructed as one Operational Training Facility (OTF). The OTF would be newly constructed on the site of existing Building 512, which would be demolished. The OTF is anticipated to be ready for occupation in early 1997. The projected annual throughput for the facility will be similar to the estimated throughput for FY 1995, which is 523 students, with an AOB of 84. Approximately 20 classes would be held per year, with new classes beginning approximately twice a month and running for 8 weeks. Operation of the DC"A" School would require approximately 20 military personnel.

The OTF will be a permanent 88,600 gross square feet (GSF) building consisting of a 21,700 GSF FFTU, a 8,625 GSF DCT, and an interconnecting Support Building of 58,275 GSF.

The FFTU 19F3C is a three-story concrete and masonry structure with heat shielding, extensive exterior mechanical systems, propane tanks storage and monitoring equipment, and service yard paving. The DCT is a two-story 30-foot-high concrete and steel structure with a second level mezzanine. It will include a 2,000 GSF instructional laboratory and extensive utilities and equipment. The Support Building is a three-story concrete and steel structure with classrooms, laboratories, toilet/locker facilities, water treatment and holding tanks, and utilities. Utilities for the OTF will include a new 6" steam connection, telephone, electricity, cooling towers for the chiller plant, and water and sewer connections.

Specialized facilities, equipment, and materials used at each trainer are described below.

a. Fire Fighting Training Unit 19F3C

The Fire Fighting Training Unit (FFTU) 19F3C is an environmentally enclosed and controlled structure for realistic hands-on fire fighting training as well as year-round classroom instruction. The FFTU is a series of training spaces that look like rooms in a ship, equipped with propane fireplaces. Computer-controlled propane burners are lit and subsequently monitored by a system of detectors. If extinguishing agents have struck at the correct location and in the appropriate quantities, the fire backs down or goes out, but, if not, the fire flares up. One large room is used for team fire fighting, and the smaller rooms, such as the mock ship's galley, are used for individual training.

The design of the FFTU to be constructed at NTC is based upon a similar proposed unit at Charleston, South Carolina, the existing unit at Newport, Rhode Island, and the Military Handbook for Firefighting School Facilities, (MIL-HDBK-1027/1). The structural spaces, mechanical equipment, operational procedures, and use of extinguishing agents closely follow these prototypes and guidelines. The facility was sized for the projected class size of 60.

Specialized equipment and facilities used by the FFTU are described below.

- Propane Tank Storage

The propane storage, piping and processing systems were designed in accordance with NFPA 58, Storage and Handling of Liquefied Petroleum Gases, and other guidelines outlined in MIL-HDBK-1027/1, to ensure safe and proper handling. Propane will be stored in two 12,000-gallon tanks placed on the east side of Paul Jones Street, across the street from the OTF (see Site Plan on Figure I-3.) An underground piping system will carry a controlled flow of gas to the FFTU. Tanks were sized to store enough propane for 30 days of operation to allow for tank maintenance without interruption to the training and to minimize refilling events, based on a probable maximum daily demand of 940 gallons (Knight,1992.)

The propane system, including tanks, vaporizers, unloading station, gas train terminations, piping and accessories, shall be designed and installed in complete accordance with the requirements of NAVFAC Design Manual DM-22, National Fire Protection Association (NFPA) 54 and 58, and Factory Mutual 7-54 and 7-55. A brief review of safety features incorporated into the selection of tank sizes and site design is presented below, extracted from the MIL-HDBK-1027/1.

- A full storage tank will contain 80% liquid equivalent to 30 days storage and 20% vapor, which allows for thermal expansion.

- The storage area shall be fenced to restrict pedestrian and vehicular traffic. The fence area will have anti-vehicle barricade posts to protect tanks from an accidental collision from vehicles or trucks.

- The storage area will not have walls, barricades or curbing features which would prohibit access and lateral ventilation to flush the area. Tank foundations shall be proper for the soil bearing conditions.

- Tank exteriors shall be coated with corrosion protective material where tank rests on the foundation and tanks shall be adequately grounded.

Some of the specifications for the storage tank, piping and hardware are as follows:

- Tank valves and other appurtenances shall be listed and approved for LP-gas use by Underwriters Laboratories, Inc. (UL), Factory Mutual Research Corporation (FM) or other qualified testing facility.

- Vent outlets from pressure relief valves shall be equipped with a loose rain cap and must be a minimum of 7 feet in height and discharge vertically upward, which assists in dispersing propane in a general safe manner.

- Operating connections will be equipped with internal valves which function as primary shutoff valves and have built-in flow protection. Emergency shutoff shall be provided with three modes of operation: manually at the installation location; remotely via pneumatic actuator; or thermally, where, in the presence of high temperatures such as a fire, the emergency shutoff valve is activated. Tanks will be fitted with accurate fixed liquid level gauging devices to prevent overfilling.

Fire protection of the propane tank yard shall be provided in the form of gas detectors around the tank area and around the vaporizer area. Tanks are separated from the vaporizer by a fence. At the vaporizer, the propane is heated and released at a pre-set, controlled pressure. Gaseous propane, regulated to 20 PSIG, will be piped underground from the vaporizers, under Paul Jones Street, through a vented casing to the FFTU building. The propane gas train terminations will be aboveground adjacent to the south exterior wall of the building.

Once the facility is in operation, additional protocols will be followed to ensure proper maintenance. Servicing of the OTF facility, including propane tank maintenance, will be accomplished by a licensed contractor.

- Extinguishing agents

A number of agents are used to simulate fire conditions and to extinguish fires. These agents are generally non-toxic, compatible with water treatment systems, and economical in

quantities. The agents used, and their counterparts used aboard ship, are described below.

Sodium dodecylbenzine sulfonate will be used as a substitute for the Aqueous Film Forming Foam (AFFF) used extensively in the Navy for fighting fires on ships. Known under the trade names of Ultrawet K, Calsoft, and Nacconal 35SL, sodium dodecylbenzine sulfanate is a common industrial surfactant that, unlike AFFF, is non-toxic to water treatment plant bacteria. Calsoft is the product chosen by the Navy. Calsoft is purchased as a 40% concentrate, which is mixed with water to make a 20% solution. This solution is then pumped through foam/water proportioners to form a further diluted foam solution used by the FFTU.

Number (No.) 2 grade sodium bicarbonate, coated with silicon, will be used as a substitute for PKP, also known as purple K or purple potassium powder. This is a dry chemical extinguishing agent. PKP is undesirable for use in the FFTU because it is extremely diffusive in air, remaining airborne for extended periods, and corrosive to metal and painted surfaces. No. 2 grade sodium bicarbonate is composed of larger particles than PKP, and, therefore, is less diffusive. It is also relatively inert as a result of the silicon coating. In time, the silicon coating breaks down, whereupon the compound dissolves in water. Sodium bicarbonate will be delivered and stored in bulk quantities.

Carbon dioxide (CO_2) will be used in portable extinguishers. Extinguishers will be recharged from high pressure bulk storage cylinders. The extinguishing system will be in conformance with NFPA 12, relating to carbon dioxide systems. Tank storage, which will be above-ground and located just west of the support building, has been sized to provide approximately 30 days of CO_2, resulting in an anticipated 4-ton tank.

A *simulated shipboard halon (dichlorodifluoromethane) gas installation* will be provided at the training facility in order to familiarize trainees with this extinguishing agent. All necessary

mock-up equipment will be provided, but no pressurized containers or actual agents will be utilized.

Water spray will simulate the use of aqueous potassium carbonate (APC), a type of extinguishment used as a fixed-range guard system on kitchen exhaust hoods.

Simulated smoke will be produced by use of *butylated triphenylphosphate (TAP)*, marketed as CHEM CHEX 220. TAP smoke is a hot airborne mixture which produces a negligible residue. Particle size can be adjusted from 0.5 to 2 microns. An exercise may use smoke for about 20 seconds, which, at a consumption rate of 1 liter per minute, results in an average consumption of 1 gallon every 11 exercises.

- Ventilation and Air Handling Systems

Emissions from the FFTU outlet from exhaust fans located on the staging area at the top of the building. Air and occasional smoke are drawn up and out of the building. Propane gas burns clean, producing some emissions of carbon dioxide and methane. There are very few particles associated with the FFTU exercises, and those which do exist are settled out before air is exhausted from the building. Before reaching the exhaust fans, the air passes through a low velocity plenum. This is basically a box 10 feet x 10 feet x 10 feet, where particles fall out of suspension.

The facility requires extensive mechanical systems for air handling and exhaust. Year-round, air enters the FFTU through louvers in the side of the building. When air temperatures are 55 degrees or warmer, propane burns well. When temperatures drop below 55 degrees, however, propane does not burn well. To rectify this situation, six air handlers located around the FFTU are used during cooler weather for make-up air. The incoming air is pre-heated in the air handlers before entering the facility.

The system of air handlers has the potential to create a noise impact. The handlers will have noise attenuators on both the inlet and the outlet sides of the fan, which are expected to mitigate noise effects. Both the occupants and the surrounding land uses will be protected from noise impacts.

- Water and Wastewater

Water required for the FFTU training will be pre-filled in a 52,000 gallon reservoir tank in the basement of the OTF. This quantity represents one normal training day demand.

Wastewater generated by the FFTU may contain several substances used during exercises: propane, sodium bicarbonate grit, and surfactant (Calsoft). Treatment of the wastewater will consist of a gravity drain system whereby water is first directed through a propane interceptor. This consists of a vault where water comes to rest momentarily, at which time any traces of propane gas are liberated and vented to the outside of the building. Water then continues into a holding tank, where an anti-foaming agent is added and the pH adjusted, if necessary, to 7-7.5. Water is circulated for 4-5 hours, then pumped at a controlled rate into the sanitary sewer system.

Based on the normal daily training day demand of 52,000 gallons, and assuming operations 5 days per week, wastewater quantities will amount to 260,000 gallons per week, or 13,520,000 gallons per year.

- Hazardous Waste

The spent canisters from the Oxygen Breathing Apparatus (OBA) worn by trainees and instructors during training operations contain trace amounts of triphenyl phosphate and other substances that have been filtered from the artificial smoke during fire simulations. Triphenyl phosphate is a potential carcinogen according to the manufacturer's literature. The canisters will be collected and handled as a hazardous waste by the NTC DRMO.

Within 90 days, spent canisters will be removed from NTC and disposed of by an approved contractor.

b. Damage Control Trainer (Wet Trainer)

The Damage Control Trainer (Wet Trainer) is a series of environmentally enclosed and controlled compartments made to look like a ship's hull. Manual valves operated by instructors behind observation windows control the flow of water through the trainer's "hull" or from the "ship's" pipes. Water under pressure allows for a realistic simulation. Trainees apply pressure, pipe wraps, and other techniques to plug the leaks.

The design of the DCT was based on the construction drawings for the existing trainer at San Diego, California. The DCT was sized for a class size of 60. Specialized facilities relate to the water storage and treatment system.

- Water and Wastewater

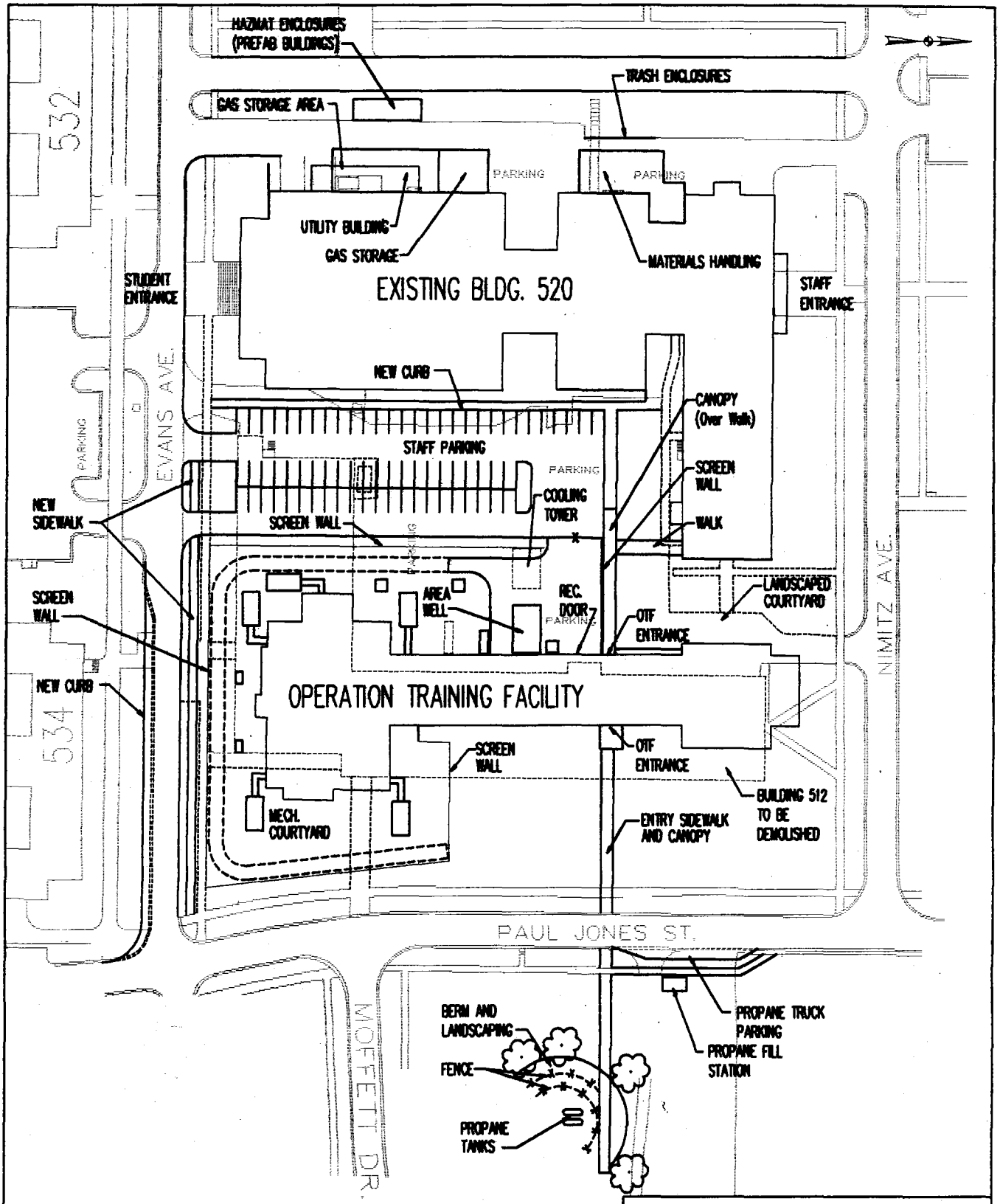
Water used in the wet trainer will be stored, treated and recycled in a 12,500-gallon storage tank located in the lower level of the support building. This quantity is anticipated to be adequate for training exercises for a month. Water will be filtered and chlorinated to maintain water quality comparable to a swimming pool. Relatively small quantities of chlorine will be stored, probably as a gas with a 2-bottle manifold, and fitted with valved chemical feeders and a gas detection device (R. Calderwood, personal communication.) The tank will be drained and refilled once a month. Water is expected to be of a quality suitable for direct discharge to the sanitary sewer system.

Water stored and recycled for the training exercises will be discharged approximately once a month to the sanitary sewer system. Based on the 12,500-gallon storage tank size, the facility will generate approximately 150,000 gallons of wastewater per year.

C. Purpose and Need

The purpose of the proposed action is to provide suitable facilities at the Naval Training Center Great Lakes (NTC) for the Hull Technician "A" (HT"A") School, the Hull Technician "C" (HT"C") School, and Damage Control "A" (DC"A") School. The HT"A" School, which provides basic training in hull maintenance and repair, is required by BRAC II legislation to be relocated to NTC from Naval Station Philadelphia. The HT"C" School, which provides advanced training in hull maintenance and repair skills, and the DC"A" School, which provides basic and team training in fire fighting and water damage control, would be relocated from NTC San Diego and the Naval Technical Training Center (NTTC) San Francisco, respectively, under BRAC III recommendations.

There is an essential need to carry out the proposed action in order to carry out BRAC directives and fulfill the training mission of NTC. BRAC initiatives have directed the closing of the Naval Station Philadelphia, and are expected to precipitate the realignment of NTC San Diego and the closing of the NTTC Treasure Island, San Francisco. NTC Great Lakes will be the only Naval Training Center where the HT"A", HT"C", and DC"A" training curricula will be available. If not implemented, the Navy will fail to perform training in skills critical to military preparedness, namely, hull maintenance and damage control. Therefore, the "No Action" alternative was not further addressed.



LEGEND

BUILDING NUMBER [520]

DEMOLITION ITEMS ----------

STRUCTURES ———

Department of the Navy
Naval Facilities Engineering Command
Northern Division

Relocation of HT "A", HT "C" and DC "A" Schools EA

Site Plan

Scale : 1"=100' | Figure: 1-3

$:\2mh/fireb

II. ALTERNATIVES TO THE PROPOSED ACTION

II. ALTERNATIVES CONSIDERED

The selection of sites other than NTC for the proposed action was infeasible as a result of BRAC directives, which specify NTC as the receiving Base. The relocation of the HT"A", HT"C" and DC"A" Schools to NTC Great Lakes is mandatory due to base closures, which will precipitate the closing of the HT"A" School at Naval Station Philadelphia, the HT"C" School at NTC San Diego, and the DC"A" School at the NTTC Treasure Island, San Francisco. NTC is anticipated to be the only Naval Training Center where these training curricula will be available.

A. Alternative Sites at NTC

Vacant lands and alternative buildings at NTC were evaluated for their possible use as a project site. Program requirements indicated that some renovated space in an existing building could be used for the HT"A" and HT"C" Schools, but the technically complex and unique requirements of the OTF were only achievable through new construction.

Two sites with adequate land area for the project were identified, a parking area adjacent to the 22nd Street gate and the chosen site at Buildings 520 and 512. The parking area at the 22nd Street gate would have required the construction of facilities directly next to residential areas and would have displaced needed parking. The site was considered incompatible with surrounding land uses and functional objectives, and, therefore, unacceptable.

Buildings 520 and 512 are under-utilized and Building 512 is in poor condition. The only active operation, the Electronic Technician "A" School in Building 520, can be readily moved to another facility at NTC without a loss of equipment or function.

This location allows efficient use of an existing building and provides enough space within the vicinity of the demolished building for new construction. Construction of the project on the site of the existing Buildings 520 and 512, therefore, is the preferred alternative. On account of the need to place the facilities at NTC, the limited amount of open and/or developable lands available at NTC, and the requirement for new construction, the preferred alternative is the only feasible alternative.

III. RELATIONSHIP OF THE PROPOSED ACTION TO FEDERAL, STATE AND LOCAL PLANS, POLICIES AND CONTROLS

III. RELATIONSHIP OF THE PROPOSED ACTION TO FEDERAL, STATE, AND LOCAL PLANS, POLICIES AND CONTROLS

The proposed action must be consistent with all pertinent Federal, State and local policies, laws and regulations. Activities occurring at the NTC are, in many cases, exempt from many State and local regulations and plans. There are, however, selected activities that are regulated at the State and Federal level, particularly with regards to wetland protection, water and air quality, and cultural resource protection. The Department of Defense (DOD) has also developed regulations that require that significant military installations adopt Natural Resource Management Plans and base Master Plans to guide in their development. The pertinent Federal, State, local, and military laws, regulations, plans and policies are summarized below.

A. National Environmental Policy Act (NEPA)

This EA is being prepared as required by the National Environmental Policy Act (NEPA) of 1969 and related regulations. Implementing regulations for NEPA have been developed by the Council on Environmental Quality (CEQ), which oversees the NEPA process for the Executive Branch. These regulations (40 CFR Part 1500-1508) set forth the general requirements that federal agencies must follow to ensure compliance with NEPA. In addition to providing the regulatory basis and procedural requirements for the preparation of Environmental Impact Statements (EISs), these regulations also provide for the preparation of Findings of No Significant Impacts/Environmental Assessments (FNSI/EA) and Categorical Exclusions (CEs) for categories of actions that will not cause environmental impacts.

G. National Historic Preservation Act

The National Historic Preservation Act was enacted in 1966 to protect properties of historic nature by empowering state historical agencies with the right to comment on any project that may affect properties of historic significance. Although the proposed facilities are not within a designated Historic District, the Illinois State Historic Preservation Officer (SHPO) was notified of the proposed action. In accordance with the Programmatic Agreement among NTC, the Advisory Council on Historic Preservation and SHPO, SHPO indicated that, because the subject site is located outside of the NTC Historic District, the project is exempt from review.

H. Endangered Species Act

Under Section 7(a) of the Endangered Species Act of 1973, as amended, federal agencies are required to carry out programs for the conservation of endangered or threatened species. According to the NTC Natural Resources Plan 1990-1994, there are no known endangered or threatened species within the project area.

I. Coastal Zone Management Act

The Coastal Zone Management Act states that a federal agency conducting work within a designated coastal zone shall do so in a manner consistent with the approved state coastal zone management program. The State of Illinois elected not to prepare a plan, therefore, there are no requirements under this legislation.

J. NTC Master Plan and Natural Resource Management Plan

U.S. Department of the Navy regulations call for the preparation of Master Plans and Natural Resource Management Plans for each military installation. The Master Plan is a guidance document designed to inventory existing conditions, forecast near and long-range improvements, and provide guidance for protection of resources in light of the respective missions of each installation.

The Great Lakes Naval Training Center Master Plan was approved in 1986 in accordance with OPNAVINST 11000.63. The proposed action was not identified as a future project because at the time the Master Plan was approved, BRAC legislation did not yet exist. However, the action is not incompatible with the Master Plan, as the land use of the subject buildings and surrounding lands are designated for Service School Command (SSC) training purposes. In fact, there are several strong consistencies with the Master Plan. These are as follows:

- The major goal for optimum land development emphasizes the concept of ideal functional relationships in the siting of facilities, especially the *collocation of related activities*. The action would collocate related schools within the Engineering Systems School, and, more specifically, collocate the basic and advanced Hull Technician specialty training.

- The Master Plan emphasizes the importance of implementing the Base Exterior Architecture Plan (BEAP) to convey the image of the Navy and Navy life to personnel, Navy families and the public. The BEAP is intended to supplement the Master Plan and guide the location, planning and design of future sites and/or building exterior improvements. BEAP guidelines were followed in the architectural and site design concepts, as described in more detail below. The BEAP outlines several design elements for the SSC vicinity intended to promote compatibility with surrounding residential uses, including berming, planting, asphalt removal, concrete paving, and street lighting. The proposed plans for Building 520, the OTF, and the propane tank storage area incorporate these elements.

Additional architectural features have been incorporated to promote compatibility with NTC architecture. The training units of the OTF will be enclosed with red ground face concrete block which is compatible with the red brick of Building 520. The support building is clad with a metal panel and curtainwall system similar to the proposed Building 520 window replacement, visually uniting the two buildings. The extensive mechanical equipment related to the OTF operations will be visually screened with block masonry retaining/screening walls. Propane tanks will be visually screened by a landscaped berm on the sides facing SSC housing.

- The Master Plan calls for *continued upgrading of substandard facilities and replacement of facilities which are obsolete due to age and deterioration.*

- One of the objectives of the Master Plan is to allow *siting and constructing facilities to allow maximum flexibility to accommodate changes in mission.*

- The Master Plan recognizes *the need to replace Building 512*, although it calls for expansion of electronics training facilities rather than damage control facilities.

The Natural Resources Management Plan (NTC, 1990) recommends protection of the natural resources of the NTC. There are no significant natural resource areas in the vicinity of the site, and the project would not directly or indirectly impact such areas.

IV. DESCRIPTION OF THE EXISTING ENVIRONMENT

IV. DESCRIPTION OF THE EXISTING ENVIRONMENT

The following sections describe the existing environment of the NTC in reference to the HT"A", HT"C", and DC"A" School project site and surrounding environs. Both the natural and built environments are presented in order to establish an informational base from which to estimate impacts caused by the proposed action.

A. Natural Environment

1. Air Quality and Noise

Air quality is defined on a regional scale and characterized based on minimum National Ambient Air Quality Standards (NAAQS), which the Illinois Environmental Protection Agency (IEPA) adheres to in administering the Federal Clean Air Act. NAAQS, shown in Table IV-1, provide standards for priority pollutants such as carbon monoxide, total suspended particulates, sulfur dioxide, nitrous oxide, ozone, and lead. The NTC is located within IEPA Air Quality Region 67. The region is in non-attainment for ozone, indicating the potential for careful IEPA review of potential emissions sources.

Noise generation in the vicinity of the project sites is minimal and noise levels are typical of institutional facilities. Primary noise sources are vehicular traffic traversing the NTC and building mechanical systems. Typical decibel levels for this environment would range from 40 dB (lowest limit of urban ambient sound) to 60 dB (low speed vehicular traffic; air conditioning unit at 100 feet) (Branch et. al. 1970.)

TABLE IV-1 NATIONAL AMBIENT AIR QUALITY STANDARDS			
Pollutant	Time of Average	Primary Standard	Secondary Standard
PM_{10} Particulate matter	Ann. Arith. Mean 24-Hour	50 ug/m^3 150 ug/m^3	50 ug/m^3 150 ug/m^3
SO_2 Sulfur Dioxide	Ann. Arith. Mean 24-Hour 3-Hour	80 ug/m^3 365 ug/m^3 none	none none 1300 ug/m^3
NO_2 Nitrogen Dioxide	Ann. Arith. Mean	100 ug/m^3	100 ug/m^3
CO Carbon Monoxide	1-Hour	40 mg/m^3 35 ppm	40 mg/m^3 35 ppm
	8-Hour	10 mg/m^3 9 ppm	10 mg/m^3 9 ppm
O_3 Ozone	1-Hour	0.12 ppm 235 ug/m^3	0.12 ppm 235 ug/m^3
Pb Lead	Quarterly Arith. Mean	1.5 ppm	1.5 ppm

Note: All standards with averaging times of 24 hours or less are not to be exceeded more than once per year.

ug/m^3 - micrograms per cubic meter of air
mg/m^3 - milligrams per cubic meter of air
ppm - parts per million

2. Hydrology, Wetlands and Floodplains

The hydrology of the site is typical of developed areas where infiltration is minimal; water runs off impervious surfaces, is intercepted by catch basins, and enters the

storm sewer system. Stormwater from the site flows south and west through the NTC piped stormwater system and discharges into Pettibone Creek at an outfall near the boundary of the NTC near Sheridan Drive. Pettibone Creek drains into Lake Michigan at the NTC Boat Basin.

There are no floodplains in the Mainside section of the NTC, according to the Federal Emergency Management Agency (FEMA) Flood Insurance Study of 1980 and the map designated as Community-Panel Number 170384 0001 B (1980), which includes the NTC (NTC, 1990.) This is probably a result of the steep terrain of the Pettibone Creek system, which quickly conveys runoff directly into Lake Michigan.

Based upon field inspection and reviews of soil surveys and the draft National Wetlands Inventory (NWI) map (GEONEX North America Operations), the subject site does not contain any wetlands and is well above the Lake Michigan and Pettibone Creek flood elevations.

3. Terrestrial Ecology, Wildlife and Vegetation

No endangered or threatened species of plant or animal are known to exist at the NTC, according to IEPA records (NTC, 1990), and there are very few ecological resources associated with the site, since the site supports buildings, paved parking, and manicured lawn. A stand of mature maple trees along Nimitz Avenue is the most valuable resource on the project site, providing perching habitat for birds, visual aesthetics, and overall benefits of air purification and shade.

4. Topography, Geology, and Soils

The topography of the NTC features Lake Michigan, two engorged feeder streams,

and level bluff areas. The formation of the ravine/bluff complex occurred over several periods of glaciation. The majority of structures and use areas at the NTC, including the subject site, are situated on top of these bluffs.

The geology of Lake County shows a series of deposits laid down by glacial ice, water, and winds during several periods of glaciation over the past 600,000 years. The landscape today is largely a result of the most recent period of glaciation, the Wisconsian, which covered the County.

Physical land can generally be divided into three layers: bedrock, surficial material, and soil. Surficial material and soil are often considered one and the same, but their distinction is particularly important in agricultural applications. The bedrock of the NTC is Silurian-age dolomite which is horizontal and slopes gently eastward. Overlying this bedrock is glacial till, which is unconsolidated, unsorted, ice-deposited sediment composed of a matrix of silt, clay and sand, in which pebbles, cobbles and boulders are imbedded. The majority of glacial till in Lake County is classified as the Wadsworth Till Member of the Wedron formation. Wadsworth Till shows variation in texture within the County. The most clayey portions of the Wadsworth Till occur within the area mapped as the Lake Border Morainic System on the eastern side of the County. The Lake Border Morainic System consists of five long, narrow, closely spaced moraines generally directed north to south, paralleling the shoreline of Lake Michigan.

Nearly the entire NTC is mapped as ML, Made Land, according to the 1970 Soil Survey of Lake County prepared by the U.S.D.A. Soil Conservation Service. Surficial deposits have been stripped and moved and non-indigenous materials brought in for construction. The project site for the HT"A", HT"C", and DC"A" Schools sits on these udorthents (Made Land).

Subsurface soil conditions at the project site were tested through a soil sampling program (Professional Service Industries, Inc. 1993) so that engineering characteristics of the foundation materials could be estimated. A representative soil profile consists of an upper layer of either bituminous asphalt (2.5 - 4 inches thick), bituminous asphalt and concrete (6 - 10 inches), or organic topsoil (6 - 12 inches). Below the surface material, a stratum of stiff silty clay 3-9 feet thick occurs. Underlying soils consisted of variably mixed strata of sand, silt, and clays, ranging in thickness from 2-30 feet, and, in general, exhibiting high unconfined compressive strength values. Groundwater levels were from 15 to 30 feet below ground surface.

B. Built Environment

The NTC is located in Lake County within the city limits of North Chicago. Because of its size, NTC is given its own postal designation of Great Lakes, Illinois. The pertinent socioeconomic and infrastructure conditions of the NTC, North Chicago, and Lake County are described in the following sections.

1. Population

The current population of the NTC is estimated at 21,358, according to the 1990 U.S. Bureau of Census. The population of the NTC is a significant portion of the overall population of the City of North Chicago and Lake County. The NTC population of 21,358 is 61% of the entire North Chicago population of 34,978 and 4% of the Lake County population of 516,418. Training recruits that regularly circulate through the NTC typically represent 20-25% of the NTC population.

The North Chicago populace is composed of 57% white, 34% black, 5% hispanic, and 4% other. Twenty nine percent of the people in North Chicago are native to the

State of Illinois while 42% come from midwest or southern states. Sixty-four percent of the population is between the ages of 18 and 44.

2. Economics

NTC is a major contributor to the local, regional, and state economy. Many items and services required by NTC are purchased from local sources. Military and civilian employees spend millions of dollars per year for local goods and services. NTC is a major consumer of off-base utilities including North Shore Sanitary (wastewater), Commonwealth Edison Company (electricity), and North Shore Gas (heat).

NTC employs more people than any other entity in North Chicago. The estimated NTC employment is 23,426, including military officers, recruits, and civilians. Abbott Laboratories and Veterans Administration Hospital employ the second and third highest number of employees at 9,500 and 2,300, respectively (North Chicago Planning Department).

The total annual civilian salary of 1990 was $54 million, according to the NTC Command Data Summary, 1990-1991. Military salaries for the same year amounted to $198 million. This represents a total of $252 million dollars disbursed to the local, regional, state, and Federal economy. Because most people employed at the base reside in North Chicago and Lake County, the local and regional economic contribution from the NTC is indeed significant.

3. Housing

Of the entire military employment at NTC, approximately 72% reside in naval housing units or barracks and 28% reside in nearby communities. Of the estimated

2,000 civilians employed at NTC, 1,500 (75%) reside within Lake County. Residence information for military and civilian personnel at NTC is shown in Table IV-2.

Table IV-2
NTC Military and Civilian Population, 1990

	MILITARY	
LOCATION	NUMBER	PERCENT
Residing in Naval Housing	2,035	9%
Residing in barracks	12,905	56%
Residing in area communities	5,875	26%
	CIVILIAN	
Lake County, Illinois	1,494	7%
Kenosha County, Wisconsin	318	1%
Cook County, Illinois	126	1%
Other	102	<1%
Total	22,855	100%

Source: Naval Training Center Great Lakes 1990-1991 Command Data Summary

There are three principal types of housing at the NTC: family housing for permanent party; student housing for the Service School Command and Hospital Corps School; and open bay barracks for recruits. Family housing is concentrated in three areas at the NTC: Forrestal Village, Nimitz and Halsey Villages, and Brick Row. In addition, the NTC has permission to utilize approximately 300 housing units at the Army Base at Fort Sheridan, Illinois, and has additional units in Glenview. As evident from Table IV-2, a significant number of military personnel reside in non-government housing within local communities. It is not known how

many of these are homeowners or renters.

Most of the civilians employed at NTC reside in Lake County, with the remaining residing in southeastern Wisconsin and the metropolitan Chicago area. Permanent military personnel are given the choice of residing in Naval housing units or the local community. Individuals who choose the latter are allocated money for rental property.

4. Schools

Children of military personnel who reside on base attend the North Chicago school system, School District 187. Children of civilian and military personnel that reside off-base and outside North Chicago attend other schools in the appropriate district or attend private schools. Higher educational opportunities are plentiful in the area, including public and private colleges and universities in Chicago that are among the best in the nation.

Forty two percent (1,835) of the 4,350 children enrolled in School District 187 are from military families. The Department of Education (DOE), through the Department of Defense (DOD), provides stipends for each military and DOD employee child. These stipends are granted to the school district and are referred to as "impact aid". This form of monetary compensation is designed to help school districts that contain many military children. Because military housing is exempt from local and state taxes, impact aid was developed to provide monetary compensation to schools. The average DOE allocation to District 187 is $1700 per pupil (M. McConohan, personal communication.)

The average cost to educate a child in School District 187 is $5,200 (M. McConohan, personal communication.) This money comes from several sources including local property tax, impact aid, and State and Federal aid. District 187 is currently experiencing financial difficulties, partially attributed to an insufficient tax base, and is considering consolidating with other districts.

5. Land Use

The subject site is located at the northeast corner of the overall Service School Command (SSC) area of the Mainside section of the NTC, as depicted in Figure IV-1. The SSC is the largest of the three training commands at the NTC and consists of three instructional departments: Engineering Systems School; Electronics Technician School; and Combat Systems School. Within these departments, training curricula are provided in 24 schools, or specialties, which contain both applied instruction space as well as operational trainers (mock-ups or full-size equipment.) These schools are co-mingled with student housing throughout the SSC, which is considered to be compatible land use.

The proposed facilities are surrounded primarily by recreational and housing uses, as shown on Figure IV-2. To the south of the site are student housing and dining facilities, to the west is an indoor and outdoor recreational complex, and to the east and northeast are open space parks including the NTC Foss Acres Park and, outside the NTC, the Foss Park, which is administered by the Foss Park District.

This area of the NTC abuts Foss Park, which is owned by the City of North Chicago. The park consists of several picnic and play areas within a wooded environment and is separated from the NTC by a barbed wire chain link fence.

6. Traffic/Circulation/Parking

a. External Transportation

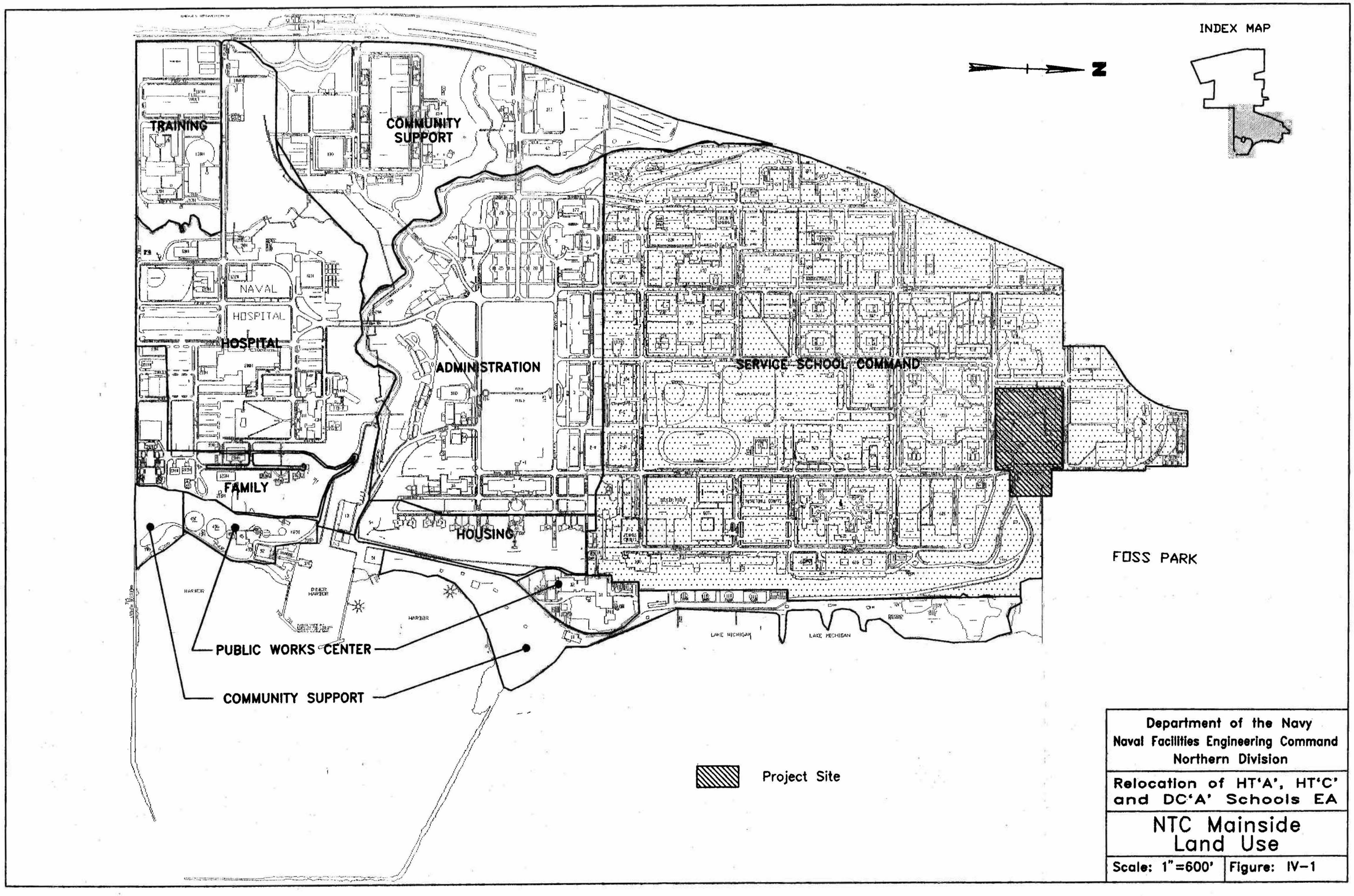
The NTC is served by several external modes of transportation including bus and commuter train. Most individuals arrive by private automobile and access the Base via the main gate along Route 137. The highway network of the area, shown in Figure IV-3, is well developed. The principal north-south arterial routes serving NTC are Route 131, the Amstutz Highway, and Sheridan Road, with Route 137 being the major east-west arterial. Interstate 94 is the major expressway that feeds these arteries.

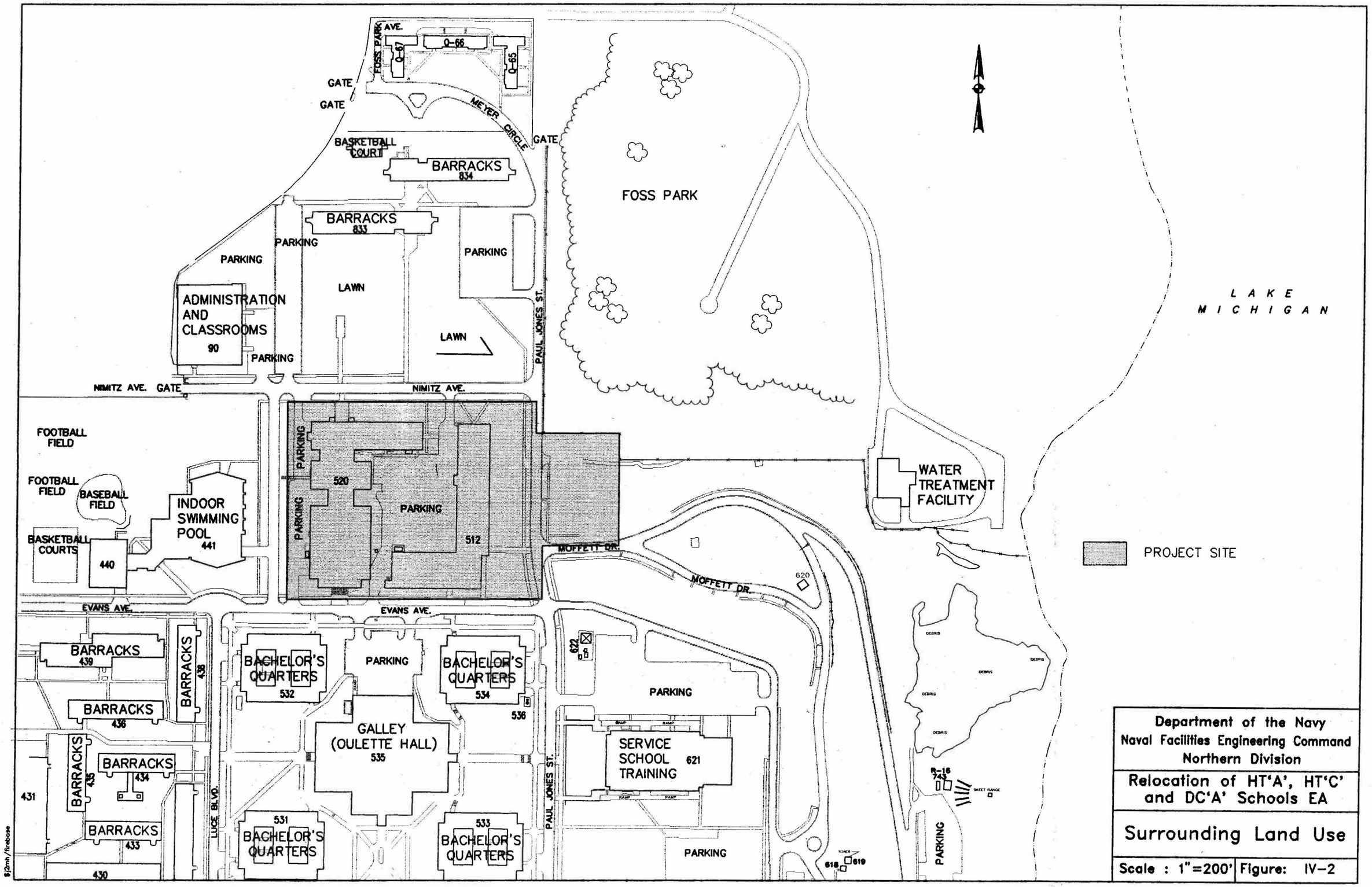
The Chicago and Northwestern Railroad Commuter Rail North Line provides regularly scheduled service between Chicago to the south and Milwaukee to the north. The Great Lakes Station is located near the Main Gate (Gate 1) at Farragut Avenue.

Regional air service is provided by O'Hare International Airport, located approximately 25 miles southwest of the NTC.

b. Internal Traffic Circulation and Parking

The roadway system of the NTC is a complex grid of streets, many of which are one-way, that provide internal traffic circulation. The principal access to the proposed facilities, shown in Figure IV-4, will be the Main Gate along Sheridan Road. There is more direct access from a gate north of the site, on Paul Jones Street at the boundary of Foss Park, but this gate is only open two hours in the morning and two hours in the evening. Paul Jones Street is the primary north-south roadway that


INDEX MAP
N
TRAINING
COMMUNITY SUPPORT
NAVAL HOSPITAL
HOSPITAL
ADMINISTRATION
SERVICE SCHOOL COMMAND
FAMILY
HOUSING
FOSS PARK
PUBLIC WORKS CENTER
COMMUNITY SUPPORT
Project Site
Department of the Navy
Naval Facilities Engineering Command
Northern Division
Relocation of HT'A', HT'C' and DC'A' Schools EA
NTC Mainside Land Use
Scale: 1"=600'
Figure: IV-1

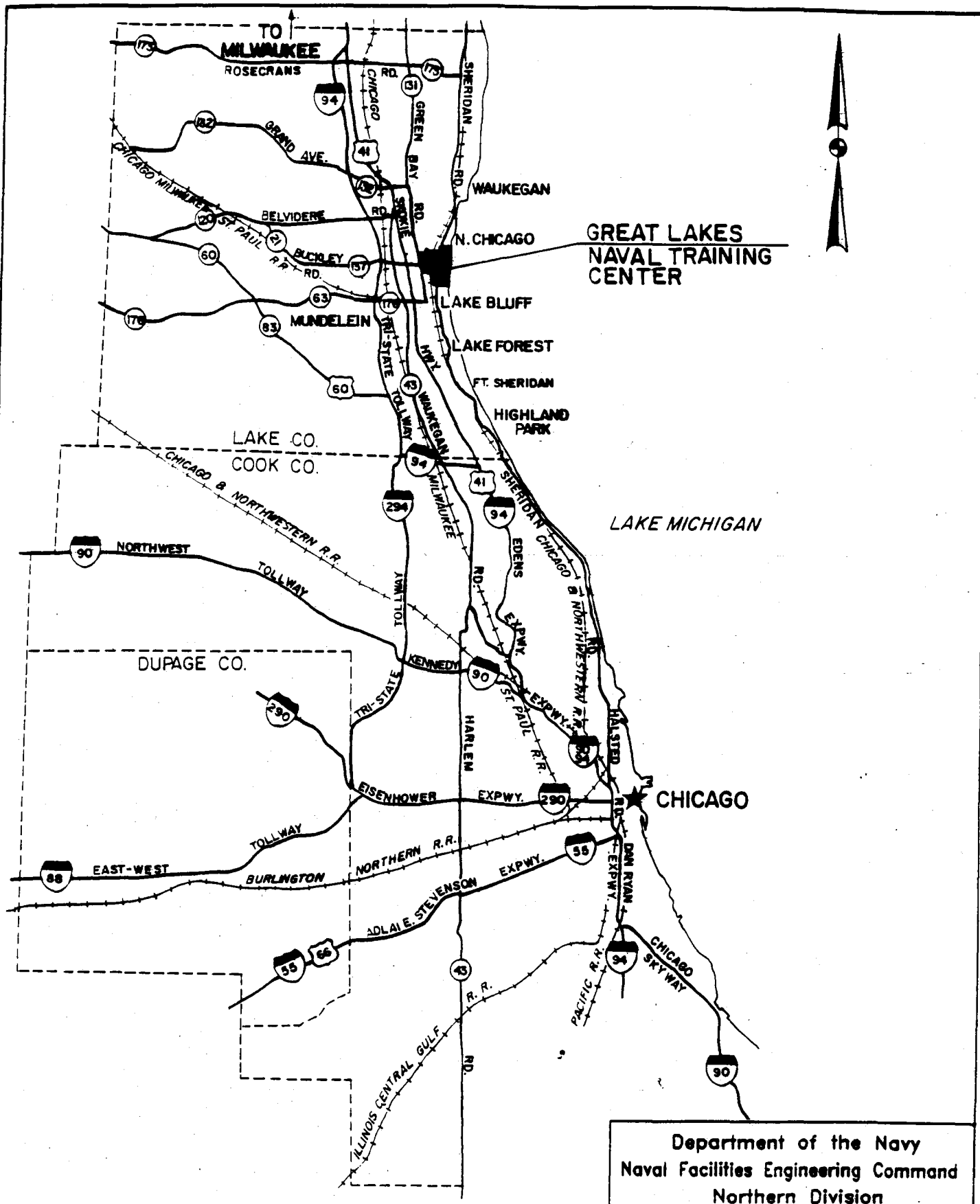


Department of the Navy
Naval Facilities Engineering Command
Northern Division

Relocation of HT'A', HT'C' and DC'A' Schools EA

Surrounding Land Use

Scale : 1"=200' | Figure: IV-2



Department of the Navy
Naval Facilities Engineering Command
Northern Division

Relocation of HT"A", HT"C" And DC"A" Schools

External Street System

Not to Scale | Figure: IV-3

services this area of the NTC. This road is a paved two-lane facility which has sufficient capacity to handle current traffic demands.

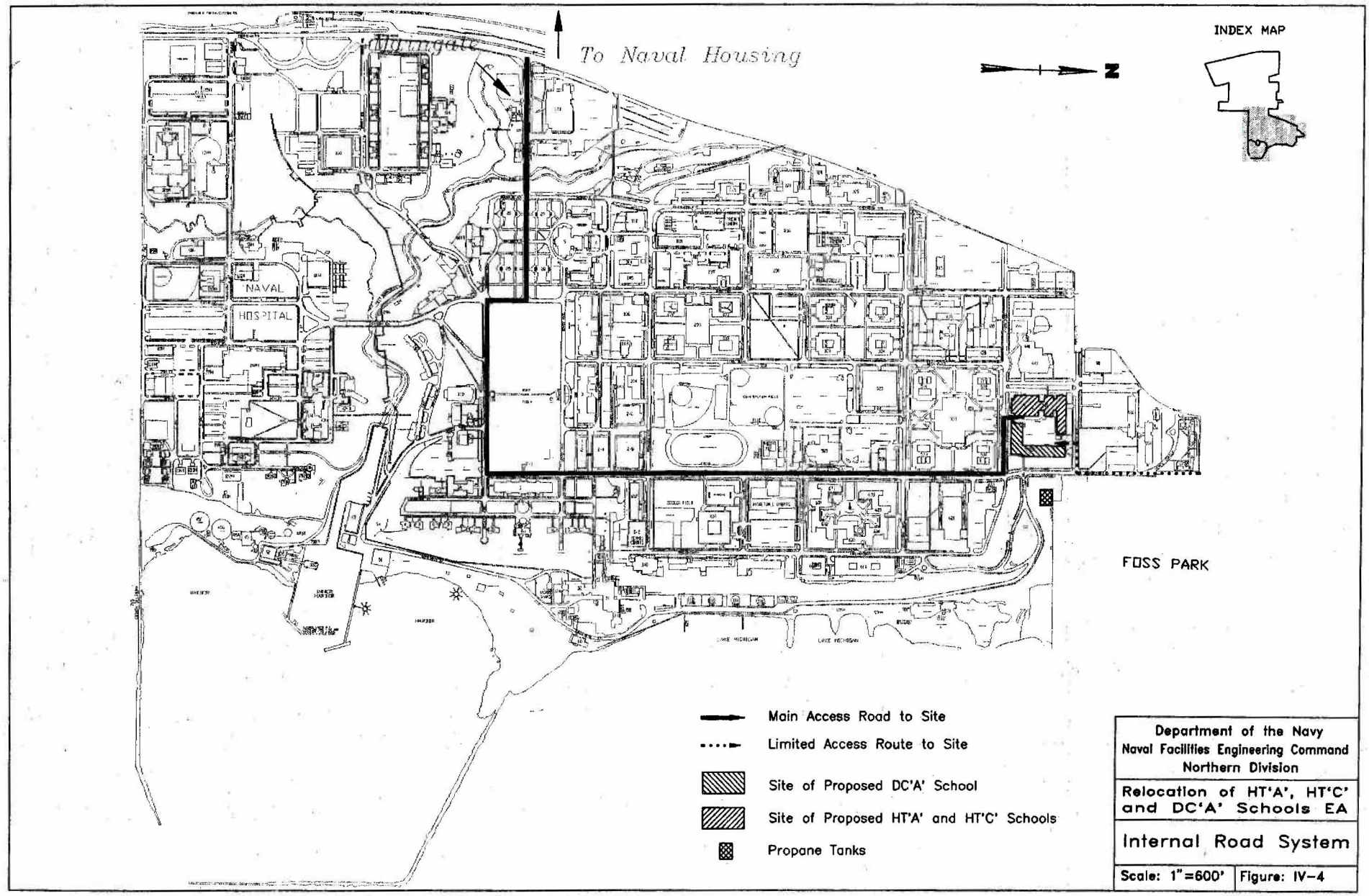
Parking is available at facilities throughout the NTC. There is a parking area between the existing Buildings 512 and 520 that provides enough spaces for staff needs.

7. Cultural Resources

The NTC is rich in tradition and history. The Base was constructed from 1905 to 1911 and was formally opened on July 1, 1911. There were 39 permanent brick buildings on 165 acres of land during World War I. During this time, the Great Lakes Navy band numbered 1500 musicians and was led by the renowned John Philip Sousa. World War II stimulated the erection of 675 new buildings.

There are many notable historic buildings at NTC. The architect chosen to design the original buildings was noted Chicago building designer, Jarvis Hunt (1863-1941). Hunt used terra cotta exclusively in the decorative elements and facades of the 39 original NTC buildings. Just prior to World War II, a number of buildings were constructed in a style which closely resembles that of Hunt's original buildings.

In 1986, the Mainside section of the NTC was designated a National Historic District. This area includes the properties that were a part of the original NTC or are of comparable style to the original structures. The Historic District, shown in relationship to the project site in Figure IV-5, is located on the east side of the Base, adjacent to Lake Michigan, and encompasses 193 acres. This area includes 127 buildings, structures or sites, of which 45 are of major significance to the district and 20 are of minor significance. The remainder are non-contributing properties.

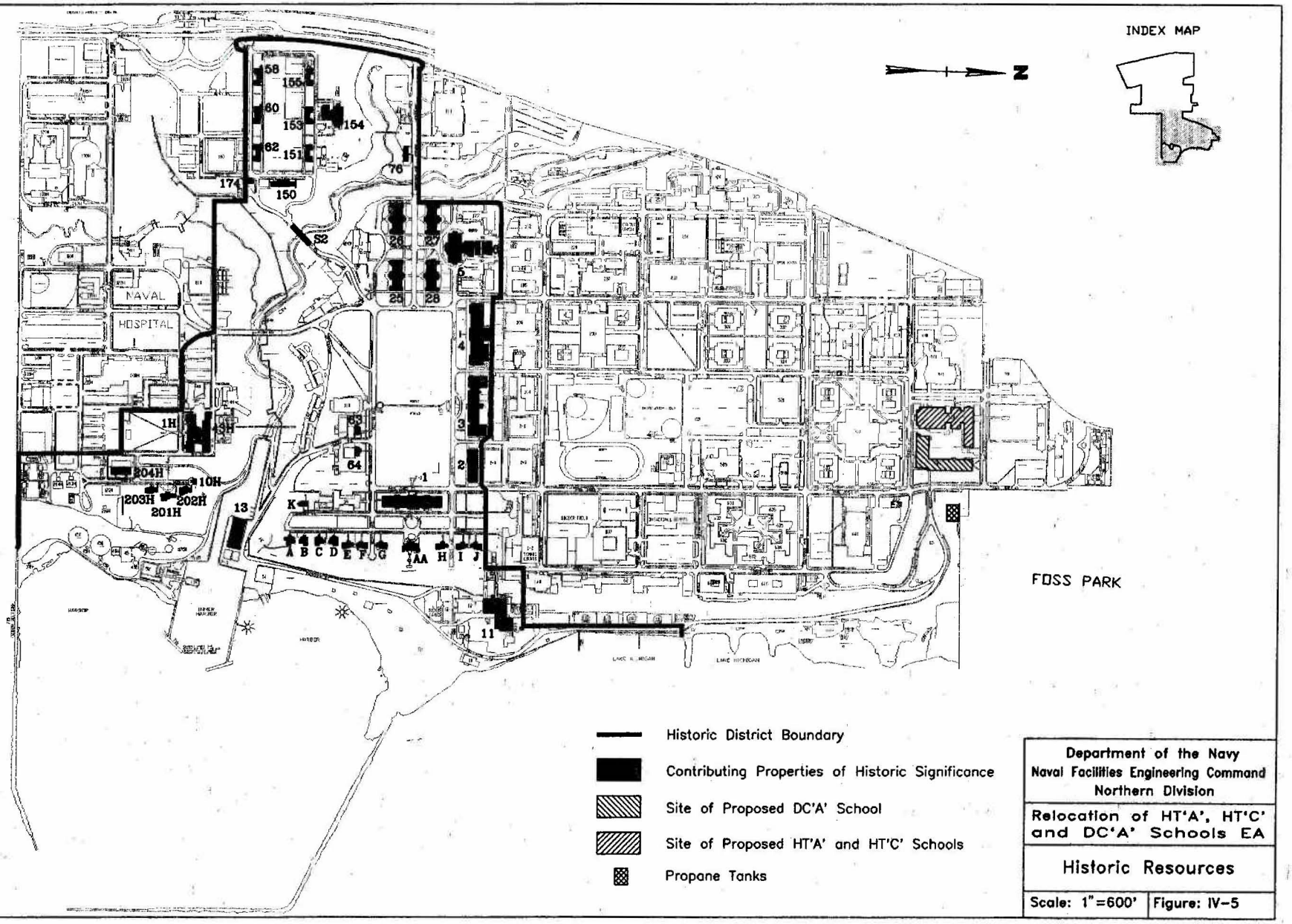


Department of the Navy
Naval Facilities Engineering Command
Northern Division

Relocation of HT'A', HT'C' and DC'A' Schools EA

Internal Road System

Scale: 1"=600' | Figure: IV-4



Department of the Navy
Naval Facilities Engineering Command
Northern Division

Relocation of HT'A', HT'C' and DC'A' Schools EA

Historic Resources

Scale: 1"=600' | Figure: IV-5

VI. UNAVOIDABLE ADVERSE IMPACTS

Although impacts to the natural and man-made environment are expected to be minimal, some adverse impacts which are unavoidable will occur as a result of the proposed action. There will be a slight increase in air emissions from the operation of the FFTU at the DC"A" School. This increase, however, is expected to be insignificant, because the facility will use propane, a clean burning fuel, in conducting fire simulation exercises.

During construction there will be an unavoidable impact on air quality and increases in noise. These impacts will be temporary in nature and will cease when construction is completed. Noise impacts will be mitigated by limiting construction to normal working hours and ensuring that muffler devices on construction equipment are in proper working order. Fugitive dust emitted during construction should be kept to a minimum through the wetting of exposed soils.

Soil erosion from the disturbed area is unavoidable but temporary, and would be minimized through the use of silt fencing and/or hay bales during and immediately following construction.

There would be a slight increase in traffic in the vicinity of the site, on the NTC, and along local streets. This increase is minimal in the context of the entire NTC. The availability of parking in and around the site is adequate.

Existing utilities will experience loading increases as a result of the proposed activity. The large quantities of water required for the fire training facility represents the greatest utility demand for this project, which will result in increased distribution by the NTC water supply system. There will be an increase in the amount of

wastewater discharged to the sanitary sewer system. Existing sanitary sewers are adequate to support this increased load. Pretreatment of process water will ensure that wastewater delivered to the wastewater treatment facility does not overtax the treatment plant or negatively impact receiving water bodies. Other utility demands will not be substantially greater than existing levels.

VII. RELATIONSHIP BETWEEN LOCAL SHORT TERM USES OF THE ENVIRONMENT AND ENHANCEMENT OF LONG TERM PRODUCTIVITY

VII. RELATIONSHIP BETWEEN LOCAL SHORT TERM USES OF THE ENVIRONMENT AND ENHANCEMENT OF LONG TERM PRODUCTIVITY

The National Environmental Policy Act (NEPA) requires consideration of the short term gains versus long term benefits, or vice versa, of a project, and evaluation of whether the project forecloses future options.

The renovation of Building 520 to accommodate the HT"A" and HT"C" Schools makes prudent use of existing facilities. The technically complex and unique facilities that will satisfy the DC"A" requirement can only be acquired through new construction. The use of Building 512 is ideal because of its proximity to Building 520 and other SSC training facilities.

The proposed facilities have been planned to relocate to NTC as a result of the Base Closure and Realignment Act. Locating these facilities at NTC will make sensible use of the existing NTC property and facilities and will ensure a long-term productive and efficient training operation for Naval vessel maintenance and damage control skills.

VIII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

VIII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irretrievable and irreversible commitments of resources refers to resources that are lost or impacts on resources over the long term. These resources primarily include natural resources, human resources, cultural resources, and socioeconomic resources.

There will be a net loss of classroom space as a result of the demolition of Building 512. Currently, however, the building is not needed for classroom use and there is sufficient classroom space available at other nearby NTC buildings to handle the displaced classes.

The investments made to relocate the training schools to NTC are irretrievable commitments of funds. The estimated project costs are as follows:

HT"A" School (some equipment relocated from Philadelphia)	=	$12,491,000
HT"C" School (some equipment relocated from San Diego)	=	$ 7,540,000
DC"A" School (new construction)	=	$24,700,000

Collateral (supporting) equipment costs, such as chairs, desks, etc., are not included.

These relocation activities will eventually result in cost savings over the long term. The relocation of the two basic training schools, the HT"A" and DC"A", to the NTC, where recruits completing boot camp will go directly to basic training, will represent a large cost savings to the Navy in terms of travel and relocation expenses. Boot camp graduates will not be required to relocate to other Naval bases, such as San Diego or Philadelphia, for further training. This long term cost savings is one of the principal goals of BRAC legislation.

IX. REFERENCES AND PERSONS CONTACTED

X. PREPARERS

X. PREPARERS

This document was prepared under the direction of:

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New Britain, CT 06051

The following persons are the principal preparers of this investigation and document:

Name	Professionnal background and role in EA preparation
Robert Wardwell, AICP	Vice President, 21 years experience in environmental impact studies: Project Manager
Linda Wright	Environmental Planner, 12 years experience in environmental planning: Principal Author
Stephen Lecco	Environmental Planner, 6 years experience in environmental impact and compliance. Contributing Author
Kenneth Olesak	Planner, 6 years experience in cartographic presentation and land use planning: Planning Analyst

Adele Faulkner	Drafter, 12 years experience in drafting and graphics: Computer graphics

APPENDICES

APPENDIX A

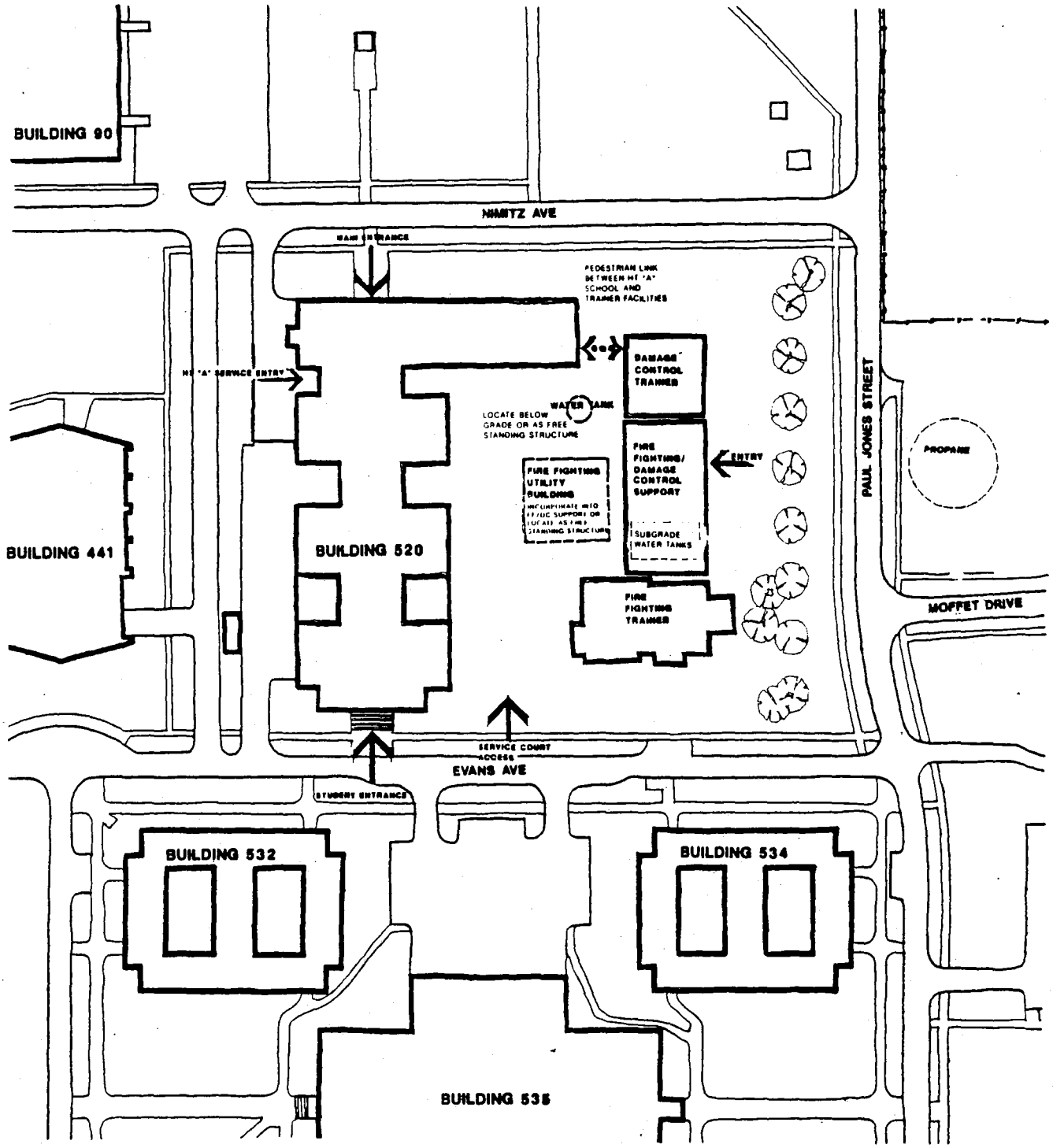
SCHEMATIC DRAWINGS

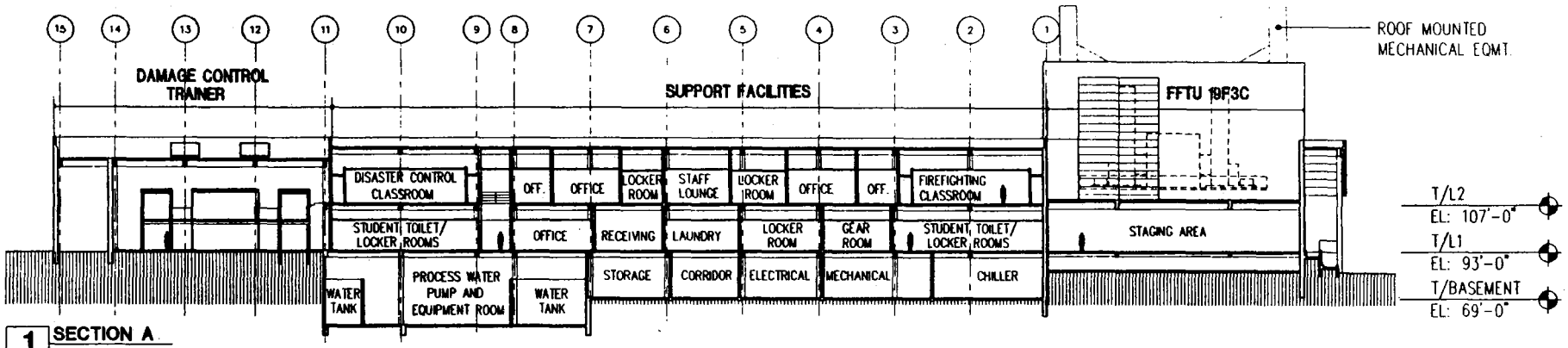
From Knight Architects Engineers Planners, Inc. - Project Documentation

Note: Some elements have been changed since these drawings were made, based on more advanced design (e.g., the above-ground water tank for the FFTU will be constructed as an underground tank in the basement of the OTF.) Specific facilities for the HT"C" School are not shown. However, drawings will provide basic concepts of layout, architecture, and facility requirements.

SITE - PROPOSED CONCEPT

KNIGHT





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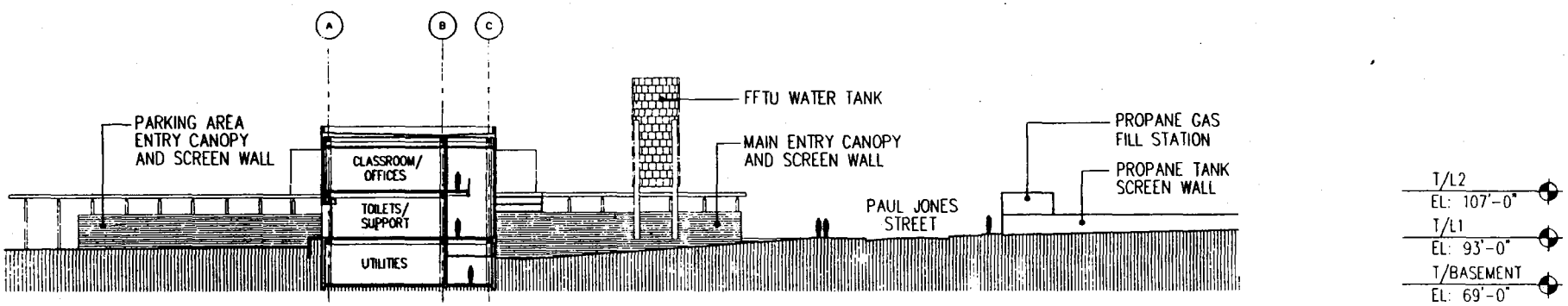
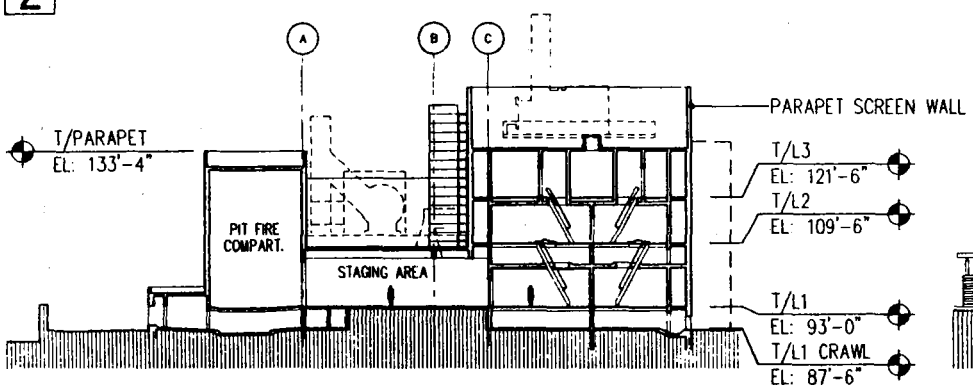
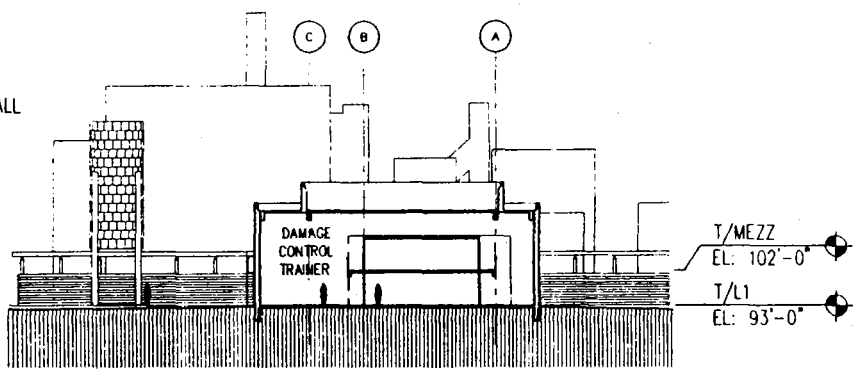


2 SECTION B



3 SECTION C



4 SECTION D

0' 10' 20' 30' 40' 50'

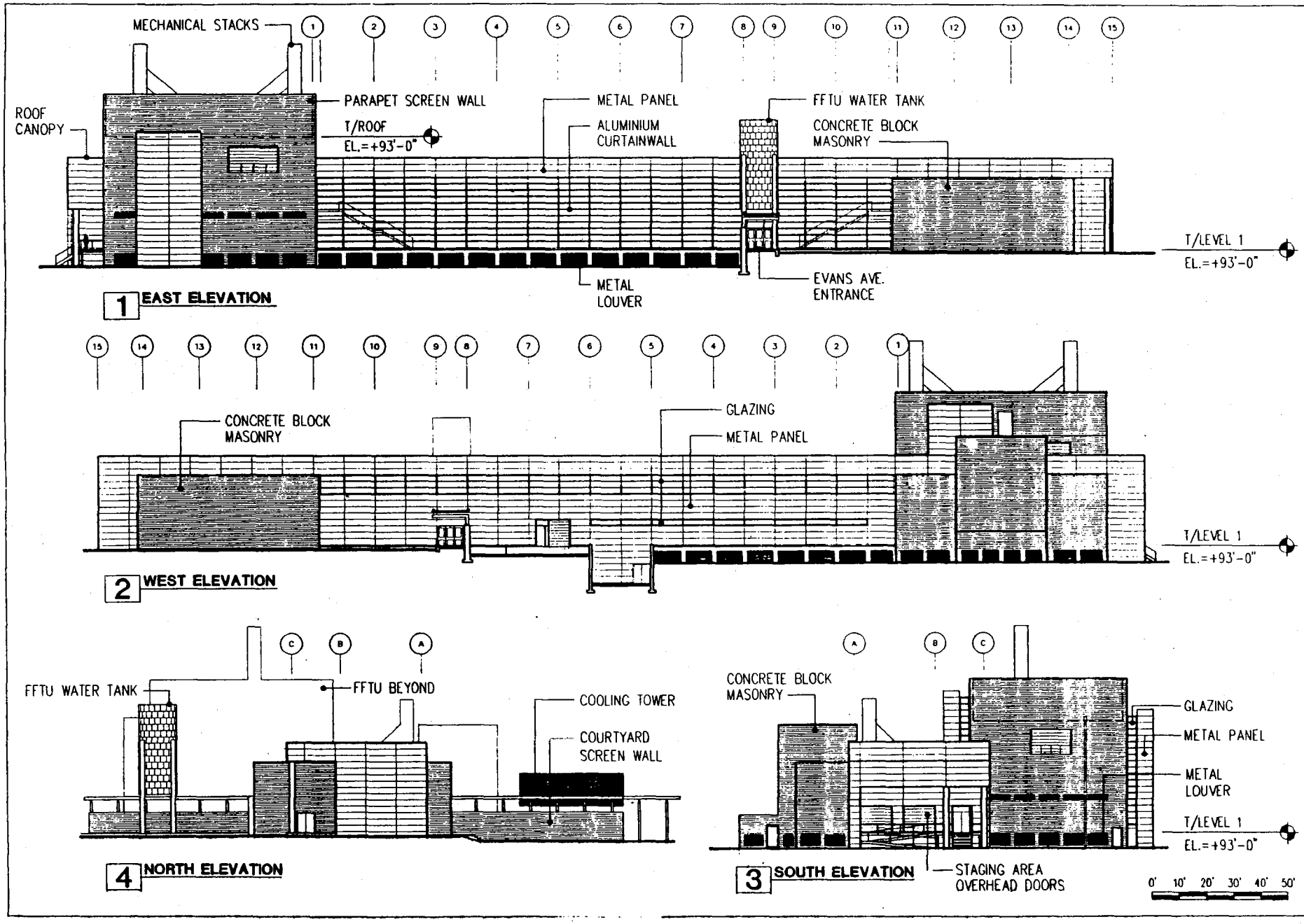
KNIGHT

GREAT LAKES, IL

HT "A" School and Operational Training Facility

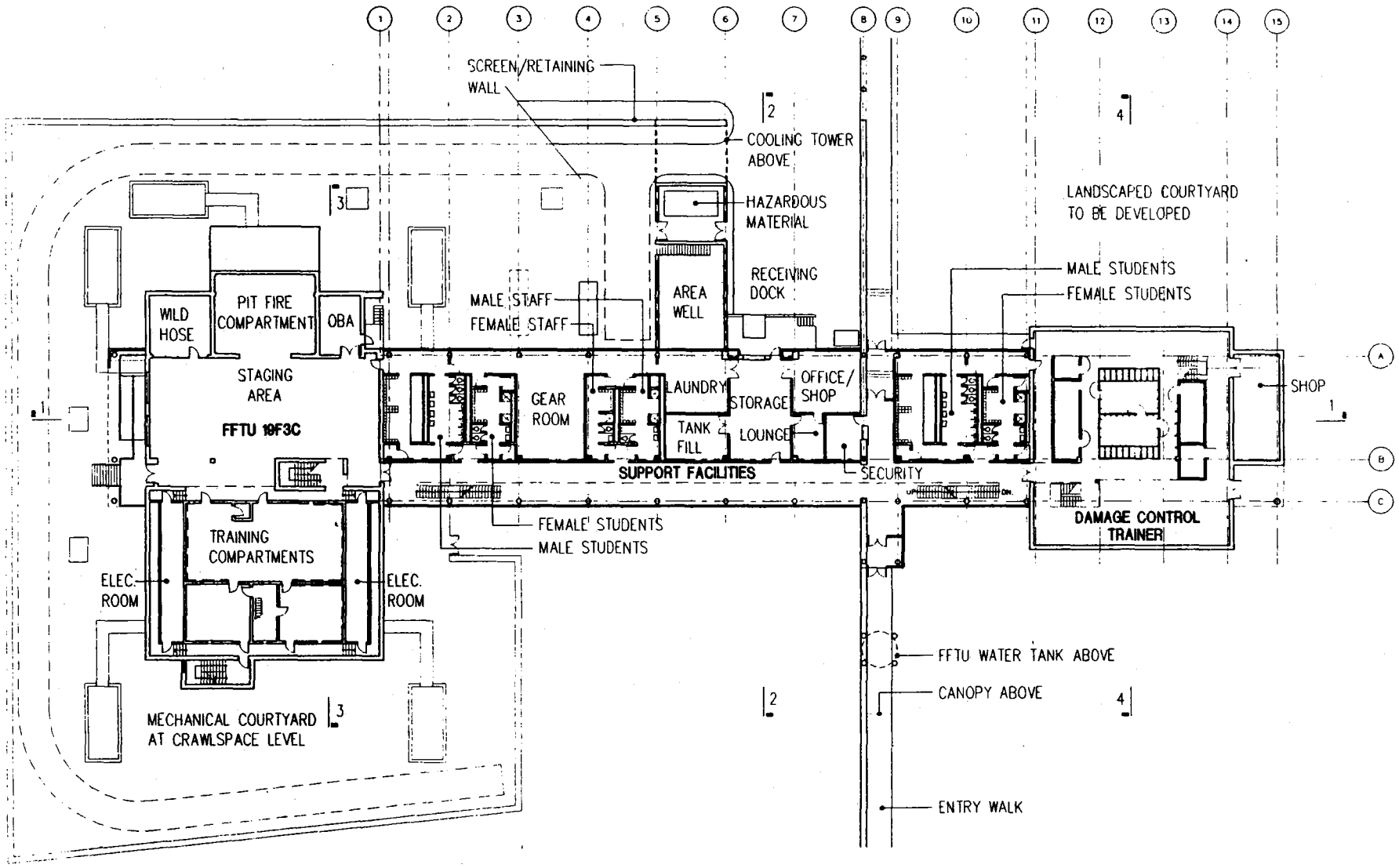
OTF SECTIONS

A-12



HT "A" School and Operational Training Facility
OTF EXTERIOR ELEVATIONS

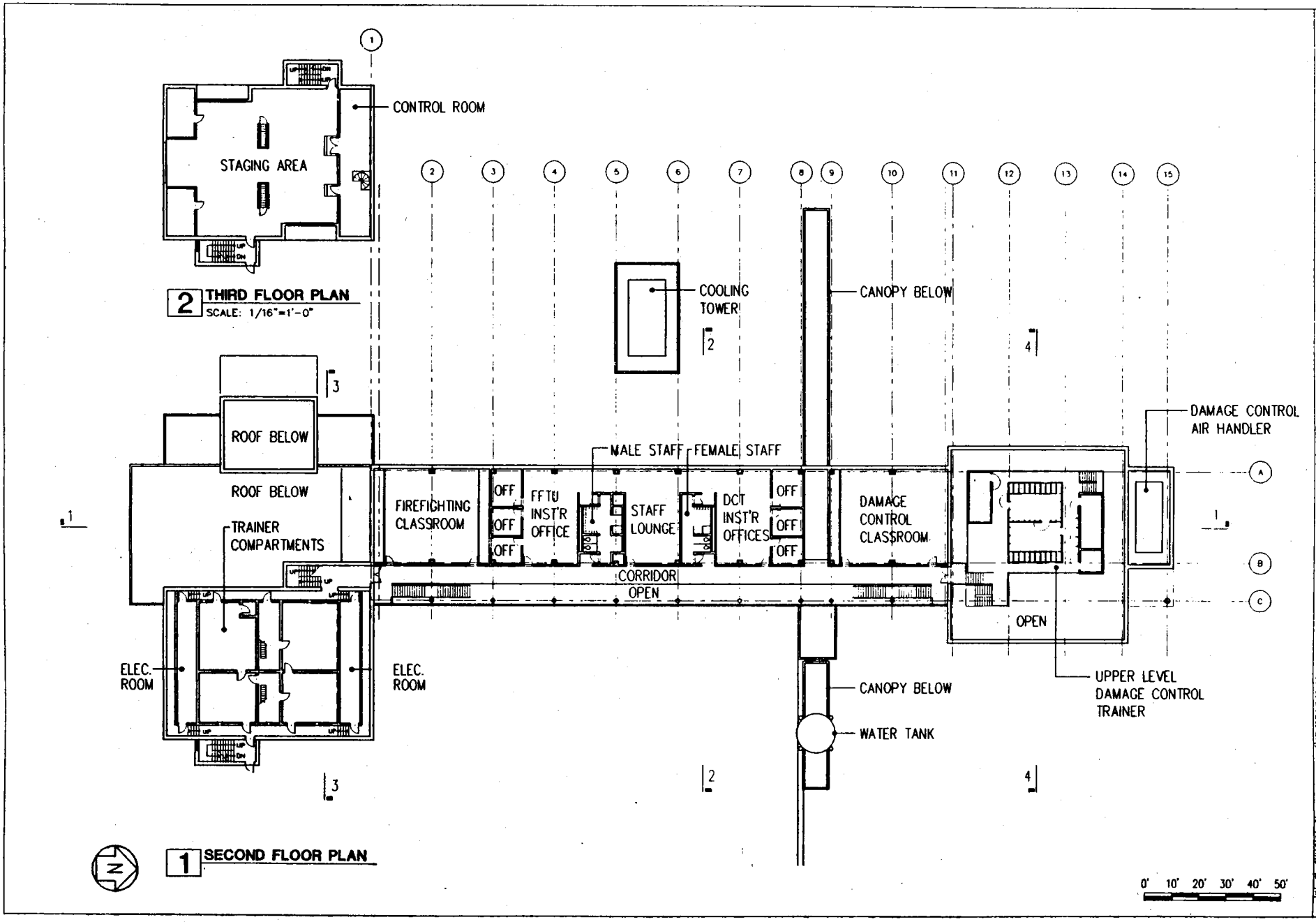
A-11

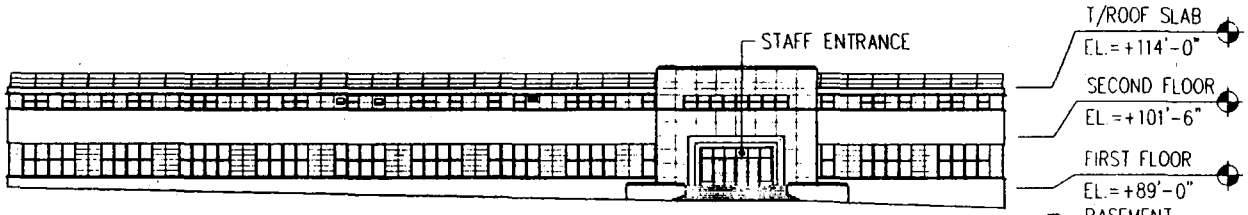


1 FIRST FLOOR PLAN

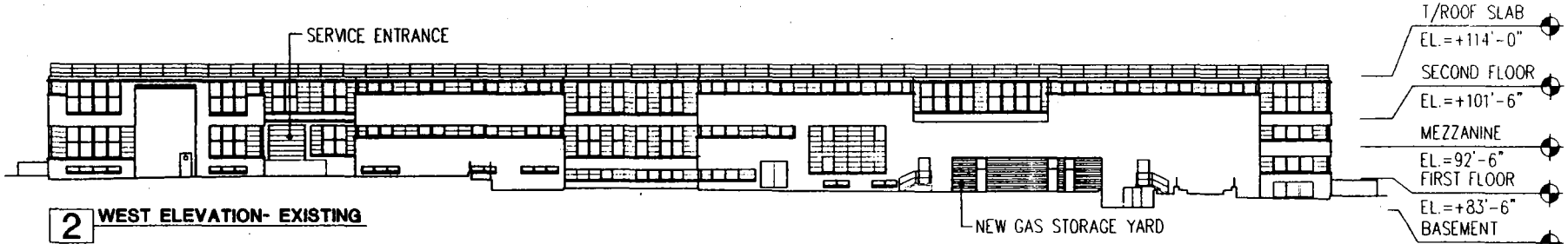
SOUTHERN DIVISION
GREAT LAKES, IL
HT "A" School and Operational Training Facility
OTF FIRST FLOOR PLAN

A-8

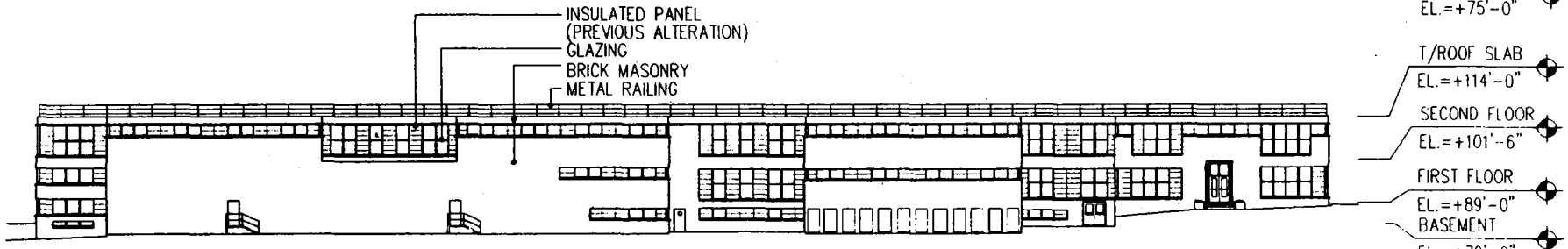

CONTROL ROOM
STAGING AREA
2 THIRD FLOOR PLAN
SCALE: 1/16"=1'-0"
COOLING TOWER
CANOPY BELOW
DAMAGE CONTROL AIR HANDLER
ROOF BELOW
ROOF BELOW
TRAINER COMPARTMENTS
MALE STAFF
FEMALE STAFF
FIREFIGHTING CLASSROOM
OFF
OFF
OFF
FFTU INST'R OFFICE
STAFF LOUNGE
DCT INST'R OFFICES
OFF
OFF
OFF
DAMAGE CONTROL CLASSROOM
CORRIDOR OPEN
OPEN
ELEC. ROOM
ELEC. ROOM
CANOPY BELOW
WATER TANK
UPPER LEVEL DAMAGE CONTROL TRAINER
1 SECOND FLOOR PLAN
0' 10' 20' 30' 40' 50'
KNIGHT
SOUTHERN DIVISION
GREAT LAKES NAVAL TRAINING CENTER
HT "A" School and Operational Training Facility
OTF SECOND/THIRD FLOOR PLAN
A-9



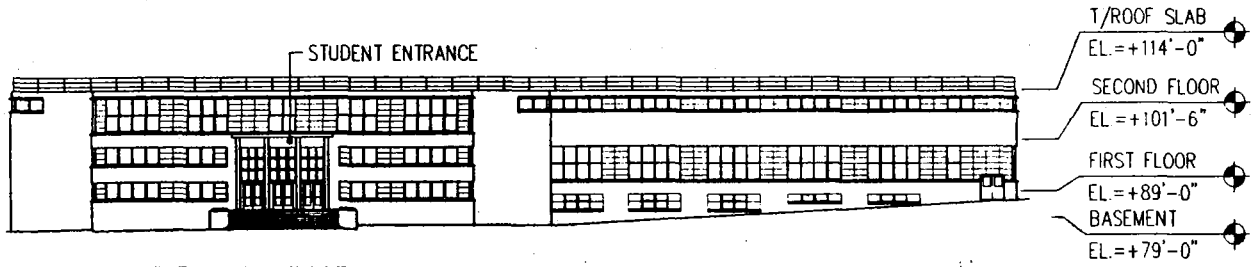
1 NORTH ELEVATION- EXISTING



2 WEST ELEVATION- EXISTING



3 EAST ELEVATION- EXISTING



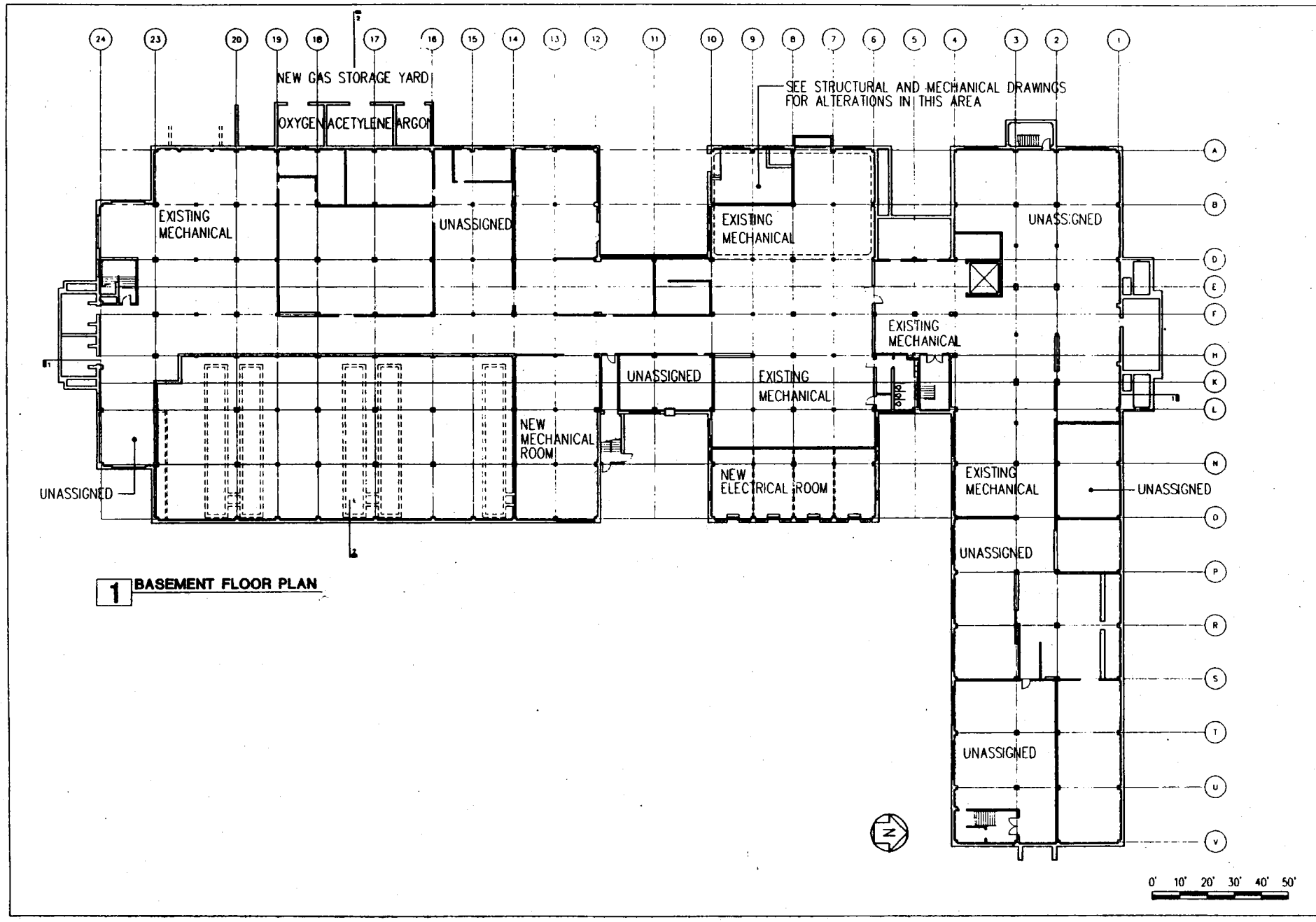
4 SOUTH ELEVATION- EXISTING

0' 10' 20' 30' 40' 50'

GREAT LAKES NAVAL TRAINING CENTER
GREAT LAKES, IL

HT "A" School and Operational Training Facility
BUILDING 520 EXTERIOR ELEVATIONS

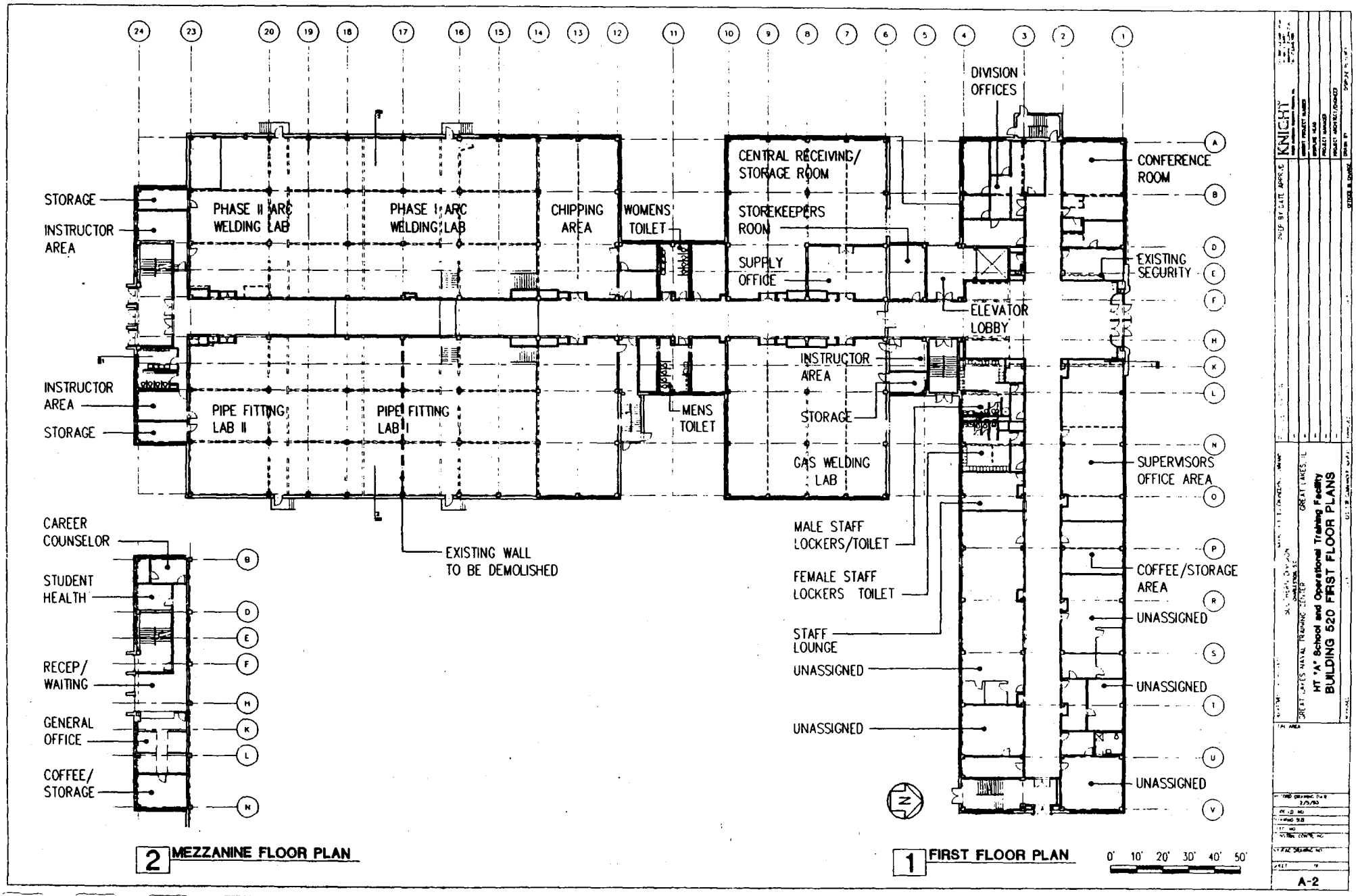
A-5

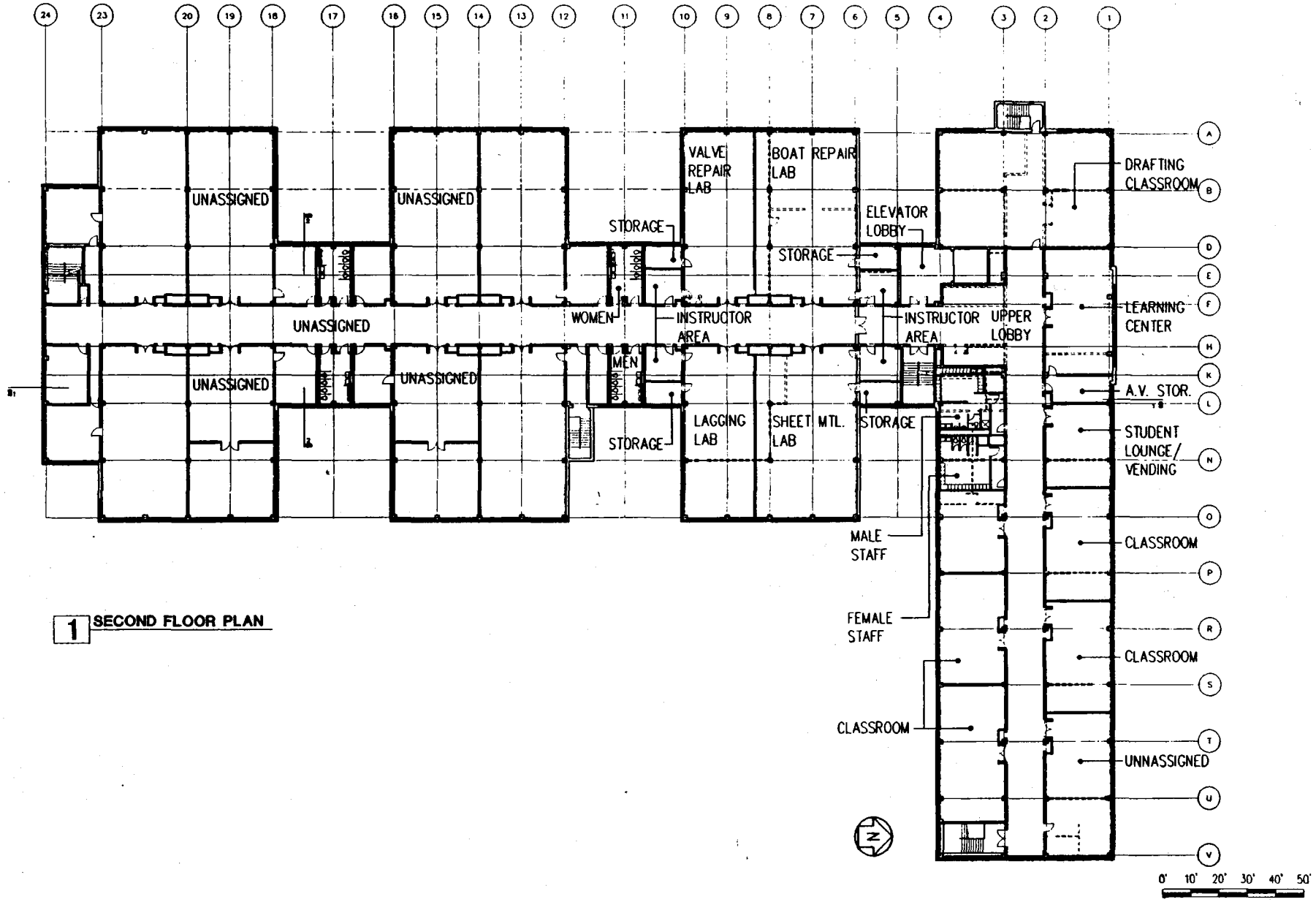


1 BASEMENT FLOOR PLAN

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
GREAT LAKES, IL
GREAT LAKES NAVAL TRAINING CENTER
HT "A" School and Operational Training Facility
BUILDING 520 BASEMENT PLAN

A-1


STORAGE
INSTRUCTOR AREA
PHASE II ARC WELDING LAB
PHASE I ARC WELDING LAB
CHIPPING AREA
WOMENS TOILET
CENTRAL RECEIVING/ STORAGE ROOM
STOREKEEPERS ROOM
SUPPLY OFFICE
DIVISION OFFICES
CONFERENCE ROOM
EXISTING SECURITY
ELEVATOR LOBBY
INSTRUCTOR AREA
STORAGE
PIPE FITTING LAB II
PIPE FITTING LAB I
MENS TOILET
INSTRUCTOR AREA
STORAGE
GAS WELDING LAB
SUPERVISORS OFFICE AREA
EXISTING WALL TO BE DEMOLISHED
MALE STAFF LOCKERS/TOILET
FEMALE STAFF LOCKERS TOILET
STAFF LOUNGE
UNASSIGNED
UNASSIGNED
COFFEE/STORAGE AREA
UNASSIGNED
UNASSIGNED
UNASSIGNED
CAREER COUNSELOR
STUDENT HEALTH
RECEP/ WAITING
GENERAL OFFICE
COFFEE/ STORAGE
2 MEZZANINE FLOOR PLAN
1 FIRST FLOOR PLAN
0' 10' 20' 30' 40' 50'
KNIGHT
GREAT LAKES, IL
HT "A" School and Operational Training Facility
BUILDING 520 FIRST FLOOR PLANS
A-2



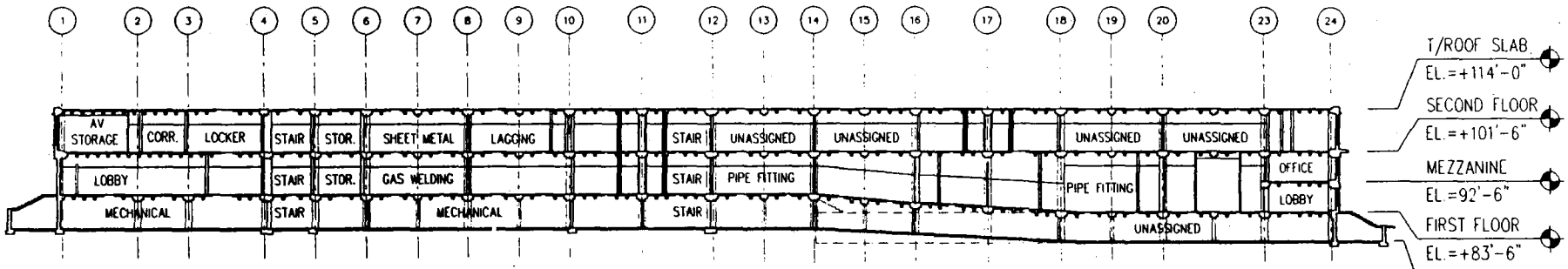
1 SECOND FLOOR PLAN

GREAT LAKES, IL

HT "A" School and Operational Training Facility

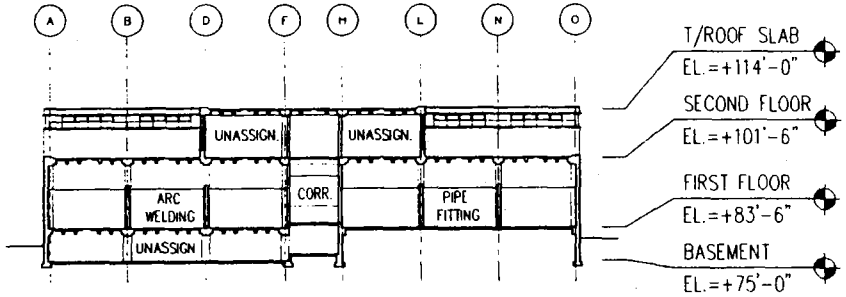
BUILDING 520 SECOND FLOOR PLAN

A-3



NOTE: AREAS LABELED ARE BEYOND SECTION CUT

1 NORTH/SOUTH SECTION



2 EAST/WEST SECTION

0' 10' 20' 30' 40' 50'

SOUTHERN DIVISION
CHARLESTON, S.C.

FORT JAMES NAVAL TRAINING CENTER

HT "A" School and Operational Training Facility
BUILDING 520 SECTIONS

RECORD DRAWING DATE 3/9/93

A-8

APPENDIX B

FFTU 19F3C WASTEWATER CHARACTERISTICS

Table 17
Wastewater Characteristics

Trainer Structure	19F1A/ 19F1B	19F4/ 19F4A	19F5/ 19F5A	19F3A/ [redacted]	21C12/ 21C12A	19F3/ 19F3B	Composite
Date of Test	11/14/89	11/14/89	11/14/89	11/14/89	11/14/89	11/14/89	7/19/89
Test No.	B8917164	B8917162	B8917163	B8917167	B8917165	B8917166	B8908356
BOD, mg/l	23	10	219	62	44	<127	104
COD, mg/l	120000	33000	3900	780	290	8300	4800
TSS, mg/l	77	5	700	250	5146	58	57
TDS, mg/l	69088	15810	9508	2625	132461	4003	2330
MBAS, mg/l	3000	6000	400	100	100	N/A	300
Oil & Grease, mg/l	24	30	19	15	6	N/A	14
PH	not tested	not tested	not tested	not tested	not tested	not tested	not tested

PRIORITY POLLUTANTS (TEST RESULTS)

VOLATILES, ug/l

Acrolein	not tested	not tested	not tested	not tested	not tested	not tested	not tested
Acrylonitrile	not tested	not tested	not tested	not tested	not tested	not tested	not tested
Benzene	<0.10	<1	<0.10	<0.10	<0.10	<10	<0.10
Bis (chloromethyl) ether	not tested	not tested	not tested	not tested	not tested	not tested	not tested
Bromoform (Tribromomethane)	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Carbon tetrachloride	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorobenzene	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorodibromomethane (Dibromochloromethane)	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Chloroethane	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
2-Chloroethylvinyl ether	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10

Table 17 (Continued)
Wastewater Characteristics

Trainer Structure Date of Test Test No.	19F1A/ 19F1B 11/14/89 B8917164	19F4/ 19F4A 11/14/89 B8917162	19F5/ 19F5A 11/14/89 B8917163	19F3A/ 19F3C 11/14/89 B8917167	21C12/ 21C12A 11/14/89 B8917165	19F3/ 19F3B 11/14/89 B8917166	Composite 7/19/89 B8908356
Chloroform (Trichloromethane)	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorobromomethane (Bromodichloromethane)	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorodifluoromethane (Fluorocarbon-12) (Diflurodichloromethane)	not tested	not tested	not tested	not tested	not tested	not tested	not tested
1,1-Dichloroethane	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dichloroethane	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
1,1-Dichloroethyene (1,1-Dichloroethene)	<0.10	<1	<0.10	<0.10	<01.0	<0.10	<0.10
1,2-Dichloropropane	<0.10	<1	<0.10	<0.10	<01.0	<0.10	<0.10
1,3-Dichloropropylene (cis-1,3-dichloropropene)	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
(trans-1,3-dichloropropene)	<1	<0.10	<0.10	<0.10	<0.10	<0.10	
Ethylbenzene	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Methyl bromide (Bromomethane)	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Methyl chloride (Chloromethane)	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Methylene chloride	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Milligrams per liter							
Micrograms per liter (Dichloromethane)		<1					
1,1,2,2-Tetrachloroethane	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrachloroethylene (Tetrachloroethene)							

Table 17 (Continued)
Wastewater Characteristics

Trainer Structure	19F1A/ 19F1B	19F4/ 19F4A	19F5/ 19F5A	19F3A/ 19F3C	21C12/ 21C12A	19F3/ 19F3B	Composite
Date of Test	11/14/89	11/14/89	11/14/89	11/14/89	11/14/89	11/14/89	7/19/89
Test No.	B8917164	B8917162	B8917163	B8917167	B8917165	B8917166	B8908356
Toluene	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
1,2 trans-dichloro-ethylene (trans 1,2- dichloroethene)	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
1,1,1-Trichloroethane	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
1,1,2-Trichloroethane	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Trichloroethylene	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Trichlorofluoromethane	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Vinyl chloride (Chloroethylene)	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<0.10
Xylenes	not tested	not tested	not tested	not tested	not tested	not tested	not tested
ACIDS, ug/l							
2-Chlorophenol	*	<1	<1	<1	<1	<1	<10
2,4-Dichlorophenol	*	<1	<1	<1	<1	<1	<10
2,4-Dimethylphenol	*	<1	<1	<1	<1	<1	<10
4,6-Dinitro-o-cresol (4,6-Dinitro-othro-cresol) (4,6-Dinitro-2-methylphenol)	*	<2	<2	<2	<2	<2	<10
2,4-Dinitrophenol	*	<4	<4	<4	<4	<4	<10
2-Nitrophenol	*	<2	<2	<2	<2	<2	<10
4-Nitrophenol	*	<2	<2	<2	<2	<2	<10
P-chloro-m-cresol (Para-chloro-meta-cresol) (4-chloro-3-methylphenol)	*	<1	<1	<1	<1	<1	<10
Pentachlorophenol	*	<2	<2	<2	<2	<2	<10

Table 17 (Continued)
Wastewater Characteristics

Trainer Structure	19F1A/ 19F1B	19F4/ 19F4A	19F5/ 19F5A	19F3A/ 19F3C	21C12/ 21C12A	19F3/ 19F3B	Composite
Date of Test	11/14/89	11/14/89	11/14/89	11/14/89	11/14/89	11/14/89	7/19/89
Test No.	B8917164	B8917162	B8917163	B8917167	B8917165	B8917166	B8908356
Phenol	*	<1	<1	<1	<1	<1	<10
2,4,6-Trichlorophenol	*	<2	<2	<2	<2	<2	<10
BASE/NEUTRALS, ug/l							
Acenapthene	*	<1	<1	<1	<1	<1	<10
Acenapthylene	*	<1	<1	<1	<1	<1	<10
Anthracene	*	<1	<1	<1	<1	<1	<10
Benzidine	*	<10	<10	<10	<10	<10	<50
Benzo(a)anthracene (1,2-benzanthracene)	*	<1	<1	<1	<1	<1	<10
Benzo(a)pyrene (3,4-benzopyrene)	*	<1	<1	<1	<1	<1	<10
3,4-Benzofluoranthene (Benzo-(B) fluoranthene)	*	<1	<1	<1	<1	<1	<10
Benzo(ghi)perylene	*	<1	<1	<1	<1	<1	<10
Benzo(k)fluoranthene (11,12-Benzofluoranthene)							
Bis (2-chloroethoxy) methane	*	<1	<1	<1	<1	<1	<10
Bis (2-chloroethyl) ether (Dichloroethyl ether)	*	<1	<1	<1	<1	<1	<10
Bis (2-chloroisopropyl ether	*	<1	<1	<1	<1	<1	<10
Bis (2-ethylhexyl) phthalate	*	<1	<1	<1	<1	<1	21
4-Bromphenyl phenyl ether	*	<1	<1	<1	<1	<1	<10
Butylbenzyl phthalate	*	<1	<1	<2	<1	<1	<10
2-chloronaphthalene	*	not tested	not tested	not tested	not tested	not tested	<10
4-chlorophenyl phenyl ether	*	<1	<1	<1	<1	<1	<10
Chrysene	*	<1	<1	<1	<1	<1	<10
Dibenzo (a,h) anthracene	*	<1	<1	<1	<1	<1	<10

Table 17 (Continued)
Wastewater Characteristics

Trainer Structure	19F1A/ 19F1B	19F4/ 19F4A	19F5/ 19F5A	19F3A/ 19F3C	21C12/ 21C12A	19F3/ 19F3B	Composite
Date of Test	11/14/89	11/14/89	11/14/89	11/14/89	11/14/89	11/14/89	7/19/89
Test No.	B8917164	B8917162	B8917163	B8917167	B8917165	B8917166	B8908356
(1,2,5,6-dibenzanthracene)							
1,2-Dichlorobenzene	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<10
1,3-Dichlorobenzene	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<10
1,4-Dichlorobenzene	<0.10	<1	<0.10	<0.10	<0.10	<0.10	<10
3,3-Dichlorobenzidine	*	<2	<1	<1	<2	<2	<20
Diethyl phthalate	*	<1	<1	<1	<1	<1	<10
Dimethyl phthalate	*	<1	<1	<1	<1	<1	<10
Di-n-butyl phthalate	*	<1	<1	<1	<1	<1	<10
2,4-Dintrotoluene	*	<1	<1	<1	<1	<1	<10
2,6-Dinitrotoluene	*	<1	<1	<1	<1	<1	<10
Di-n-octyl phthalate	*	<1	<1	<1	<1	<1	<10
1,2-Diphenylhydranzine	*	not tested	not tested	not tested	not tested	not tested	not tested
Fluoranthene	*	<1	<1	<1	<1	<1	<10
Fluorene	*	<1	<1	<1	<1	<1	<10
Hexachlorobenzene	*	<1	<1	<1	<1	<1	<10
Hexachlorobutadiene	*	<1	<1	<1	<1	<1	<10
Hexachlorocyclopentadiene	*	<1	<1	<1	<1	<1	<10
Hexachloroethane	*	<1	<1	<1	<1	<1	<10
Indeno (1,2,3-cd) pyrene	*	<1	<1	<1	<1	<1	<10
Isophrone	*	<1	<1	<1	<1	<1	<10
Napthalane	*	<1	<1	<1	<1	<1	<10
Nitrobenzene	*	<1	<1	<1	<1	<1	<10
N-nitrosodimethylamine (Dimethyl nitrosamine)	*	<1	<1	<1	<1	<1	<10
N-nitroso-di-n-propylamine	*	<1	<1	<1	<1	<1	<10
N-nitrosodiphenylamine	*	<1	<1	<1	<1	<1	<10

Pursuant to the 1991 Programmatic Agreement among NTC, the Advisory Council on Historic Preservation, and the Illinois State Historic Preservation Officer (SHPO), any planned work, including new construction, repairs, modifications or demolitions of existing facilities within and immediately adjacent to the Historic District are subject to review and evaluation by the SHPO.

There are no known prehistoric archaeological sites located at the NTC (NTC, 1990), but SHPO has indicated the potential for archaeological sites in the vicinity of the Base on account of the proximity of Lake Michigan and the presence of natural bluffs. In light of this potential, the SHPO was notified of this project. Their response was consistent with the Programmatic Agreement, indicating that, because the subject site is located outside of the Historic District, the project is exempt from SHPO review.

8. Utilities

The main utility service to the subject sites consist of electricity, water, sanitary sewerage, stormwater drainage, steam, and communications. These are described in more detail below.

a. Electricity

Approximately 92% of the electric power used by the NTC is commercially generated and purchased from the Commonwealth Edison Company, which services most of northeastern Illinois. The remaining 8% is generated by steam turbine generators located in Building 11. The average and peak demands for the NTC are 22 and 26.4 megawatts, respectively (NTC, 1986). Electric power is distributed throughout the NTC via 34.5 kilovolt (Kv), 4.15 Kv, and 2.4 Kv feeders and a system of substations.

The main feeder system is a 34.5 Kv loop that originates at the Commonwealth Edison substation. The distribution system is considered to be in good condition.

The vicinity of the project site is serviced by an electrical distribution of 2400 Kv. Primary service is provided by underground duct banks in Evans Avenue, with electrical service to Buildings 512 and 520 located in the vicinity of the interior parking lot access drive from Evans Avenue.

b. Water

The NTC potable water system is operated and maintained by the NTC Public Works Center. This system includes a raw water intake from Lake Michigan, a water treatment plant (Building 12), storage tanks, booster pumps, and distribution water mains. The average daily demand is 4.97 million gallons per day (MGD). During the summer, average daily demand peaks at 5.3 MGD. Currently there is not adequate storage capacity to meet the requirement of 150% of average daily demand. Furthermore, the age of the distribution system is a concern and several principal distribution mains are heavily tuberculated, thus reducing water carrying capacity (NTC, 1986). The Capitol Improvements Plan calls for construction of two water storage tanks, each with a capacity of 2 million gallons, to ensure sufficient water for future demands (NTC, 1986.)

Water service is available on all four sides of the project site. A 10" water main is present in Evans Avenue and 8" water mains are present along all other sides, in Nimitz Avenue, Paul Jones Street and the unnamed street to the west. The Nimitz Avenue water main interconnects with a City of North Chicago water main opposite the formal entrance to Building 520. The nearest hydrant is located on the east side of Paul Jones Street between Buildings 621 and 622, southeast of the project site.

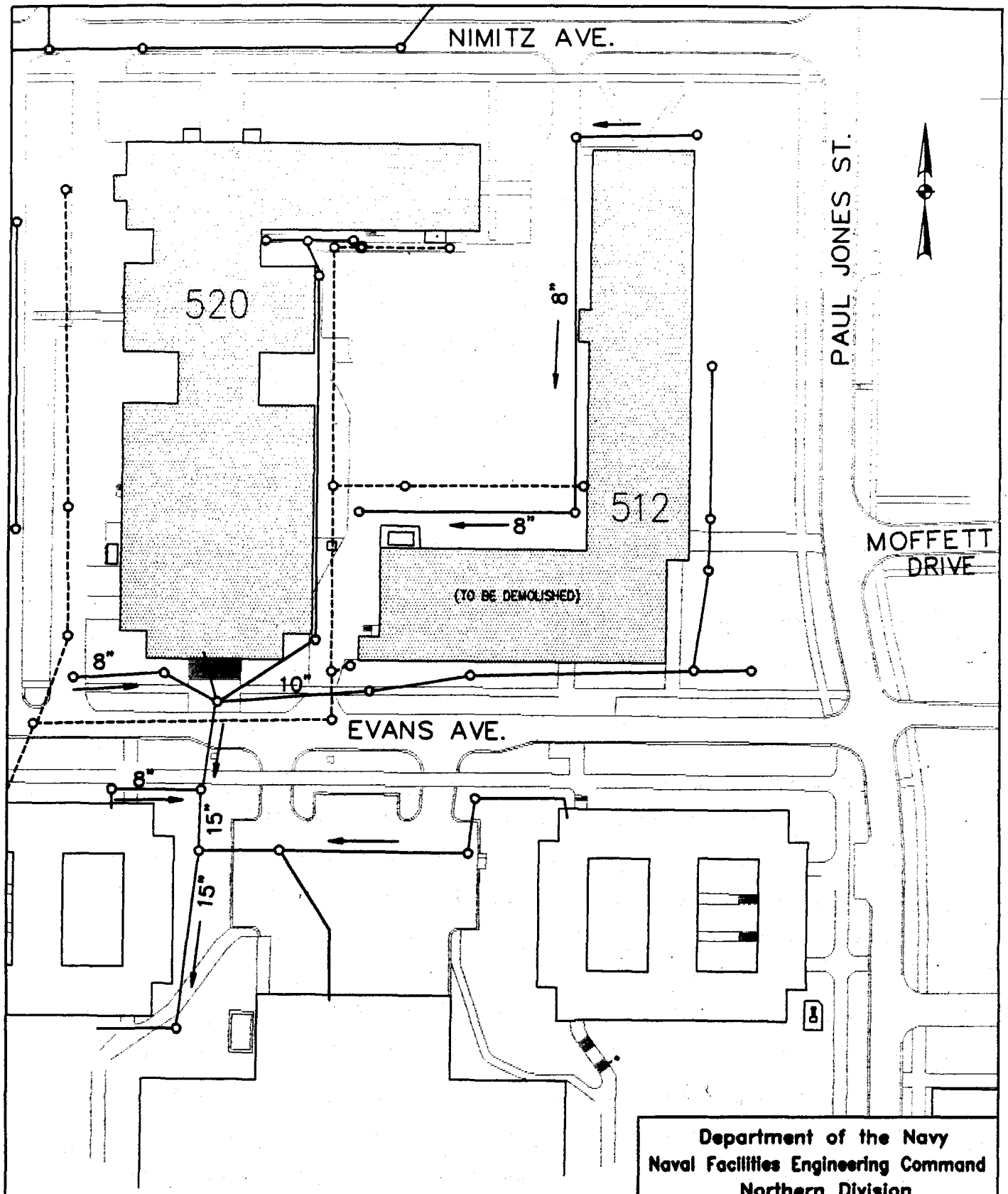
c. Sanitary Sewerage

The Public Works Center operates and maintains the sanitary sewage disposal system that serves the NTC and the nearby Veterans Administration Hospital. No specialized wastewater treatment sewers are present on the NTC. Sewage collected by the system is discharged to the Gurnee Treatment Plant, which is operated by the North Shore Sanitary District (NSSD). The NTC is allowed to discharge up to 10 MGD to the District for treatment, but currently uses only 40% (4 MGD) of this allowance.

The NTC system has adequate capacity to handle dry weather flows, but because of combined stormwater/sewer connections this capacity is exceeded during heavy rainfall events. Retention facilities at NTC can store 2.35 million gallons of overflow, but when this capacity is exceeded, wastewater overflows into Lake Michigan or into Skokie Ditch (Navy, 1986), located along western periphery of the Base.

Sanitary sewers are present on the subject site in the service drive area west of Building 520 and in the interior parking lot, as shown on Figure IV-6. These sewer pipes are 8" diameter and connect to the NTC internal collection system, which flow southwest from the site, eventually reaching the NTC pump station near the Boat Basin, where sewage is pumped to the NSSD.

The NTC main sanitary sewer to the NSSD is an 18" force main running to the north through the NTC Foss Acres Park to a point east of Paul Jones Street, thence northerly along the east side of Paul Jones Street to a manhole northeast of the intersection of Paul Jones Street and Nimitz Avenue. At this manhole, sanitary flows continue north by gravity in an NTC sanitary sewer to a NSSD interceptor sewer.



LEGEND

Existing Sanitary Sewer ----------

Existing Storm Sewer ————

Manhole o

Department of the Navy
Naval Facilities Engineering Command
Northern Division

Relocation of HT'A', HT'C' and DC'A' Schools EA

EXISTING UTILITIES

Scale : 1"=200' | Figure: IV-6

d. Stormwater

Stormwater runoff from the project site consists of intercepted surface water from roof tops, paved areas, and other impervious surfaces. Stormwater is collected by a series of 8" and 10" pipes that connect with a 15" pipe that crosses Evans Avenue and continues south along Building 532 and Luce Boulevard, as indicated in Figure IV-6. The piped stormwater system eventually turns west and discharges stormwater from this drainage area into Pettibone Creek in the vicinity of Sheridan Road.

Storm sewers collect stormwater from the roof drains of Building 512 via an 8" storm sewer located in the interior parking area, and from the southeast corner of Building 512 by a 6" storm sewer. The interior parking area itself does not have a collection system located on its downslope west side; some interception is accomplished by the Building 512 storm sewer as it exits the area to Evans Avenue.

The portion of the site west of Building 520 drains on the north to Nimitz Avenue and on the south to Evans Avenue. A 12" storm sewer is present in the unnamed street to the west of Building 520, but this does not collect project site storm drainage except for that associated with the down slope areas east of the unnamed street. An 18" storm sewer is present in Nimitz Avenue along the Building 520 frontage.

e. Steam

The NTC steam production plant, located in Building 11, consists of six boilers fired by natural gas, with fuel oil as backup. The plant serves the steam and hot water needs of most of the Base, including Buildings 512 and 520. The total rated capacity of the six boilers is 750,000 pounds per hour (lbs/hr). The highest peak steam

demand experienced at the plant during the early 1980s was approximately 520,000 lbs/hr (U.S. Navy, 1986).

Nimitz Avenue north of Buildings 512 and 520 is the northernmost extent of steam distribution. Steam conduits with condensate returns and cathodic protection are present on all four sides of the project site. Steam is medium pressure in the immediate vicinity of the project site at 60 PSIG. Steam lines are located along Nimitz Avenue, Paul Jones Street and the unnamed street to the west. Steam lines are located on the south side of Evans Street across from the project site, crossing under the street to access the buildings. Access to Building 512 is direct from the street, while access to Building 520 is from a line extending up the service drive.

f. Communications

The NTC communication system is part of the local telephone service. The entire Base is served by the Illinois Bell telephone company with long distance service provided by AT&T. The nearest communications duct bank is located near Evans Avenue.

9. Hazardous Substances

A number of substances are currently used in Building 520, which houses the Electronics School and is known as the Electronics School Radar Building. Building 512 is unused except for limited storage, but contains some of the same substances used in Building 520. Substances present in Building 520 include ammonium, molybdate, paint, dipropolyne, acid residue, xylene, varnish, tetrachlor, stencil ink, oils, solvents, PD680 solvent, waste oil, grease, damping oil, benzenes, naphtha, acetone, toluene, methanol, lead paint, lacquer, stains, enamel, thinners, C-452, A-

110, and bromocide-T (HARZA, 1992). Under Resource Conservation and Recovery (RCRA) definitions, many of these substances are hazardous and must be handled as such. These materials are handled in accordance with Material Safety Data Sheet (MSDS) recommendations and Occupational Health and Safety (OSHA) standards.

There are two general categories of waste generated, including solid waste and hazardous waste. Solid waste includes general office waste and other work materials. This material is disposed of in trash containers, picked up weekly, and transported to a nearby landfill. Hazardous waste is generated by a number of training facilities and operations on the Base and is handled by the Defense Reutilization and Marketing Office (DRMO.) The DRMO is responsible for picking up hazardous waste from all generators, including Buildings 512 and 520. Permit regulations as of November 1992 require that waste in excess of 50 gallons be removed and transported to its final destination, be it landfill or treatment facility, within 90 days. The DRMO administers the removal of hazardous waste, which is accomplished by EPA- and State-approved contractors. NTC does not store, transport, or dispose of hazardous waste.

V. ENVIRONMENTAL IMPACTS

V. ENVIRONMENTAL IMPACTS

The proposed action is to provide facilities for the Hull Technician "A" School, the Hull Technician "C" School and the Damage Control "A" School at NTC Great Lakes. The environmental consequences of the action are presented in this section in terms of the natural and the built environment. Existing conditions for each parameter were presented in Section IV. The major activities associated with the proposed action are the following:

1) Alteration and renovation of Building 520 to accommodate the relocation of the HT"A" School from Naval Station Philadelphia and the HT"C" School from NTC San Diego. Once constructed and occupied, the HT"A" School would train approximately 600 people annually in hull repair and maintenance, and the HT"C" School would train approximately 1150 people annually in advanced welding and non-destructive testing.

2) Demolition of existing Building 512 and erection in its place of a new 88,600 GSF facility to house the DC"A" School, which requires a Fire Fighting Trainer Unit (FFTU), Damage Control Trainer (DCT) and Support Building. Once constructed and occupied, the DC"A" School would train 525 people annually in fire fighting and water damage control techniques.

3) Establishment of exterior elements to consist of landscaping, parking lot, mechanical systems components, utility connections, propane tank storage, and miscellaneous site appurtenances.

A. Natural Environment

1. Air Quality and Noise

Construction activities associated with the demolition of Building 512 and erection of the new structures will have short term nuisance impacts on air quality, primarily from suspended particulates. This impact will be temporary, and mitigated by

fugitive dust controls such as watering. In addition, exhaust emissions from construction vehicles will represent an increase in emissions in the project area.

The primary potential source of air emissions at the new facilities would be from operation of the FFTU at the DC"A" School. Pollution from this unit, however, is negligible, as described below.

Propane will be the fuel used to simulate fires in the FFTU. Propane has a standard and reliable chemical composition, as opposed to natural gas, which is a blend of chemicals. Propane gives the desirable flame characteristics and has been tested for environmental acceptability in training situations. Propane burns clean. When burned, small quantities of carbon dioxide (CO_2) and methane (CH_4) are emitted; no carbon monoxide (CO) or other toxins are released. All fire simulation exercises are conducted in enclosed chamber environments that are controlled and monitored by computer systems. Although an Open Burning Permit would be required by the IEPA, no open burning actually occurs.

According to the Military Handbook for Fire Fighting School Facilities (MIL-HDBK-1027/1), the following air emissions can be expected from the FFTU 19F3C:

Carbon Monoxide (CO_2)	negligible
Hydrocarbons (HC)	negligible
Nitrous oxides (NO_x)	negligible
Other oxides (XO_x)	none
Particulates (PM_{10})	0.08 lb/hour

These emissions are far below the comparable NAAQS and IEPA air quality action levels. The small quantity of particulates would be considered fugitive emissions (D. Heenko, personal communication.)

Construction will temporarily elevate noise levels above average levels, primarily from equipment engines and mechanical concussions. Equipment will consist of earthmoving equipment, materials handling equipment, and stationary equipment needed for grading, trenching, seeding, and paving. Pile drivers and cranes will be used for construction of the OTF. Noise levels could reach 65 to 95 dB, but would occur on a limited basis and during normal daytime hours. Once construction is complete, noise levels will return to the levels typical of existing conditions.

The primary source of noise from the new facilities would be from the extensive ventilation and exhaust systems required by the HT"A" and HT"C" Schools in Building 520 and the DC"A" School in the OTF. Where operating equipment generates high levels of noise, attenuation measures will be employed to protect both occupants and potential surrounding receptors. Noise levels outside the buildings are not expected to be elevated above ordinary classroom levels. The nearest receptor outside the NTC is Foss Park, located on the east side of Paul Jones Street adjacent to the project area.

2. Hydrology, Wetlands and Floodplains

Stormwater runoff during construction may contain greater amounts of suspended particles from exposed soils. Temporary effects from erosion and sedimentation caused by construction and demolition activities will be controlled by placing silt fencing and hay bales at selected locations, such as around catch basins, to ensure that only minimal quantities of sediment, if any, enter the storm sewer system. Once the facilities have been completed, it is anticipated that the quality and quantity of stormwater from the site will be similar to existing conditions. The site is, and will be, composed of mostly impervious surfaces.

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Stormwater runoff during construction may contain greater amounts of suspended particles from exposed soils. Temporary effects from erosion and sedimentation caused by construction and demolition activities will be controlled by placing silt fencing and hay bales at selected locations, such as around catch basins, to ensure that only minimal quantities of sediment, if any, enter the storm sewer system. Once the facilities have been completed, it is anticipated that the quality and quantity of stormwater from the site will be similar to existing conditions. The site is, and will be, composed of mostly impervious surfaces.

The project site is located outside of regulated wetland and floodplain areas and the proposed action would not have any direct or indirect effect on these areas.

3. Terrestrial Communities, Wildlife and Vegetation

The project site is primarily developed, with buildings and parking lots comprising approximately 85% of the area. The most valuable natural resource is a row of mature trees along the eastern edge of the site. The project design integrates the new construction with the existing vegetation in order to minimize environmental impacts as well as to minimize the industrial appearance of the facility. As a result, a large portion of the mature tree stand has been preserved in the site design (see Site Concept diagram in Appendix A.)

4. Topography, Geology, and Soils

The construction of a new facility in place of Building 512 will not alter existing topography to any significant extent. The existing Building 512, because of site topography, is built into the hillside along Nimitz Avenue. The proposed OTF will also be situated in this manner, allowing preservation of the mature trees on the higher, eastern edge of the site.

Geological conditions and soils do not pose any limitations to the proposed construction. Soil borings taken at the project site revealed stable soil conditions and no need for unusual construction methods. There will be a minimal amount of soil removed from the site during demolition and construction for placement of new foundations. Soil conditions were used as a basis for site preparation measures and foundation types and sizes required for facility design. Basic site preparation will entail the removal of 6-18 inches of the unsuitable organic soils, loose fill materials

and/or soft soils before subgrade compaction and placement/compaction of fill soils, if any.

B. Built Environment

1. Population

There would be a net increase of approximately 2231 students per year as a result of the relocation of Naval students from Philadelphia, San Diego and San Francisco, and an addition of 90 military staff. The 29 civilian billets expected to be available from the project are assumed to be filled from the local population. The expected students and staff requirements are shown in Table V-1.

Table V-1
Throughput, Average-On-Board (AOB) and Staff Requirements for HT "A", HT "C", and DC "A" Schools

SCHOOL	THROUGHPUT	AOB	MILITARY/CIVILIAN STAFF
HT "A"	661	112	36 Military
HT "C"	1147	200	34 Military 29 Civilian
DC "A"	523	84	20 Military
Total	2331	396	90 Military 29 Civilian

Source: C. White and S. Kim, personal communications

As a result of downsizing of the Navy, annual throughput of trainees is declining. This is clearly shown by the annual projected utilization (throughput) for the HT"A"

and DC"A" Schools, estimated for planning purposes, shown in Table V-2. These figures reflect training of HT and DC rates only, not additional use of the trainers by other engineering rates which might train on the FFTU, for example, as secondary training. Such cross-training is desirable from a military standpoint, and the facilities would accommodate a higher utilization rate, but currently, and into the foreseeable future, the Navy does not have the staffing necessary to accomplish this additional training.

Table V-2
Annual Projected Utilization, HT "A" and DC "A" Schools

FY	HT "A" SCHOOL	DC "A" SCHOOL
1993	1096	587
1994	833	539
1995	661	523

Source: C. White, personal communication

Downsizing will result in decreased size of other classes at NTC as well, so the anticipated increase of students at the training schools at NTC will not be matched by an associated population increase. As a result, it is expected that the annual addition of 2231 students will be within the normal fluctuation of the NTC.

The overall base population at NTC, including recruits and permanent military personnel, is 21,358 (U.S. Bureau of Census 1990). On a local and regional scale, the addition of approximately 400 students (AOB) and 90 personnel, which would be the net result on the population, would be relatively insignificant.

2. Economics

A slightly positive economic benefit should be realized from the project, mainly from the addition of military permanent party staff and the need for local civilian instructors. Data on the average salary of civilian personnel at NTC for 1990 was obtained from the NTC Public Affairs Office. Salary figures for military personnel were unavailable. The average civilian employee at NTC earns $26,300 per annum and we will assume that the military personnel to be relocated will earn a similar annual salary. The introduction of 90 military personnel and 29 new civilian billets would result in a disbursement of approximately $3,129,700 (= 119 x $26,300) per year from the Department of Defense (DOD). This translates into spending for local services, housing, taxes, and schools in the North Chicago area.

3. Housing

Students of the proposed training facilities will be housed in barracks at the Service School Command (SSC), which comprises the vicinity around the project site. The SSC currently has a capacity of 7700 students. The projected AOB students as a result of base closures is 7500, which indicates there will be adequate housing for all trainees, including those attending the HT"A", HT"C" and DC"A" Schools. There is a proposal to raise the housing unit space requirement from the (current) 72 square foot (SF) per "A" student to 90 SF/student. In the event that this proposal is adopted, more housing will be needed. The required housing would be provided through construction of additional barracks on available land at the SSC (K. Ross, personal communication.)

Assuming civilian staff are already housed among the local population, there would be a need for housing to accommodate the 90 additional military staff brought in by

the project. According to NTC data, approximately 78% of permanent party go into family housing (B. Masterson, personal communication), resulting in a need for 70 family units and 20 other units. Because the family housing units at the NTC are full, alternative housing must be made available for incoming personnel. Housing will be made available in two main locations, at Fort Sheridan, an Army installation undergoing realignment, and in Glenview.

4. Schools

Students attending the training facilities would not be accompanied by families, so there would be no associated demand on local schools as a result of facility operation. The addition of staff with families, however, could result in the introduction of some school-aged children to local school districts. The three relocated training schools have been estimated to require a total staff of approximately 119, with 90 of these being Navy personnel. Assuming that all 29 civilian staff are local and all military staff are relocated, the proposed facilities would bring in 90 people.

It is unknown how many relocated individuals will have school-aged children. Census data for Lake County (1990) showed that the average household typically has 0.8 children of potential school age. Assuming that a Navy household is average, the addition of 90 military staff would result in 72 school-aged children to local school systems.

Civilian employees owning homes in surrounding communities would pay municipal property taxes based on the assessed value of the property. Some military personnel reside in surrounding communities and, therefore, pay local property taxes, but many live in Naval housing communities and do not pay local property taxes. If all 90 new

staff were to live in Navy housing, the DOD impact aid of $1,700 per child would provide approximately $122,400 to the appropriate school districts.

Incoming Navy families as a result of the project are expected to be housed outside the NTC, since family housing at the NTC is currently full. Many of these families are expected to reside in government housing at Fort Sheridan or Glenview, where Navy families will be replacing many outgoing Army families. As a result, the net effect on school enrollments is expected to be negligible. Furthermore, the distribution of housing among local communities will prevent the overburdening of any one school district.

5. Land Use

Buildings in the project vicinity are geared toward Service School Command (SSC) training. The mix of training school facilities with student housing is compatible in this area, so the proposed construction of the three training schools is consistent with NTC land use.

The industrial nature of the facilities is, however, somewhat out of character for the residential and recreational uses adjacent to the project site. Visual compatibility with surrounding uses will be achieved through architectural and landscaping elements. Functional compatibility, primarily associated with health and safety of the surrounding land users, will be ensured through extensive safety features in both design and equipment.

The primary hazards associated with the facility relate to the storage of flammable or explosive materials. Explosive materials will be stored in explosion-proof areas within the facility. Flammable gases will be stored in secured areas, monitored for

leaks and temperature anomalies, and equipped with emergency shutoff valves.

Safety was of primary consideration in the placement and equipment design of the propane tanks. Tanks have been located within a 100-foot clear radius and are over 100 feet from the property line, which is twice the distance required by NFPA regulations (G. Stocker, personal communication) and over 400 feet from the nearest barracks. A landscaped berm has been incorporated to maximize visual compatibility with the adjacent park uses, but the storage area is open on the south and east to allow diffusion of any leaking gas away from the major use areas. The tanks will be fitted with thermal sensors that automatically trigger shut-off valves which stop the flow of propane in the above-ground system in the event of elevated temperatures. The storage facility will conform with or exceed the requirements of the City of North Chicago, which follow the State Fire Marshall Code and the BOCA Fire Protection Code (K. Humphres, personal communication.)

6. Traffic/Circulation/Parking

The addition of 119 staff would result in some increased traffic to the Base and the local North Chicago street system. However, even if all staff were to live off-Base and travel to work in individual vehicles, they would be traveling to the facility on different shifts. Impacts to local streets would be minimal.

NTC internal traffic circulation would not be adversely affected by the slight increase in traffic. The roadways in and around the project site have sufficient capacity to handle the increase in vehicular activity.

Parking is available at most buildings at the NTC. No vehicle parking would be necessary for students. The anticipated staff parking requirement for 60 parking

spaces will be accommodated on the site.

7. Cultural Resources

The Illinois State Historic Preservation Officer (SHPO) was contacted regarding the potential for cultural and/or archeological resources within the project site. Their response was consistent with the Programmatic Agreement, indicating that, because the subject site is located outside of the Historic District, the project is exempt from SHPO review.

8. Utilities

Utility requirements for the renovated Building 520 and the OTF are described below. These estimates may be amended during the preparation of final design plans.

a. Electricity

The main electric utility system can adequately service the proposed facilities. Electrical service to the project site will be in underground duct banks. The primary electrical service is to be an extension of the existing 34.5 Kv site distribution system, which is routed underneath Evans Avenue.

b. Water

The intake and distribution system at NTC will adequately supply the proposed facilities to meet their water requirements. Although the distribution system on the Base has storage limitations and specific problem areas, the proposed facilities would

incorporate their own storage capabilities. Supplying water to these storage facilities will not be a problem, since the NTC Water Treatment Plant is capable of supplying 9 million gallons per day (MGD) (B. Bailey, personal communication) and the current average daily demand is only approximately 5 MGD (NTC, 1986.)

c. Sanitary Sewerage

Two types of wastewater will be generated from the three training schools, domestic and process wastewater. Domestic wastewater is not expected to vary from the quantity and quality used under current conditions. The existing sanitary sewer system adequately conveys domestic wastewater from the site.

Process wastewater from the OTF will consist of the water used and collected at the FFTU and DCT. Wastewater from fire fighting training will contain sodium bicarbonate and biodegradable surfactants. Wastewater will be collected in an equalization tank, treated, and pumped at a metered rate into the sanitary sewer system. Pretreatment will be accomplished with antifoaming agents and pH content will be adjusted.

The concentrations of chemicals present in the pre-treated effluent have been obtained from test runs at a facility similar to the design of the proposed FFTU 19F3C. The wastewater characteristics, as listed in MIL-HDBK 1027/1, are as follows:

Biological oxygen demand (BOD)	62 mg/l
Chemical oxygen demand (COD)	780 mg/l
Total suspended solids (TSS)	250 mg/l
Total dissolved solids (TDS)	2625 mg/l
Oil & Grease	15 mg/l

This effluent is non-toxic and completely biodegradable when combined with acclimated bacteria. These tests indicate that this wastewater is acceptable for discharge to the NSSD system. NSSD requires that wastewater effluent from the NTC not exceed 62 mg/l for BOD, 900 mg/l for COD, and 350 mg/l for TSS (P. Bouchard, personal communication). The NSSD may require testing of the effluent from the FFTU in order to confirm the above concentrations.

Priority pollutants were also tested in the FFTU wastewater, including volatile compounds, acids, and pesticides. Tests revealed that none of these substances are present in high concentrations. Appendix B contains complete test results.

Wastewater from the DCT (Wet Trainer), which is maintained by chlorination and filtration, will be of a quality directly compatible with sanitary wastewater.

Process wastewater from Building 520 will consist of effluent from weld cleansing tanks, laboratory wash-down, and photographic developing. Wastewater will be collected from laboratories, shops, and from the silver recovery unit in a sump or chemical-resistant tank and pre-treated for removal of heavy metals (sludge) and adjustment of pH. Sludge would be disposed of as hazardous material. Wastewater effluent would be of a quality suitable for discharge to the sanitary sewer.

The ultimate disposal of the effluent would be through the publicly owned treatment works (POTW) operated by the North Shore Sanitary District (NSDD), which discharges to Lake Michigan. The capacity of the NSSD is adequate to handle the additional wastewater and the additional amount will not cause the NTC to exceed their allowance of 10 MGD. A new contract with NSSD will be written to reflect the additional discharge.

The NTC Public Works Center noted that the existing sanitary sewers should be adequate to accommodate anticipated FFTU process wastewater releases, assuming an after-hour release regime (Knight, 1993). Daily training discharge from the FFTU is estimated at 135 gallons per minute, over an eight hour period. Discharge from the Wet Trainer would be a scheduled release of 12,500 gallons once per month. Discharges from Building 520 would be nominal. The existing sanitary sewers in place in Evans Street and that part of the sanitary drainage basin system serving the project site can adequately accept the projected process wastewater release.

Each connection to the NTC sanitary sewer system will require a Sanitary District Connection Permit from the NSSD. In addition, the processing system for the FFTU wastewater, the DCT wastewater, and the wastewater from the HT Schools will each require an IEPA pretreatment permit.

d. Stormwater

The existing stormwater system, shown on Figure IV-6, will be modified to include a closed pipe system designed to accommodate a 10 year storm event. Stormwater detention is not required. Stormwater runoff from the site is expected to be similar in quantity and quality to existing conditions.

e. Steam

The existing steam system, which provides heat to Buildings 512 and 520, is inadequate to service the proposed OTF and will be upgraded. The existing 3" steam supply now serving Building 512 is inadequate; this will be removed and replaced by a new 6" steam connection. The existing 3" condensate line serving Building 512 will be extended to the OTF. The existing 6" steam supply and 3" condensate return

serving building 520 will be reused.

Neither of the existing buildings is metered for steam, so accurate estimates of current consumption cannot be made (B. Bailey, personal communication.) However, estimates of demand anticipated from the new facilities have been made by Knight Architects Engineers Planners, Inc. The preliminary estimate of demand for steam heat at the OTF is 16 - 20,000 lbs/hour (Tony Kowalik, personal communication.) Building 520 will require approximately 8,000 lbs/hour more steam than the current consumption, which is estimated at 9,000 lbs/hour.

The NTC steam plant has sufficient capacity to meet this extra demand, and the proposed steam distribution system to the two buildings has been evaluated as adequate.

f. Communications

New telephone service would be routed to the OTF from the existing communications duct bank located near Evans Avenue.

9. Handling and Disposal of Hazardous Materials and Substances

The proposed action will involve the removal, use and generation of hazardous materials.

An asbestos survey conducted for the project determined that asbestos-containing building materials (ACBM) are present in both Building 512 and 520 (Carlson Environmental, Inc., 1993). Friable asbestos was found primarily in the west wing of Building 512, while a variety of materials in both buildings contained non-friable asbestos. The project will include removal and abatement of asbestos. The

quantities that will be removed during the renovation or demolition process are as follows:

Building 512
25,350 SF of floor tile
35,360 SF of roofing material
850 LF of pipe insulation
180 pipe joints
93 fire doors

Building 520
98,000 SF of floor tile
19,800 SF of ceiling tile
800 SF of HVAC insulation
8,600 LF of pipe insulation
135 fire doors
1,500 pipe fittings

Abatement, removal and disposal procedures will be conducted by a licensed asbestos contractor in accordance with applicable State and Federal regulations.

A paint sampling program indicated the presence of lead in the majority of samples collected in the two buildings. However, with the exception of two samples collected from Building 512, the concentration of lead was below the U.S. Department of Housing and Urban Development guideline for abatement of health hazards in occupied buildings (Carlson Environmental, Inc. 1993). Neither of the two samples, submitted for the toxicity characteristic leachate procedure (TCLP) lead analysis, was found to exceed the lead concentration that would mandate classifying the material as hazardous waste, according to Environmental Protection Agency (EPA) regulations. Where building materials with lead-based paint need to be removed, they will be handled and disposed of as ordinary demolition materials.

A variety of hazardous materials will be used at the three training schools, including

lubricating oil, cutting fluid, grease, photographic chemicals, acetone, paints, and fiberglass resin. These materials will be stored in special storage facilities and handled strictly according to OSHA standards.

Hazardous wastes from the proposed facilities would consist of spent Oxygen Breathing Apparatus (OBA) canisters used at the DC"A" School and welding sludge from the HT"A" and HT"C" Schools. The spent Oxygen Breathing Apparatus (OBA) canisters used at the DC"A" School during fire fighting training are hazardous because of the residual substances filtered from the artificial smoke. The welding sludge collected from wastewater at the HT"A" and HT"C" Schools will be treated as hazardous material due to the high concentration of metals. Silver recovered from the photographic process will be recycled.

Hazardous waste generated by the proposed facilities will be brought to a collection area at the DRMO and disposed of within 90 days, in accordance with current IEPA permit regulations. The existing transport, holding, and disposal system, administered by the NTC Public Works Center (PWC) and the DRMO, is adequate to handle the quantities and types of materials generated by the proposed facilities.

C. Cumulative Impacts

Cumulative impacts are the incremental effects over time of a proposed action, when added to other past, present, and reasonably foreseeable similar or related future actions, both federal and non-federal. The proposed relocation is one of many actions directed by Base Closure and Realignment Act (BRAC) legislation. BRAC directs the closing of the other two recruit training centers (RTC) at San Diego and Orlando, so NTC Great Lakes will be the only Naval RTC. In addition, NTC Great

Lakes has been identified as the primary training center for surface warfare skills, so it is likely that a number of other training facilities will be scheduled for relocation to NTC.

One of the foreseeable impacts is the increase in personnel and recruits, who will place demands on schools and services of local communities. While the scope of the realignment activities would appear to indicate substantial increases, impacts will be greatly modified by the overall downsizing trend of the military.

The Recruit Training Command (RTC) has housing capacity for 15,500 recruits. The projected peak load after base consolidation is complete, in October 1994, is 11,000 recruits, with an annual accession of approximately 55,000 (K. Ross, personal communication.) Because of downsizing, these loadings are a reduction of the levels experienced at NTC in the past, most recently during the mid-1980s. The RTC, then, has a surplus of housing to accommodate the expected number of recruits, and NTC and local services are equipped for handling these numbers.

The RTC staff is expected to increase from 540 to approximately 900 as a result of other training centers closing (B. Masterson, personal communication.) At the present time, an accurate estimate of the number of other staff who will be relocating to NTC as a result of BRAC initiatives is unavailable. It is expected that housing will be made available for military staff in need. Currently, housing for permanent party consists of 2,089 family housing units at the NTC, approximately 300 units at Fort Sheridan, 225 units in Glenview, and an additional 170 units to be acquired in Glenview, as well as private housing in surrounding communities (K. Ross, personal communication.) Civilian employees will likely reside in private housing within the local communities. No great influx in the net number of people and/or children of school age is expected because Navy personnel (and families) would be moving into

formerly occupied housing units and, in the case of Fort Sheridan, housing units vacated by Army personnel (and families.)

Without military downsizing, the cumulative impacts of the proposed relocation projects in terms of population might have been substantial. An overview of the situation, however, indicates that the future population will be very similar to existing or previous conditions. In terms of the physical environment, facilities at the NTC would be modified, added or removed as needed to fulfill training requirements. Each facility proposed for relocation will have its own requirements for equipment, materials, and utilities, that will need to be assessed individually. These facilities would be designed to function within the limitations of their proposed sites and within the capabilities of NTC utility systems. As such, the actions recommended by BRAC are not expected to have significant cumulative impacts on either the social or physical environment.

VI. UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS