Department of Energy
Fermi Area Office
Post Office Box 2000
Batavia, Illinois 60510

MAR 3 1 2004

Mr. Gerald Brown, Associate
Director for Operations Support
Fermilab
P.O. Box 500
Batavia, IL 60510

Dear Mr. Brown:

SUBJECT: NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DETERMINATION AT FERMI NATIONAL ACCELERATOR LABORATORY - "UPGRADE OF SANITARY SEWER LINE FROM THE INDUSTRIAL COMPLEX TO FEYNMAN COMPUTING CENTER"

Reference: Letter, G. Brown to J. Monhart, dated March 19, 2004, Subject: Same As Above

I have reviewed the Fermilab Environmental Evaluation Notification Form (EENF) for the subject proposed project transmitted by your referenced letter. Based on the information provided in the EENF, I have approved the following project as a categorical exclusion (CX):

Project Name	Approved	CX (s)
Upgrade of Sanitary Sewer Line from the Industrial Complex to Feynman Computing Center	3/31/2004	B1.15, B2.5

I am returning a signed copy of the EENF for your records. No further NEPA review is required. This project falls under a categorical exclusion(s) provided in 10 CFR 1021, as amended in 1996.

Sincerely,

Jane L. Monhart

Jane L. Monhart
Area Manager

Enclosure:
As Stated

cc: M. Witherell, w/o encl.
K. Stanfield, w/o encl.
B. Chrisman, w/o encl.
C. Trimby, w/o encl.
S. Dixon, w/encl.
B. Griffing, w/encl.
T. Dykhuis, w/o encl.

FERMILAB ENVIRONMENTAL EVALUATION NOTIFICATION FORM

Project/Activity Title: Upgrade of Sanitary Sewer Line from the Industrial Complex (IC) to Feynman Computing Center (FCC)
ES&H Tracking Number: 01041 **Funding Source:** GPP
Fermilab Project Manager: Steve Dixon (X8501)

Signature _____

Date 3/18/04

Fermilab NEPA Reviewer: Teri Dykhuis

Signature Teri L. Dykhuis

Date 3/18/04

I. Description of the Proposed Action

The existing sanitary sewer line is old and deteriorating, allowing high levels of infiltration of ground water into the sanitary line. The resulting increased flows result in frequent surcharges from the City of Batavia for surpassing the range of normal flows into their sewerage from Fermilab. A new line is necessary to avoid increasing and unacceptable maintenance costs and surcharges.

The alternative of trench-and-replace would be more expensive than the proposed pneumatic pipe bursting method, which is trenchless construction. In addition, the trenchless approach minimizes environmental impact due to the elimination of surface digging and trenching all along the sewer line. The no action alternative would allow the groundwater infiltration to continue which is cost-prohibitive and poor resource management, since we are burdening a POTW that has limited capacity.

II. Description of the Affected Environment

This project would include the replacement of approximately 1375 feet of 8-inch transite pipe with new high-density polyethylene (HDPE) pipe. The new pipe would be pulled through the existing pipe by a tool that simultaneously bursts the existing pipe. The fragments of the transite pipe would then be left in place. The route for the pipe would be from the Industrial Complex (IC) to a manhole south of Road "B", then along the south side of Road "B" to manhole #101, then under the road to the Feynman Computing Center (FCC) [See attached drawings]. Temporary working pits would be excavated in as many as six locations adjacent to existing manholes along the route. The pits would be the only excavation needed for the project because of the "pipe bursting" method being employed to install the new line.

The entire length of the line is approximately 1375 feet. The project could be phased, however, we anticipate completing the entire length at one time. Each of the working pits would require the excavation of approximately 30 cubic yards of soil, which would then be re-used to backfill the excavations after the job is complete. We anticipate that the pits would require some dewatering, which would be discharged to the existing ditches.

III. Potential Environmental Effects (Provide comments for each checked item and where clarification is necessary.)

A. Sensitive Resources: Will the proposed action result in changes and/or disturbances to any of the following resources?

- ☐ Threatened or endangered species
- ☐ Other protected species
- ☒ Wetland/Floodplains
- ☐ Archaeological or historical resources
- ☐ Non-attainment areas

B. Regulated Substances/Activities: Will the proposed action involve any of the following regulated substances or activities?

- ☒ Clearing or Excavation
- ☐ Demolition or decommissioning
- ☒ Asbestos removal
- ☐ PCBs
- ☐ Chemical use or storage
- ☐ Pesticides
- ☐ Air emissions
- ☒ Liquid effluents
- ☐ Underground storage tanks
- ☐ Hazardous or other regulated waste (including radioactive or mixed)
- ☐ Radioactive exposures or radioactive air emissions
- ☐ Radioactivation of soil or groundwater

C. Other relevant Disclosures

- ☐ Threatened violation of ES&H permit requirements
- ☐ Siting/construction/major modification of waste recovery or TSD facilities
- ☐ Disturbance of pre-existing contamination
- ☐ New or modified permits
- ☐ Public controversy
- ☐ Action/involvement of another federal agency
- ☐ Public utilities/services
- ☐ Depletion of a non-renewable resource

IV. NEPA Recommendation

Fermilab has reviewed this proposed action and conclude that the appropriate level of NEPA determination is a Categorical Exclusion. The conclusion is based on the proposed action meeting the applicable requirements in DOE's NEPA Implementation Procedures, 10 CFR 1021, Subpart D, Appendix B1.15, B2.5.

V. DOE/CH-FAO NEPA Coordinator Review

Concurrence with the recommendation for determination:

NEPA Coordinator reviewer Jonathan Cooper

Signature Jonathan P. Cooper

Date 3/31/04

Fermi Area Manager Jane L. Monhart

Signature Jane L. Monhart

Date 3/31/04

VI. Comments on checked items in section III.

WETLANDS/EXCAVATION -- The existing manhole #101 is in a wetland area, and one of the working pits would have to be excavated in this location. Previous conversations with the U.S. Army Corps of Engineers have indicated that temporary storage of excavated soils in these areas does not require a permit if the soils are stored in a way that allows the restoration of the area after the completion of the work. In this case, we would store the spoils on geotextile fabric in an upland area adjacent to the work. The topsoil would be segregated from the remaining fill, and used to top off the backfilled areas. The total volume of excavation would be from 120 - 180 cubic yards, depending on the number of pits required. No excess material would be removed from the project site.

ASBESTOS -- The old transite pipe contains asbestos fiber. None of this pipe would be removed as part of the project. Fragments of the old pipe would be left underground.

LIQUID EFFLUENT -- The working pits would have to be dewatered, resulting in an effluent to surface water. In order to avoid sedimentation, the effluent would be discharged behind silt fence or other structural barriers would be employed to prevent sedimentation in existing ditches.

IC-FCC SANITARY SEWER UPGRADE

PROJECT NUMBER 3-5-133

DRAWING LIST:

G-1 VICINITY PLAN, DRAWING LIST AND GENERAL NOTES
C-1 PLAN AND PROFILE

REFERENCE DRAWINGS

3-5-79 ME-1	SAN. LIFT STA. UPGRADES RD. B, NS-1 & NS-2 PLANS AND SECT.	(SANITARY LIFT STATION RD.B DETAILS)
3-5-79 C-1	SAN. LIFT STA. UPGRADES RD. B PLAN AND PROFILE	(SANITARY MANHOLE 100A DETAILS)
3-5-4 PC-5	INDUSTRIAL AREA ICW, DWS AND SANITARY SEWER UTILITY CORRIDOR F	(SANITARY MANHOLE 101 DETAILS)
10-1-15 K PC-1	GAS LIQUEFACTION BUILDING UNDERGROUND UTILITIES	(SANITARY MANHOLE 102 DETAILS)
3-5-4 PC-6	INDUSTRIAL AREA ICW, DWS AND SANITARY SEWER UTILITY CORRIDOR H	(SANITARY MANHOLE 103 AND 104 DETAILS)
6-1-101B C-2	CDF USER'S COMPLEX UTILITY INSTALLATION PLANS AND PROFILES	(SANITARY MANHOLE 105 DETAILS)
3-5-111 C-8	CDF-DO UTILITY CORRIDOR UTILITY TRENCH PLAN AND PROFILE	(SANITARY MANHOLE 108 DETAILS)

GENERAL NOTES:

1. SCALE FOR THE DRAWINGS IS FOR GENERAL INFORMATION ONLY, LOCATIONS AND DIMENSIONS SHALL BE TAKEN AS SHOWN AND NOT SCALED.
2. SUBCONTRACTOR'S WORK ACTIVITIES SHALL BE RESTRICTED TO AREAS WITHIN THE LIMITS OF CONSTRUCTION AS NOTED ON THE DRAWINGS. SUBCONTRACTOR'S ACTIVITIES AND VEHICLES SHALL NOT BE ALLOWED OUTSIDE OF THESE LIMITS UNLESS APPROVED BY THE FERMILAB CONSTRUCTION COORDINATOR.
3. DEBRIS SHALL BE REMOVED FROM THE FERMILAB SITE.
4. ALL CONSTRUCTION MATERIALS MUST BE DELIVERED TO, ASSEMBLED, AND UTILIZED IN THE IMMEDIATE CONSTRUCTION AREA, UNLESS OTHERWISE COORDINATED WITH THE FERMILAB CONSTRUCTION COORDINATOR.
5. NEW PIPE SHALL BE 8" HIGH DENSITY POLYETHYLENE PIPE AND MEET THE REQUIREMENTS OF ASTM F714 POLYETHYLENE (PE) PLASTIC PIPE (SDR-PR) BASED ON OUTSIDE DIAMETER, ASTM D1248, ASTM D3350. SUBCONTRACTOR SHALL SUPPLY AN ALTERNATE BID FOR INSTALLING 10" PIPE IN LEIU OF 8".
6. TELEVISION INSPECTION OF PIPELINES SHALL BE PERFORMED PRIOR TO START OF WORK AND AFTER INSTALLATION OF NEW PIPE.
7. SEE EXHIBIT "A"-SHORT, SCHEDULE AND SUPPLEMENTARY TERMS AND CONDITIONS, FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

BIDDING PROCEDURE

PROJECT DESCRIPTION

THE PROJECT, AS DEPICTED ON THESE DRAWINGS, IS FOR A COMPLETE SEWER PIPE REPLACEMENT OF APPROXIMATELY 1,375 LIN.-FT. OF 8" TRANSITE PIPE. BECAUSE OF THE DEPTH OF THE PIPE, SLOPE OF THE PIPE AND PROXIMITY TO EXISTING UTILITIES, THE PIPE BURSTING METHOD OF INSTALLATION IS DESIRED. DUE TO FUNDING, ONLY A PORTION OF THE WORK MAY BE AWARDED AT THIS TIME. IT IS EXPECTED THAT THE REMAINING WORK MAY BE EXECUTED AS FUNDING PERMITS.

THE OPTIONS LISTED BELOW ARE INTENDED TO BE ALTERNATES TO THE BASE BID (COMPLETE PROJECT SCOPE). SINCE THESE OPTIONS MAY BE EXERCISED AT DIFFERENT TIMES, EACH OPTION SHOULD BE PRICED AS A STAND-ALONE PROJECT. START-UP COSTS AND CLOSE-OUT COSTS SHALL BE INCLUDED IN EACH OPTION BID PRICE (I.E. MOBILIZATION COSTS, PROCUREMENT OF MATERIALS, VIDEOGRAPHY, RESTABLISHMENT OF JACKING/RECEIVEING PITS, LANDSCAPING, ETC.) DEPENDING ON CURRENT FUNDING AND THE TOTAL PROJECT COST, EITHER THE BASE PROJECT SCOPE (COMPLETE PROJECT) OR ANY OPTION (OR COMBINATION OF OPTIONS) MAY BE EXECUTED.

FOR THE BASE BID AND EACH OF THE THREE OPTIONS, INCLUDE A SEPERATE PRICE FOR UPSIZING THE EXISTING PIPE FROM 8" TO 10" SEWER PIPE.

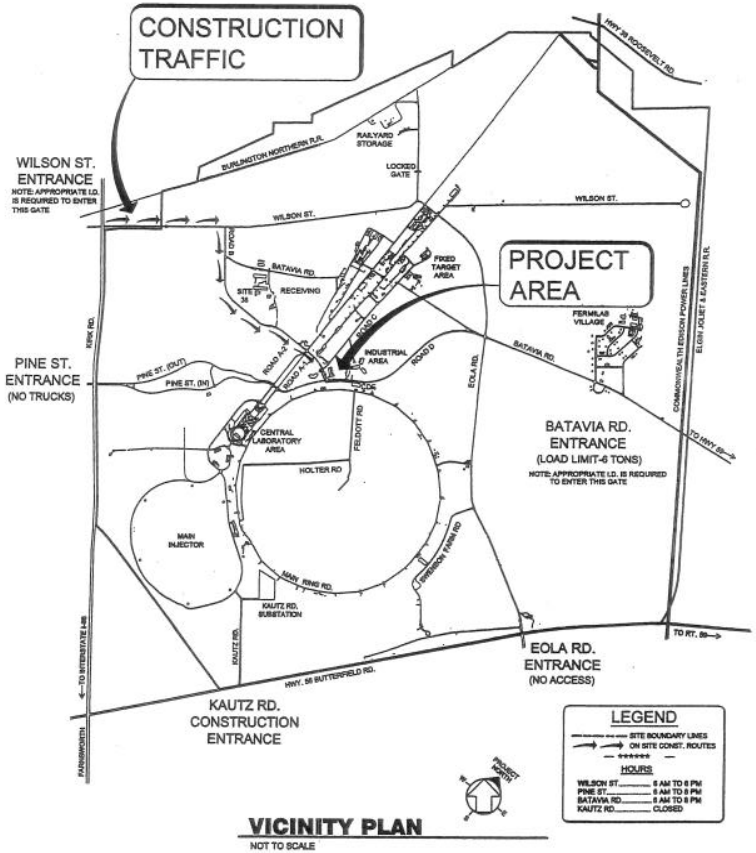
DESCRIPTION OF OPTIONS

BASE BID:
REPLACE APPROXIMATELY 1375' OF 8" TRANSITE SEWER PIPE WITH 8" HDPE UTILIZING THE PIPE BURSTING METHOD OF INSTALLATION AS SHOWN ON THESE CONSTRUCTION DOCUMENTS. (PROVIDE PRICE FOR OPTIONAL UPSIZE TO 10" PIPE)

OPTION 1:
REPLACE APPROXIMATELY 818' OF 8" TRANSITE SEWER PIPE WITH 8" HDPE FROM MANHOLE 101 TO MANHOLE 104 UTILIZING THE PIPE BURSTING METHOD OF INSTALLATION. (PROVIDE PRICE FOR OPTIONAL UPSIZE TO 10" PIPE)

OPTION 2:
REPLACE APPROXIMATELY 408' OF 8" TRANSITE SEWER PIPE WITH 8" HDPE FROM THE SANITARY LIFT STATION AT ROAD B TO MANHOLE 101 UTILIZING THE PIPE BURSTING METHOD OF INSTALLATION. (PROVIDE PRICE FOR OPTIONAL UPSIZE TO 10" PIPE)

OPTION 3:
REPLACE APPROXIMATELY 150' OF 8" TRANSITE SEWER PIPE WITH 8" HDPE FROM MANHOLE 104 TO MANHOLE 108 UTILIZING THE PIPE BURSTING METHOD OF INSTALLATION. (PROVIDE PRICE FOR OPTIONAL UPSIZE TO 10" PIPE)



VICINITY PLAN
NOT TO SCALE

REV.	DATE	DESCRIPTIONS

REVISIONS

	NAME	DATE
DESIGNED		
DRAWN	R. Alber	
CHECKED		
APPROVED		
SUBMITTED		

SCALE:

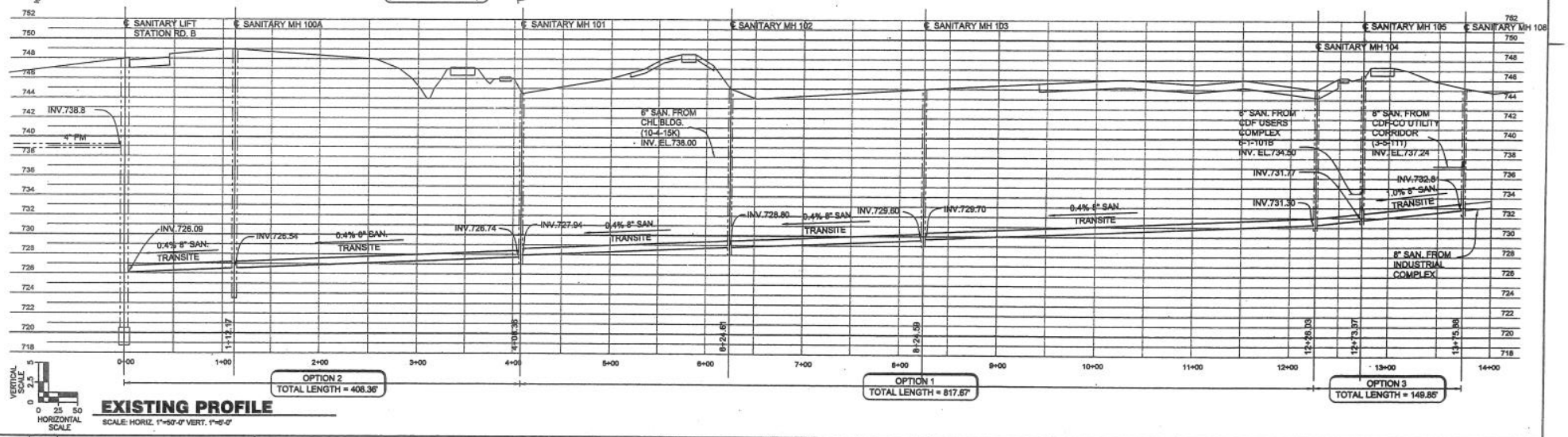
FERMI NATIONAL ACCELERATOR LABORATORY
UNITED STATES DEPARTMENT OF ENERGY

IC-FCC SAN. SEWER UPGRADE
VICINITY PLAN, DRAWING LIST AND GENERAL NOTES

DRAWING NO. 3-5-133 G-1 REV.

PLAN

SCALE: 1"=50'-0"



EXISTING PROFILE

SCALE: HORIZ. 1"=50'-0" VERT. 1"=5'-0"

REV.	DATE	DESCRIPTIONS REVISIONS

	NAME	DATE
DESIGNED		
DRAWN	R. Alber	
CHECKED		
APPROVED		
SUBMITTED		

SCALE:

FERMI NATIONAL ACCELERATOR LABORATORY

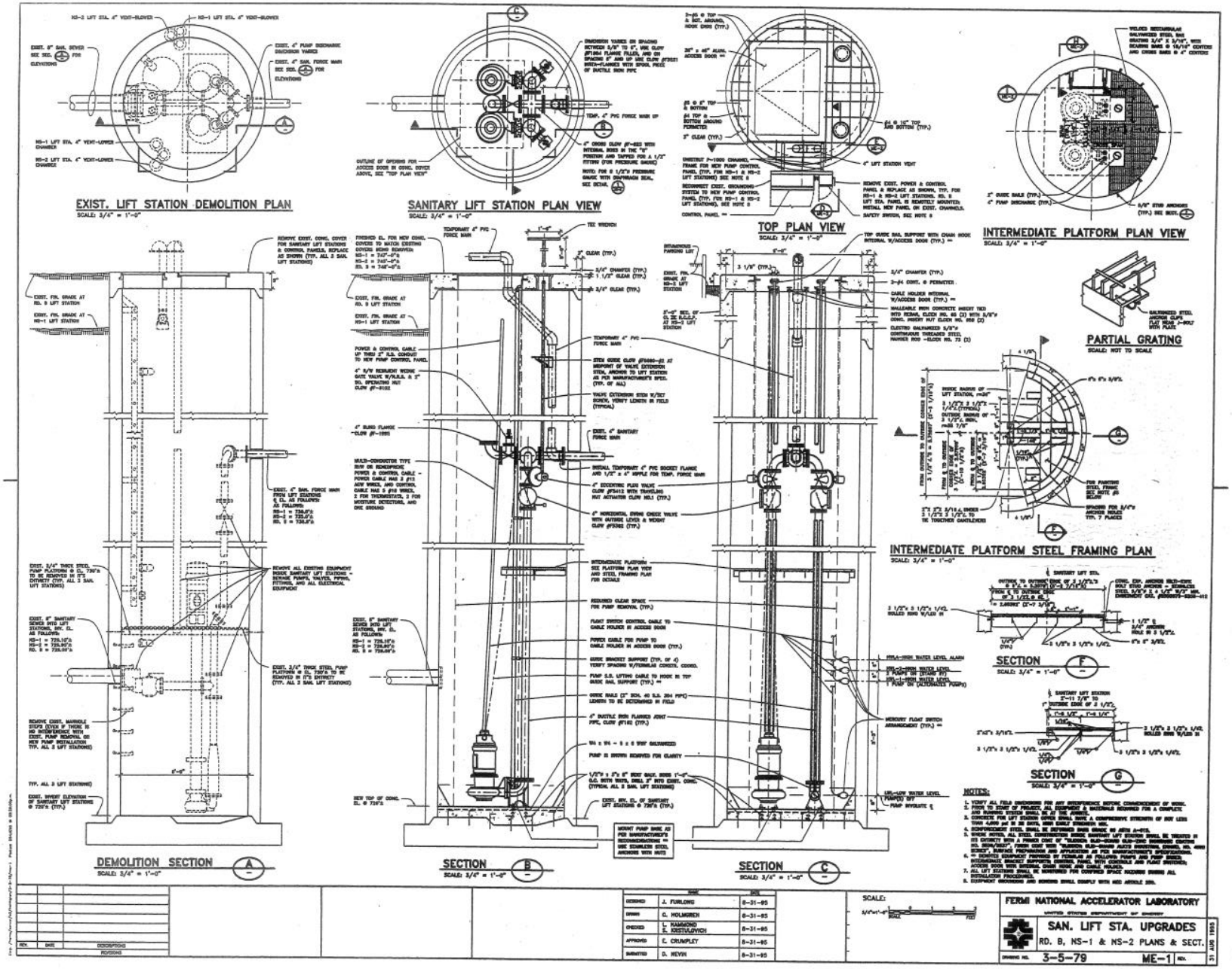
UNITED STATES DEPARTMENT OF ENERGY

IC-FCC SAN. SEWER UPGRADE

PLAN AND PROFILE

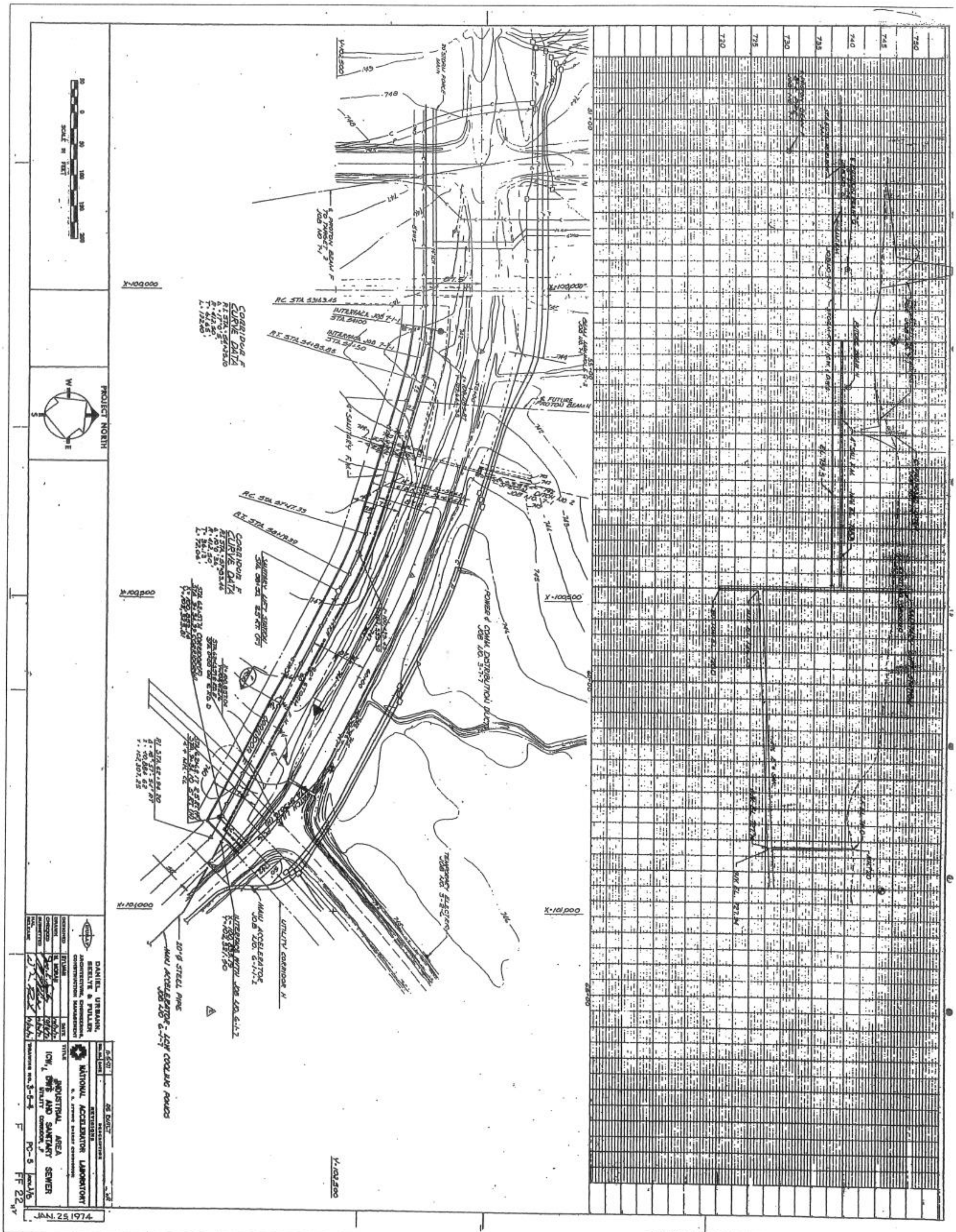
DRAWING NO. 3-5-133 C-1 REV.

PLOT-DATE



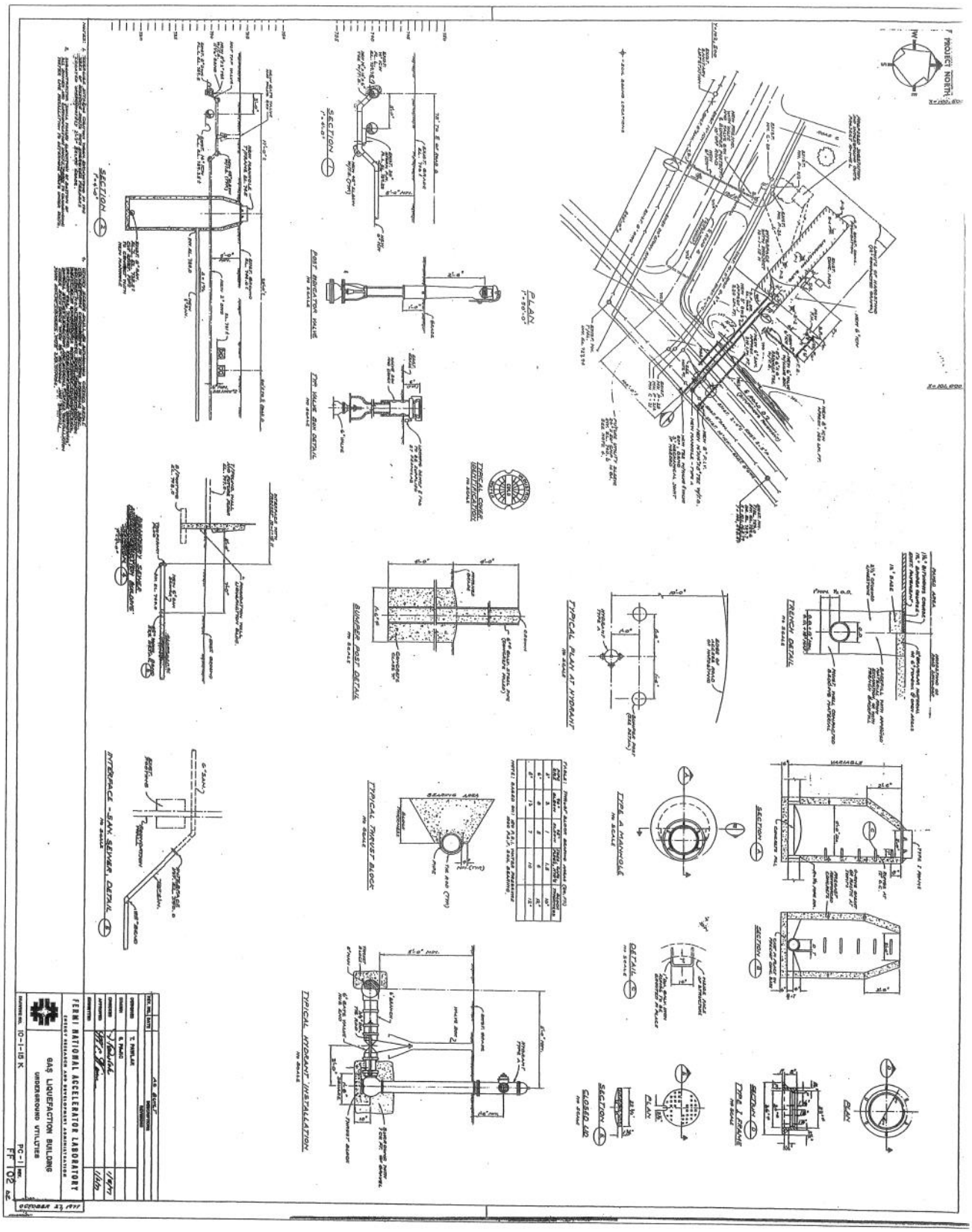
FOR REFERENCE ONLY
3-5-79 ME-1
SANITARY LIFT STATION RD.B DETAILS

FOR REFERENCE ONLY
3-5-79 C-1
SANITARY MANHOLE 100A DETAILS



5 of 9

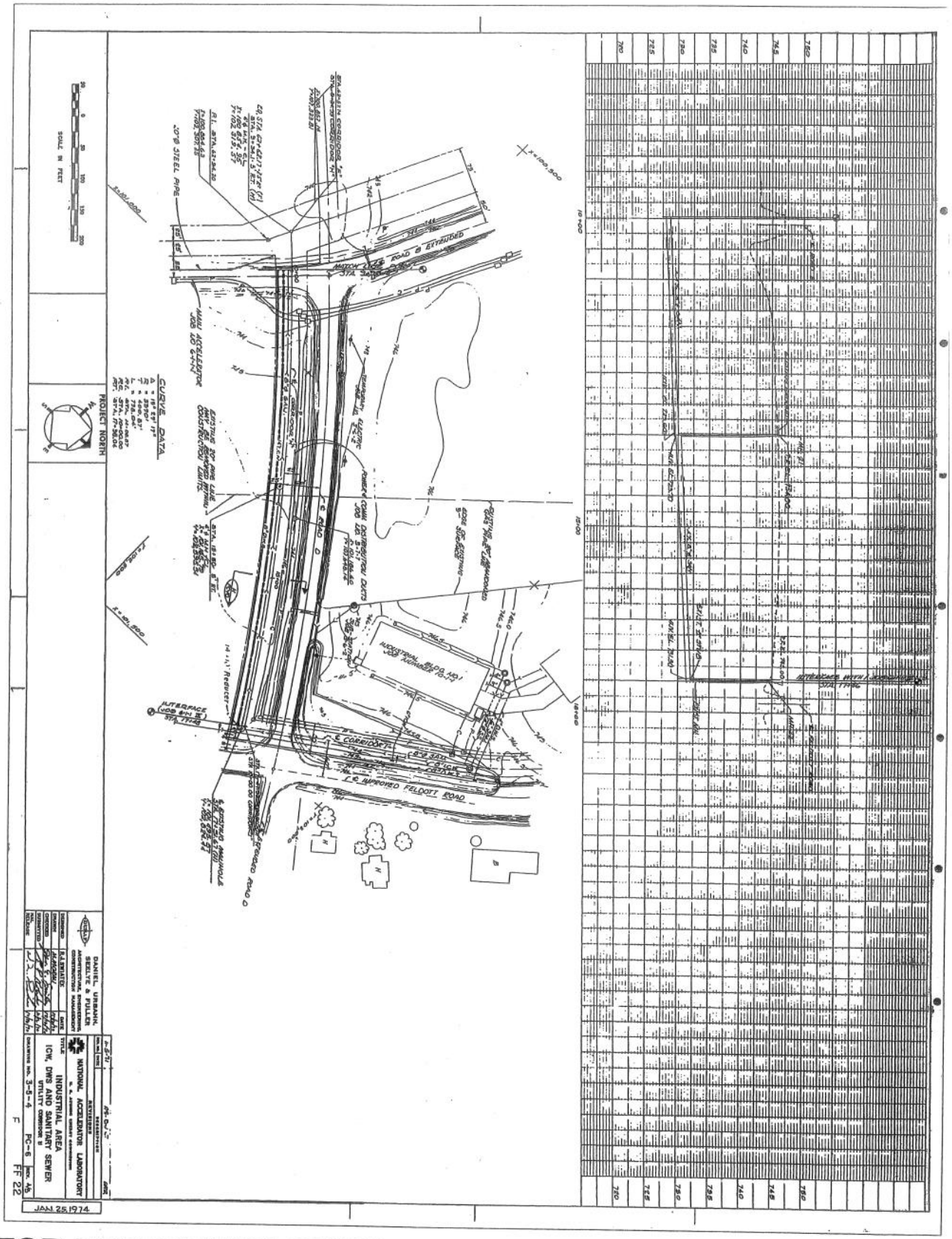
FOR REFERENCE ONLY
3-5-4 PC-5
SANITARY MANHOLE 101 DETAILS



FOR REFERENCE ONLY

10-1-15 K PC-1

SANITARY MANHOLE 102 DETAILS



FOR REFERENCE ONLY

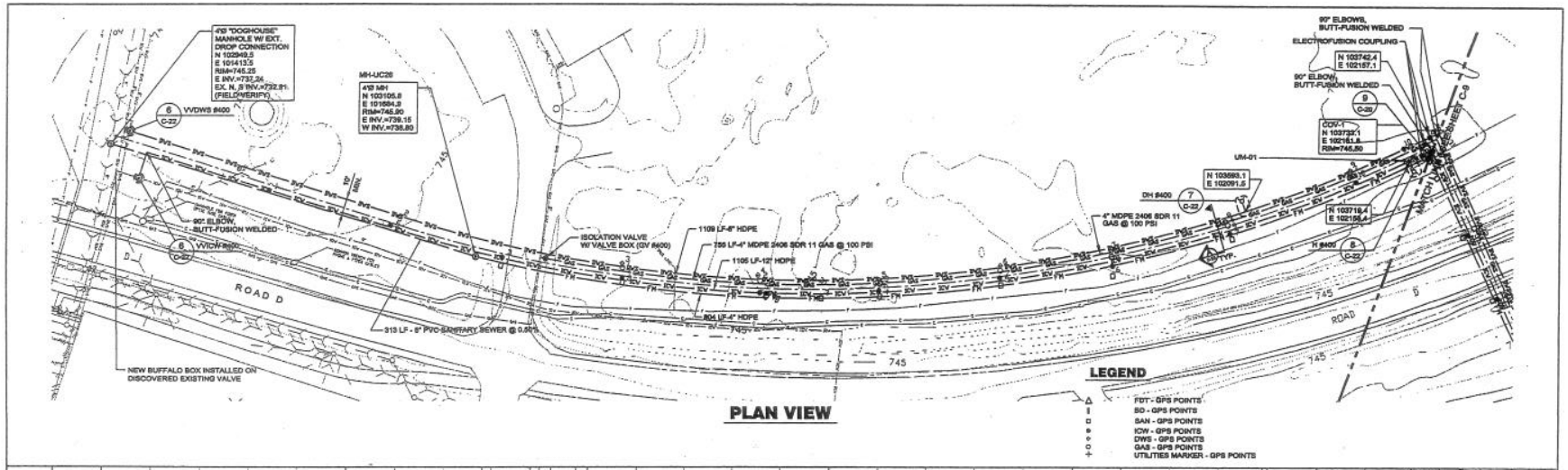
3-5-4 PC-6

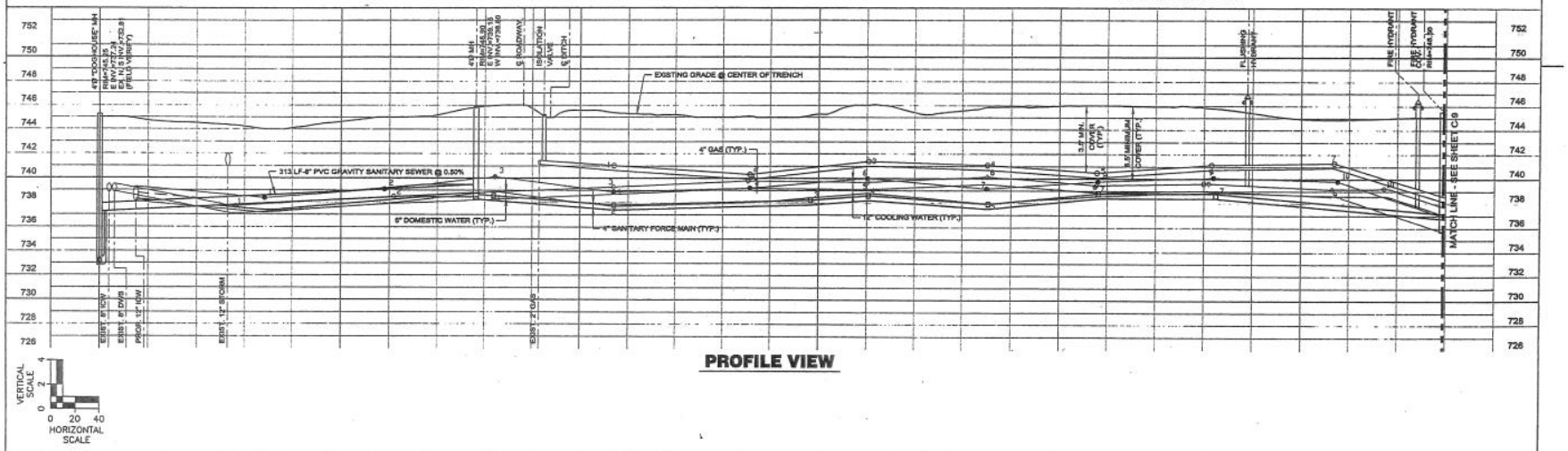
SANITARY MANHOLE 103 AND 104 DETAILS

FOR REFERENCE ONLY

6-1-1018 C-2

SANITARY MANHOLE 105 DETAILS





REV.	DATE	DESCRIPTIONS
AS	-	AS-BUILTS
1	05/10/03	INCORPORATED LWR COMMENTS

REVISIONS

PATRICK ENGINEERING INC.
4070 Varsity Drive TEL. (630) 795-7200
Lisle, Illinois 60532 FAX (630) 434-8400
http://www.patrickengineering.com

Exelon. Services Federal Group

A/E CONSULTANT		DATE
DESIGNED	CMP	03/22/02
DRAWN	MSK	03/26/02
CHECKED	CMP	04/04/02
APPROVED	JDS	04/05/02
SUBMITTED	JEP	04/24/02

FERMI LAB		DATE
DISCIPLINE REVIEW		
CRITERIA REVIEW		
ENGINEERING REVIEW		
FESS REVIEW		
SUBMITTED		

PROJECT NORTH

SCALE: 1" = 40'-0"

FERMI NATIONAL ACCELERATOR LABORATORY
UNITED STATES DEPARTMENT OF ENERGY

CDF-D0 UTILITY CORRIDOR
UTILITY TRENCH PLAN AND PROFILE

DRAWING NO. 3-5-111 C-8 REV. AS

30 JUNE 2003

FOR REFERENCE ONLY
3-5-111 C-8
SANITARY MANHOLE 108 DETAILS

An article on the "pipe bursting method"
– Griff

Vermeer At Work – Job Stories

FOR IMMEDIATE RELEASE

AGING SEWER LINES IN OHIO REPLACED USING PIPE BURSTING METHOD

Written By: Dick Yach — Technical Writer Des Moines, Iowa

Provided By: Vermeer Manufacturing Company — Pella, Iowa

Sunbury, Ohio, a small town of 6,000 people, rests a commuter-convenient 14 miles north of Columbus. Last year, the city was inundated with 2,000 applications for new homes—a prospective 33 percent increase to the current population. That kind of growth can stress a city's water and sewage systems, especially when the existing sewer lines are experiencing significant root intrusion and water infiltration.

City officials knew that they had water infiltration problems in their eight-inch sewer lines, because when it rained, the sewage treatment plant volume doubled. This ground water infiltration added unnecessary costs for chemical treatment, as well as the needed electricity to run pumps.

For a town like Sunbury, that wants to welcome growth, the only cost-effective solution would be to replace the sewer lines. The question then becomes one of how to get that done least expensively. Thankfully, for the Village of Sunbury, and the thousands of towns and cities like it, newer trenchless sewer-pipe replacement technologies are available that are cheaper and less disruptive than open-cutting.

Moffitt Rehabilitation Services, headquartered in Hawesville, Kentucky has been in the sewer line rehabilitation business for the last 13 years, working primarily in Indianapolis, Columbus and Dayton, Ohio. They have employed a number of methods for sewer line rehabilitation including open-cutting and sliplining. On this job, they opted for bursting the existing pipe, and pulling in new polyethylene line.

According to Darrell Moffitt, president and owner of Moffitt Rehabilitation Services, Inc., the older technology methods have their drawbacks. "This project, which included 4,000 feet of replacement throughout the older section of town, was originally budgeted for open-cutting, but this method is time consuming, disruptive to the customers and expensive. We might have considered sliplining, which we have done a lot of, but this method would have reduced the capacity of the line, which the city did not want."

One section of 370 feet of deteriorated clay pipe was set up for demonstration of the Vermeer Hammerhead Mole® Pipe Bursting system. If this first burst was successful, the entire 4,000 feet would be burst rather than open-cut. Because the houses were only 10 to 15 feet away from the sewer line, Moffitt and the city officials wanted to use a trenchless method. Open-cutting would present too much of a potential hazard to home foundations.

The plan was to burst the existing eight-inch diameter clay pipe and replace it with eight-inch diameter polyethylene pipe (with a Sidewall Dimension Ratio [SDR] of 17). The route for this length of the sewer line ran completely under sidewalks on a hill, putting the deepest part of the sewer line 15 feet below the surface. This added depth was another reason why Moffitt and the city officials were willing to try something other than open-cutting. By using the trenchless pipebursting method, Moffitt was able to save the city $17,000 of excavation, granular backfill and sidewalk concrete replacement costs on this 370-foot burst.

pipe. Prior to the main sewer cleaning and inspection from Keystoneburg, Ohio, technicians cut the line and used specialized television cameras to determine where the five laterals were located along the burst route.

Tuesday morning, the entry pit was excavated and shored at one manhole, with the entry pit measuring close to 20 feet long, and approximately four feet wide. Four hundred feet of air line connected to a compressor was inserted into the new PE pipe. A line was floated down the existing sewer line to attach to the winch cable line of the Vermeer HydroGuide™ eight-ton winch. The winch was set up with its downrigger section lowered into the manhole 370 feet from the entry point.

The HydroGuide Power Winch™ is part of the Hammerhead bursting system, with all its components designed to reduce excavation and restoration, both of surface area and manholes. For example, the HydroGuide Power Winch has a lower pulley assembly specially engineered to adjust to different size manholes, even those that are offset. The second component of the winch, the swiveling winch pulley allows the operator to burst in any direction.

The additional key design element of the Vermeer Hammerhead Mole System is the ability to remove the bursting head in the exit manhole, eliminating exit pit excavating and restoration. Once the bursting head and pneumatic tool reach the exit point, the tool is reversed out of the bursting head and pulled back to the entry point. In doing this, the bursting head can be removed from the manhole without excavation.

On this project, the winch cable was subsequently secured to the nose of the pneumatic tool. The 7" Hammerhead Mole pneumatic impact tool was inserted into the PE pipe and connected to the air line. Then, the bursting head with an outside diameter of ten inches was secured to the plastic pipe.

When the burst was prepared, the pipe, bursting head and tool assembly were winched into the pit and lined up with the existing sewer line at a depth of eight feet. With winch tension set, the tool was started, and the burst proceeded to the manhole 370 feet from the entry point.

At the manhole exit point, Moffitt expected to dig up the surrounding area in order to retrieve the tool. To his surprise, when eight to ten inches of the new PE was showing in the manhole, the winch cable was disconnected, the tool was set into reverse, and unlocked itself from the burst head. It was then backed out of the manhole through the new pipe to the entry point. The ability of the Hammerhead Mole to reverse itself out of the manhole saved hours of excavation and manhole restoration.

"I was skeptical at first of the tool's ability to go into reverse, remove itself from the bursting head and back out through the new line to the entry pit," said Moffitt. "Every contractor I had seen before has had to dig their tool up. When I worked up the figures for this job, I figured on having excavation at every manhole to remove the tool. Now, with the Hammerhead's ability to reverse out of the manhole, I save and my customer saves too."

Wednesday and Thursday of the same week, Moffitt's crews cut the laterals and attached them to the new PE. There was never any disruption of service to the customers. Moffitt planned it knowing that the bursting head would compact a 10-inch diameter hole in this highly compactable clay, there would be enough annular space around the new PE for any waste water to travel through. This allowed his crews to burst the mainline and expose the laterals and connect them to the new PE after the line was in.

Moffitt described the savings that pipe bursting with the Hammerhead Mole System brought him and the Village of Sunbury. "We did in four days what would have taken us 10, if you take into account backfilling, and concrete restoration. Pipe bursting with the pneumatic tool reduced excavation and saved time putting in a completely new line. And we did it all without disrupting service."