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W105 SOURCE CONTROL WELL PLAN

ERT Document PD-722-261
November 1986

W105 SOURCE CONTROL WELL PLAN

Prepared for:
Reilly Tar & Chemical Corporation
Indianapolis, Indiana

RECEIVED
NOV 5 1986
U.S. EPA, REGION V
WASTE MANAGEMENT DIVISION
HAZARDOUS WASTE ENFORCEMENT BRANCH

ERT - A RESOURCE ENGINEERING COMPANY
696 Virginia Road, Concord, Massachusetts 01742

6667D PD-722-261

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SECTION A

SITE MANAGEMENT PLAN

Source Control at W105

Well W105 was reconstructed as an Ironton-Galesville aquifer monitoring well by the MPCA in 1984. A six-inch diameter carbon steel casing was grouted into place, and extends from approximately two feet above grade to a depth of about 640 feet (Figure 1). The bottom of the well is at a depth of approximately 700 feet and the well is open only to the Ironton-Galesville aquifer. The open bedrock construction of well W105 is suitable and of sufficient diameter for use as a source control well and installation of a submersible pump. No further reconstruction or additional casings, screens, etc. are needed for source control at W105. The only additional work required is the permanent installation of a submersible pump with a connection for the discharge to the sanitary sewer.

Well Development and Pump Specifications

The current depth of well W105 is uncertain. Prior to pump installation, the well will be sounded and tapped to determine depth and to ensure that the open hole portion of the well (640-700 feet) remains open. If the well has filled in above the 700 foot depth, the well will be bailed to remove sediment above 700 feet. Material bailed from the well will be disposed of according to applicable regulations. to where?

Pump Specifications - A pumping rate of 25 gpm will be maintained in well W105 in accordance with the Remedial Action Plan. The total head lift that the submersible pump will be required to overcome is estimated at 215 feet. This is based on MPCA pumping of W105 on September 25, 1984 for about seven hours at over 100 gallons per minute, which produced a pumping water level of approximately 180 feet. A 4-inch diameter,

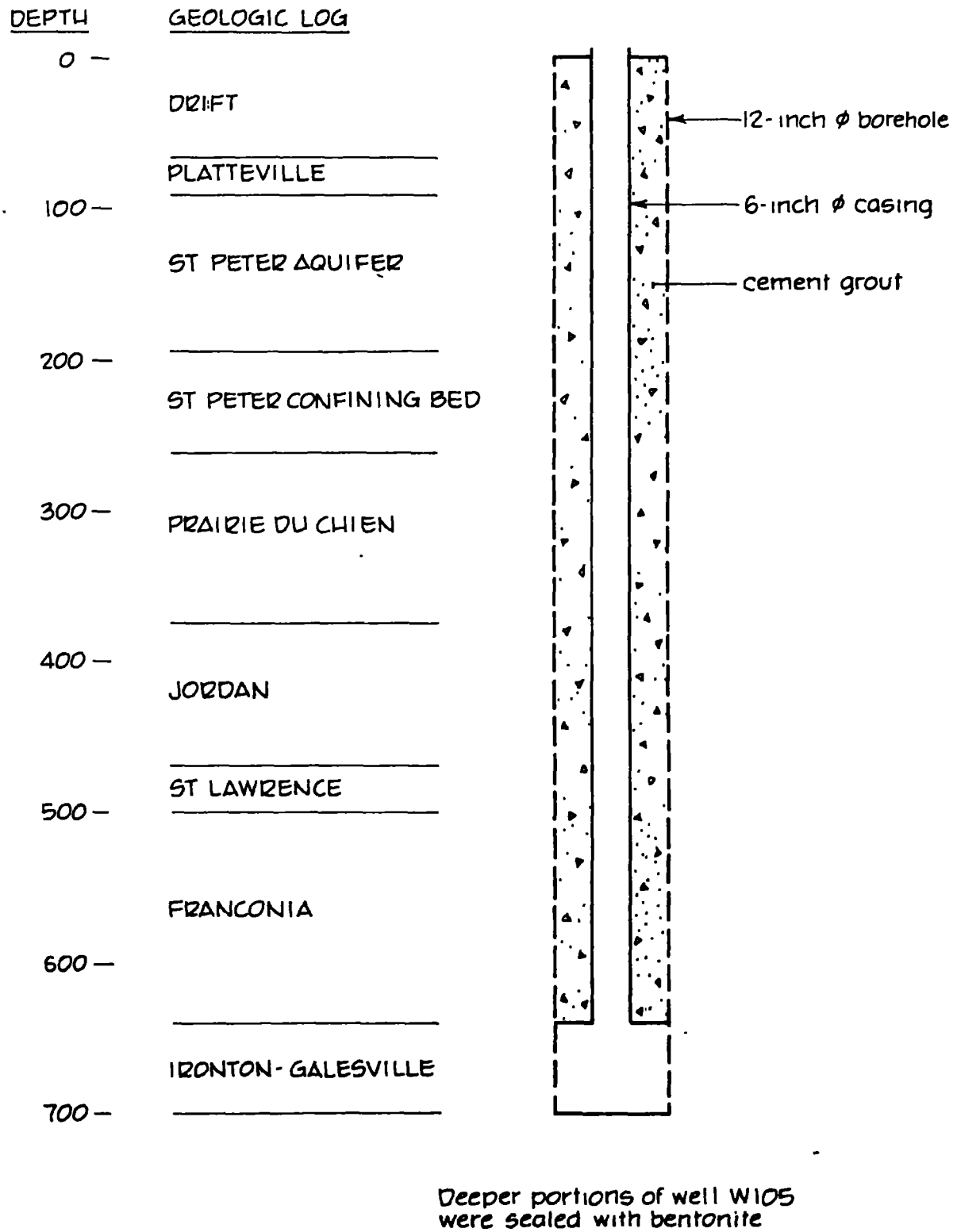


Figure 1 Current Status of Well W105

3-phase 3-horsepower submersible pump will be required to achieve the required pumping rate and total head lift. A Grundfos model SP6-14 submersible pump or equivalent will be installed. The materials for the pump and discharge pipe will be as follows:

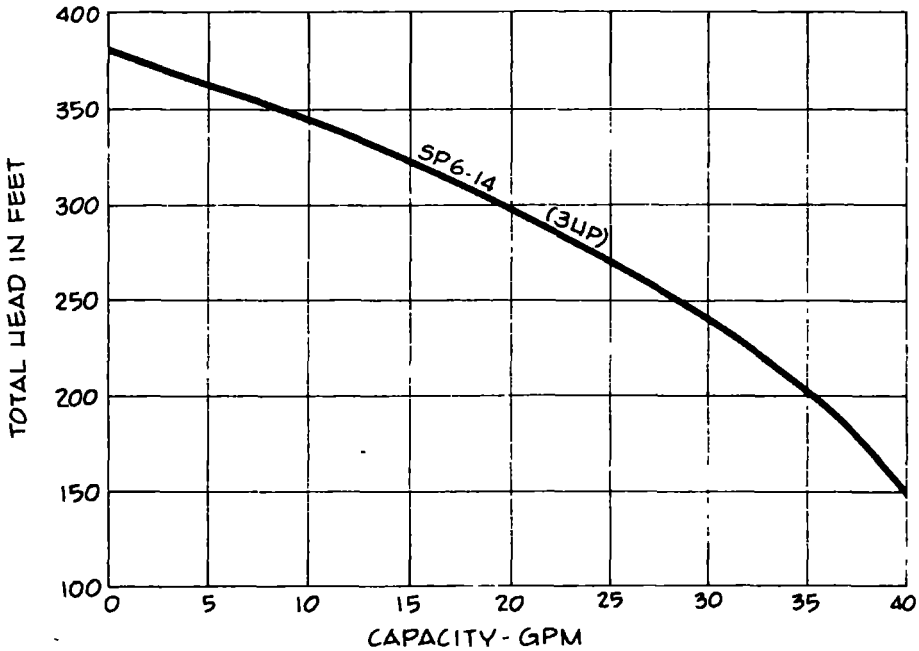
- The submersible pump will be constructed of stainless steel;
- A 2-inch national pipe thread (NPT) discharge pipe will extend from the pump outlet to the point of discharge. The discharge pipe will be constructed of galvanized steel.
- The specifications and rating curve for the pump are given in Figure 2.
- Upon completion of the well a reference point will be established at the well head. The horizontal location and vertical elevation of the reference point will be surveyed.

The submersible pump will be installed within well W105 to an approximate depth of 200 feet below the ground surface. test Figure 3 shows the final design for source control well W105.

A licensed well contractor will assist in the performance of the activities described in this work plan.

SP 6-14

PERFORMANCE CURVE



DIMENSIONS AND WEIGHTS

MODEL NO	HP	LENGTH	APPROX UNIT SHIPPING WT (LBS)
SP6-14	3	50 7/8"	79

NOM. FLOW RATE - 30 GPM
FLOW RANGE - 20 to 40 GPM
PUMP OUTLET - 2" NPT

Figure 2 Pump Specifications for W105

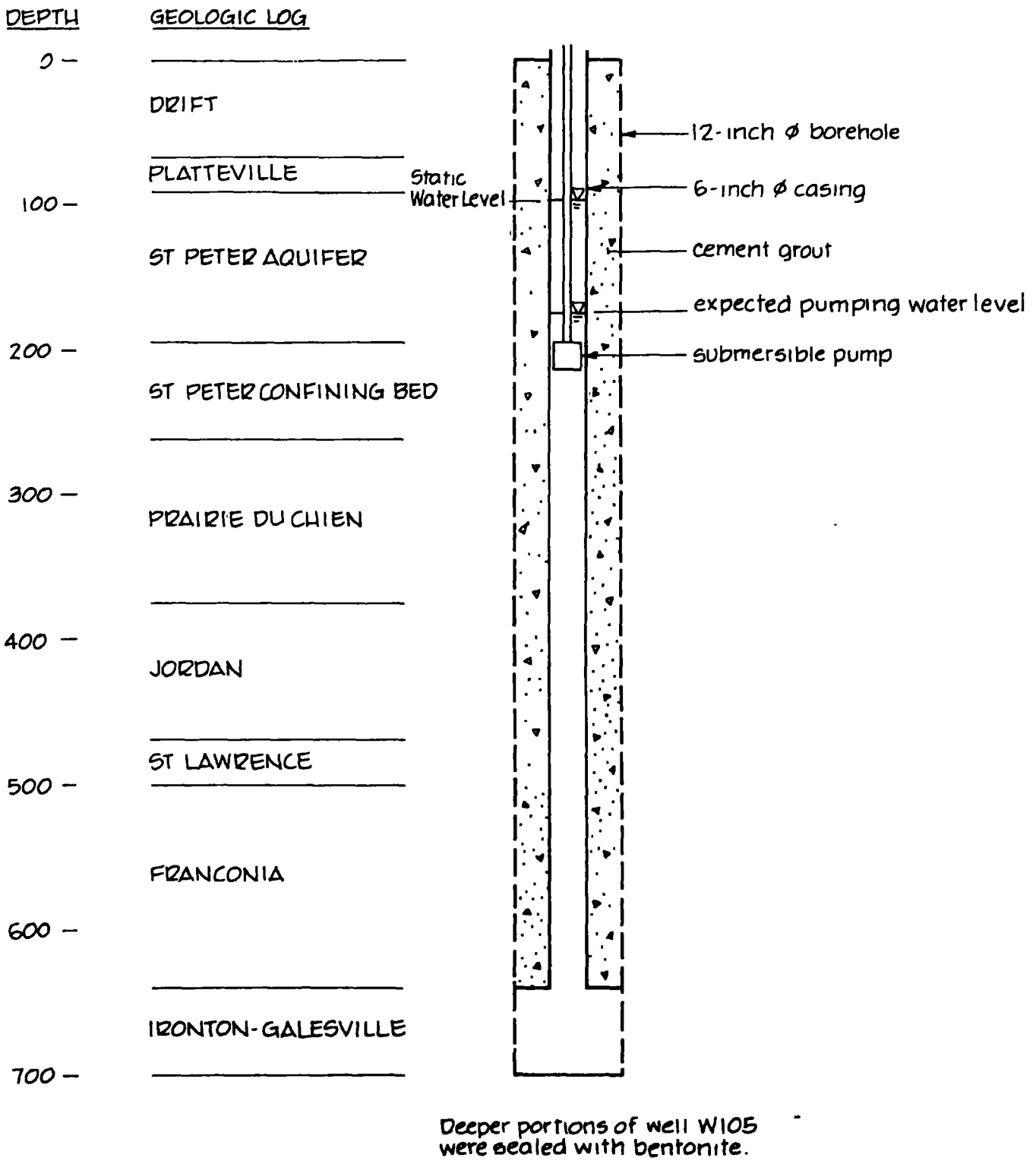


Figure 3 Final Design for Source Control Well W105

Pumphouse Design and Construction

The design of the W105 pumphouse is based on providing a structure and equipment suitable for what is assumed to be a long-term operation (possibly decades) with minimal maintenance and operating requirements. The pumphouse is designed as a 7'4" by 7'4" walk-in building with plenty of room for maintenance work. The roof is provided with a removable panel to allow for access to the well by a drill rig.

The W105 pumphouse will be a solidly-built masonary structure with a concrete floor. The wall structure will be masonry block with a brick veneer (color to match the condominiums to the north) to make a more attractive building. Insulation will be provided in the roof and walls and under the floor for energy efficiency. A gravel driveway off Walker Street is included to provide access and off-street parking for inspection and maintenance personnel. Electric heating and lighting and a floor drain will be provided inside the pumphouse. The floor drain will discharge to a dry well consisting of 50 feet of perforated pipe laid in a gravel bed. The pumphouse floor grade will be about 1.5 feet above existing grade so as to provide drainage away from the building.

Complete construction specifications and blueprints for the W105 pumphouse are presented in Appendix A. These specifications will be used in obtaining bids and contracting for the construction work.

Piping Design and Construction

The piping design for the W105 source control well is also based on providing for long-term, low-maintenance operation. Galvanized pipe will be used from the wellhead to a point just outside the pumphouse, where carbon steel pipe wrapped with polyethylene will be used for the underground run to the sanitary sewer. The discharge line inside the pumphouse will be provided with a wellhead pressure gauge, followed by a shut-off valve, a flow controller, a flow meter, a sample tap, a downstream pressure gauge, and a check valve. The flow meter will be equipped with a flow totalizer. and strip chart.

The discharge from well W105 will be joined with that from well W23 at a point just outside the W105 pumphouse. The combined flows from wells W23 and W105 will then run under pressure from the connection at W105 to an existing sanitary sewer manhole on Walker Street. This discharge line will be laid under the gravel driveway to minimize disruption of the site surface. All of the discharge piping will be polyethylene-wrapped carbon steel laid at least four (4) feet underground, with appropriate insulation added to protect against freezing.

Complete construction specifications and blueprints for the W105 discharge piping and sanitary sewer connection are also presented in Appendix A.

Contaminated Soils

It is possible that soils contaminated with coal tar materials will be encountered during the excavation required for the W105 pumphouse foundation, dry well, and/or underground discharge piping. It is likely, however, that any contaminated soils will be thoroughly weathered -- given the site's long history and the relatively shallow excavation depths (4 to 8 feet). Hence, it is unlikely that volatile or "runny" coal tar wastes or contamination will be encountered.

If any coal tar wastes or contaminated soils are encountered during excavation work, Reilly's Project Manager, Engineering Manager or Hydrogeology Project Manager/Field Coordinator (see Section B -- Quality Assurance Project Plan) will determine if the material is suitable for use as backfill based on the material's likely engineering properties and environmental effects agencies, criteria. Any contaminated soils used as backfill will be covered with at least six inches of clean fill before final grading. Any contaminated soils that are unsuitable for backfilling will be temporarily stockpiled at the W105/W23 construction site until all of the excavation work required for wells W23 and W105 is completed. The stockpiled material will then be disposed of off-site in accordance with all applicable state and federal hazardous and solid waste regulations.

Any temporary stockpile for contaminated soils for off-site disposal will be covered with plastic sheeting at the end of each work day. The cover sheeting will also be disposed of off-site -- in accordance with all applicable rules and regulations -- after the stockpiled soils are removed for disposal. Any temporary stockpile

should be in active use for no more than 30 days, given the detailed construction schedule presented later. In any event, any temporary stockpile will be removed no more than 90 days after it was started. and cause no imminent endangerment to the public health or the environment.

The Health and Safety Plan for this work (see Section C) recognizes that coal tar contamination may be encountered during excavation work and specifies appropriate measures for worker-protection if contamination is encountered.

Operation

Pumping of the W105 source control well will begin within 5 days of completing construction, as required by RAP Section 6.1.3. The well will be pumped at a monthly average rate of 25 gpm, as specified by RAP Section 6.1.3, until a request to cease pumping is approved pursuant to RAP Section 6.1.5. Reilly will notify the EPA and MPCA by certified mail of the date on which W105 construction was completed and the date on which pumping began.

The W105 source control well will be operated by the City of St. Louis Park (the City) on behalf of Reilly Tar & Chemical Corporation (Reilly) in accordance with Reilly/City Agreement (Exhibit B to the Consent Decree) beginning on the day that pumping is started. The City will inspect the W105 pump operation at least twice per week. All inspections will be noted in a log book kept at the W105 wellhouse using a form like the one shown in Figure 1. The flow meter totalizer reading, date, time, inspector's name, and any relevant comments will be recorded in the log during each inspection.

FIGURE 4

INSPECTION LOG FOR THE W105 SOURCE CONTROL WELL

chart

Date	Time	Flow Totalizer Reading (gal)	Calculated Average Flow Rate (gpm) For Month-to-Date	Comments	Inspector's Name

The W105 source control well will be pumped continuously, except for brief shut-down periods required for maintenance and/or repair. The City will notify the EPA and MPCA of any shutdown lasting more than ten (~~10~~ 3) days, with an explanation of the cause and an estimated date when pumping will be restarted. Shut-down periods for maintenance or repair are expected to be brief and infrequent because of the simple equipment involved.

W105 will normally be pumped at a rate of 25 gpm, but this rate will be increased as required after shut-down periods in order to maintain a monthly average rate of 25 gpm. The monthly average rate will be calculated on a calendar month basis using the flow totalizer readings in the inspection log. Average flow rates to date will be calculated and noted in the log book at least once a week to help ensure that the 50 gpm montly average rate will be met each month. Monthly average pumping rates for W105 will be reported for the applicable calendar months in the progress reports required by Part K of the Consent Decree.

The discharge from W105 will be monitored for Carcinogenic PAH and Other PAH quarterly during the first year of pumping and biannually thereafter, as specified by RAP Section 6.1.4. The monitoring will be performed by the City in accordance with the Reilly/City Agreement. In addition, Reilly will monitor the discharge from W105 for Carcinogenic PAH and Other PAH once during the first week of pumping. This initial monitoring is not required by the RAP, but is suggested by Reilly to aid in time-series analysis of the W105 monitoring data. Sampling and analysis for the first week monitoring will be conducted by ERT using

the procedures specified in the "Initial Sampling Plan for the Reilly Tar & Chemical Corp. NPL Site - St. Louis Park, Minnesota" (submitted to the EPA and MPCA by the City on October 3, 1986 pursuant to RAP Sections 3.2 and 3.3) as approved by the EPA and MPCA.

It should be noted that Section 2(c) of the Reilly/City Agreement requires that the discharge from W105 will be routed to the storm sewer before the fourth anniversary of the Effective Date of the Consent Decree. This change may require pretreatment of the discharge, depending on the NPDES effluent limitations established pursuant to RAP Section 2.5. Discontinuance of the discharge to the sanitary sewer will be implemented in accordance with RAP Section 2.9.

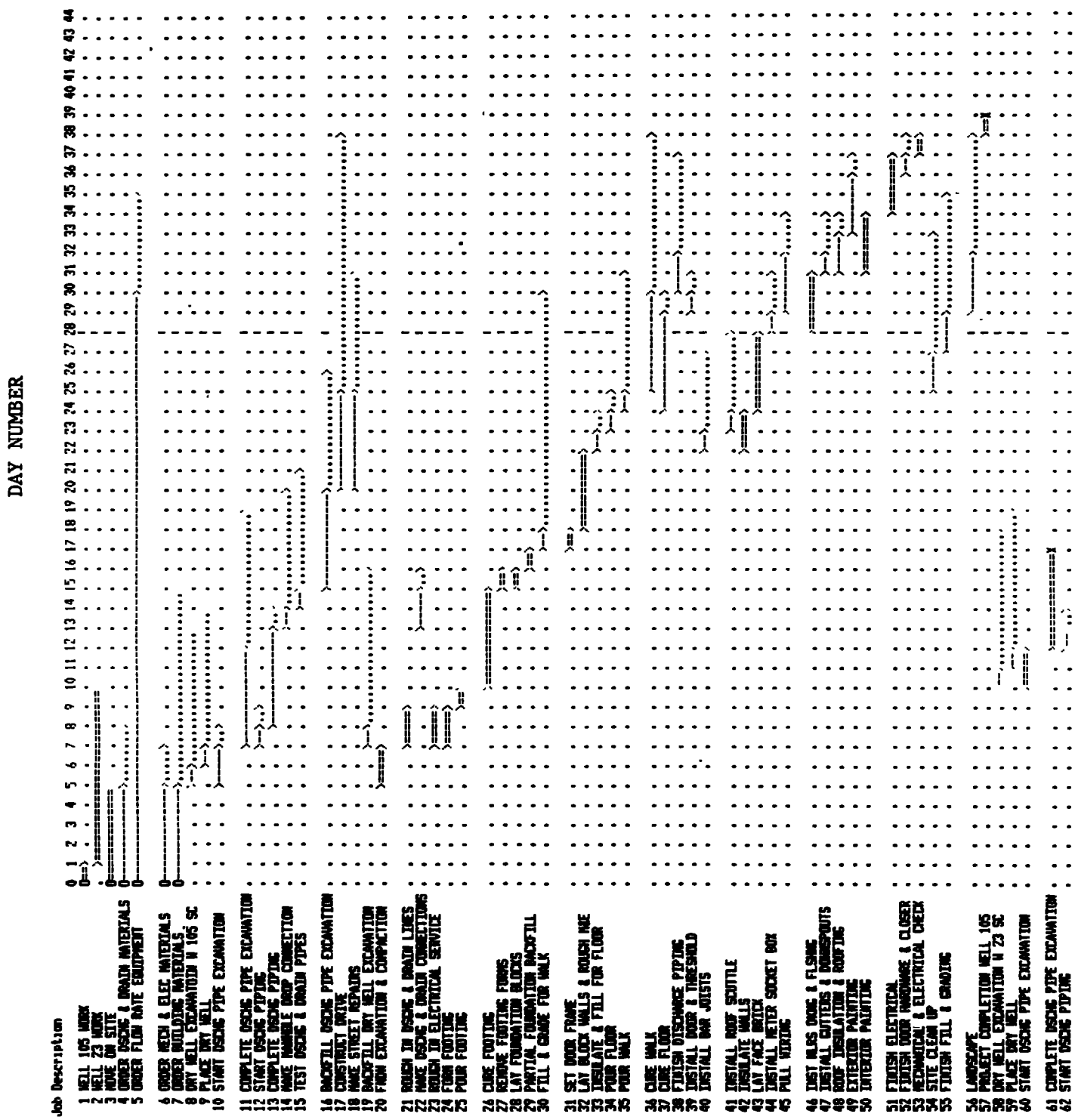
Schedule

Section 6.1.2 of the RAP specifies that construction of the W105 source control well must be completed within 60 days of receiving DNR and MWCC permits and receiving approval of this plan, whichever comes later. The 60-day period results in a tight schedule, but should be adequate for the required construction work if no unexpected difficulties are encountered.

Figure 5 presents the detailed construction schedule currently planned for the W105 source control well work. This schedule is subject to modification as the work progresses, and Reilly makes no commitments to meeting any of the schedule dates other than the 60-day completion requirement specified in the RAP. The schedule in Figure 5 is provided solely to assist the EPA, MPCA and City of St. Louis Park in planning

FIGURE 5

PRELIMINARY SCHEDULE FOR W105 CONSTRUCTION



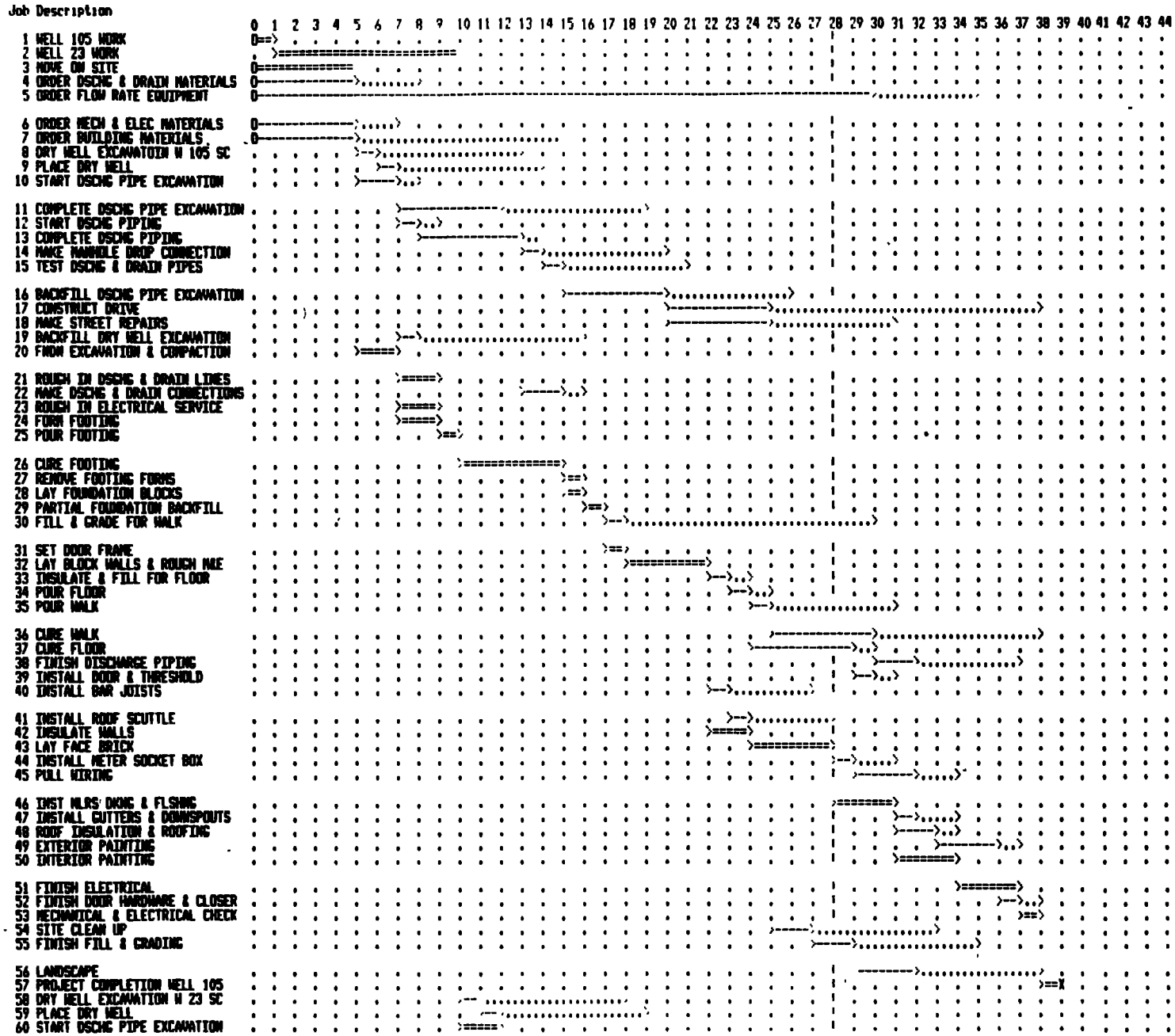


FIGURE 5 (CONT'D)

inspections of the work. These entities will be provided with an updated schedule before beginning any on-site work and as required by any major schedule changes after the work has started.

The schedule in Figure 5 indicates that the work at W105 will proceed simultaneously with that at W23. This is an important aspect of the work as far as minimizing disruption at the site during construction and meeting the 60-day schedule effectively. This is particularly the case for construction items common to each well, such as the access driveway, underground discharge line and electrical service connection. Reilly, therefore, requests that all plan and permit approvals required be granted simultaneously for W105 and W23. Can not grant

Figure 5 indicates a total schedule of 39 working days for completing the W105 construction. This amounts to 53 calendar days if work is started on Monday or Tuesday with a five-day work week. This is obviously a tight schedule, so weekend work an/or excused delays (pursuant to Part N of the Consent Decree) may be required if unexpected difficulties are encountered.

As indicated above, Section 6.1.2 of the RAP specifies that the 60-day construction period for W105 starts when Reilly receives approval of this plan and receives DNR water appropriation and MWCC sanitary sewer discharge permits, whichever occurs last. Reilly is also required to obtain various permits from the City before beginning work (in accordance with Part T of the Consent Decree). Reilly will submit the

required City permit applications promptly after receiving approval of this plan from the EPA and MPCA, and will provide copies of the City permit applications to these agencies. Reilly will notify the EPA and MPCA by certified mail promptly after receiving the last of all required City, DNR and MWCC permits, and the 60-day construction period will begin on the day that Reilly received the last required permit.

no in formula

- w/in 60 day submitt applic to MWCC & MDNR

SECTION B

QUALITY ASSURANCE PLAN

6624D 722-260

QUALITY ASSURANCE PLAN
FOR W105 WORK AT THE
RTCC - ST. LOUIS PARK SITE

ERT Document No. QAD722-260

October 1986

Prepared for

REILLY TAR & CHEMICAL CORPORATION
INDIANAPOLIS, INDIANA

ERT - A RESOURCE ENGINEERING COMPANY
696 Virginia Road, Concord, Massachusetts 01742

6624D 722-260

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1.0 INTRODUCTION

1.1 Background

ERT and the Reilly Tar & Chemical Corporation (RTCC) will complete certain tasks in fulfillment of the Consent Decree and Remedial Action Plan for the St. Louis Park Site. This Quality Assurance Plan pertains to all work to be performed by ERT, RTCC and subcontractors to convert the former supply well (now a groundwater monitoring well) identified by number W105 to a source control well by installing a pump, a well house and all necessary piping and connections to direct the pump outflow to the nearby sanitary sewer line. Further details on the work to be performed, its purpose and the methodology to be employed may be found in the project Site Management Plan.

1.2 Quality Objectives

The purpose of this Quality Assurance Plan is to define the Quality Assurance and Quality Control provisions to be implemented to ensure that:

- The resulting source control well conforms to design specifications given in the project Site Management Plan.
- The work is performed in an efficient manner.
- Field records generated during the course of the field work are complete and accurate.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The project organization is illustrated in Figure 2-1. The RTCC Project Manager, Mr. John Craun will oversee and coordinate all project activities. The ERT Project Manager/Field Coordinator, Mr. William Gregg, will schedule and direct all field activities and will conduct correspondence with RTCC. The Project Manager/Field Coordinator is also responsible for maintaining records of the work performed on the project and for archiving those records in the Central File upon completion of the work. The RTCC Engineering Manager, Mr. Lewis Locke will direct the engineering aspects of the work, including the installation of the sewer line connection and pump house. The Project Quality Assurance Officers are responsible for ensuring that this plan is implemented by their respective organizations, and that project data undergo technical and peer review, as necessary. The pump installation contractor will perform all work necessary to install the pump and make it operational. The sewer line connection subcontractor will install piping and connection to the sewer line and will install a well house to enclose the well and pump.

3.0 QA/QC - FIELD ACTIVITIES

3.1 Training

In order to ensure that the two subcontractors doing the field work can do so in a cooperative and efficient manner, instruction and guidance will be

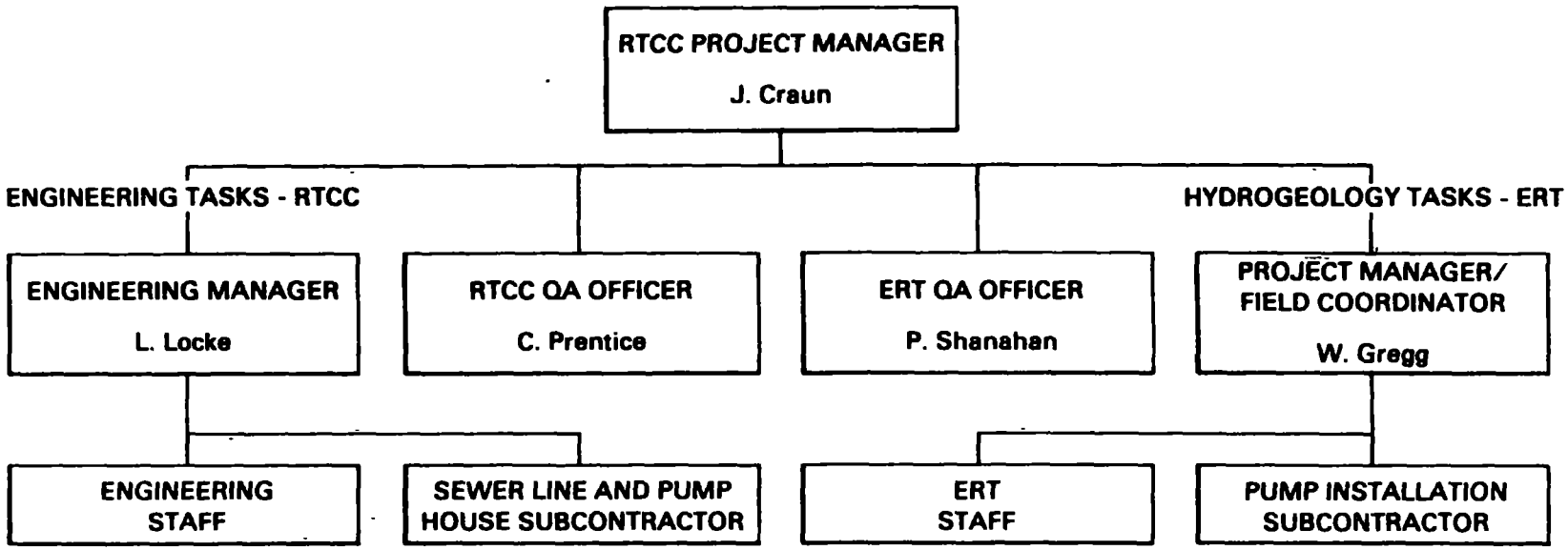

Figure 2-1 Project Organization

provided by the RTCC Project Manager and the ERT Project Manager/Field Coordinator to instill an understanding of the project objectives and plans and of the respective roles of the subcontractors.

3.2 Subcontractor Quality Control

Subcontractor quality control is that system of activities which ensures that products or services obtained from subcontractors fulfill the needs of the project. Subcontractor quality control begins with subcontractor procurement. The project policy for control of procurement is described in the ERT Quality Assurance Manual for Hazardous Waste Site Investigations, Chapter 5. The subcontractor procurement process considers:

- Bidder's qualifications in terms of personnel and physical resources, Quality Assurance program and Health and Safety program,
- Results of pre-qualification audits, if appropriate,
- Price and technical qualifications

Periodic quality control inspections of each contractor will be performed by the RTCC Engineering Manager and the ERT Project Manager/Field Coordinator to evaluate adherence to the project QA Plan and the project Health and Safety Plan. Inspection will include (as appropriate):

- Type and condition of equipment,
- Calibration procedures,
- Personnel qualifications,
- Decontamination procedures,
- Documentation.

Results of the inspection will be entered in the field notebook.

3.3 Document Control and Recordkeeping

Document Control for the W105 work serves a two-fold purpose. It is a formal system of activities that ensures that:

1) All participants in the project are promptly informed of revisions of the Quality Assurance Plan; and
2) All critical documents generated during the course of the work are accounted for during, and at the end of the project.

This QA Plan and all Standard Operating Procedure documents have the following information on each page:

- Document Number
- Page Number
- Total number of pages in document
- Revision number
- Revision date

When any of these documents are revised, the affected pages are reissued to all personnel listed as document holders with updated revision numbers and dates. Issuance of revisions is accompanied by explicit instructions as to which documents or portions of documents have become obsolete.

Control of, and accounting for documents generated during the course of the project is achieved by assigning the responsibility for document issuance and archiving. For the W105 work, the RTCC Project Manager and the ERT Project Manager/Field Coordinator have this responsibility.

Documentation for the project will either be recorded in non-erasable ink, or will be photocopied promptly upon completion, and the photocopies dated. All documents will be signed by the person completing them.

4.0 NUMERICAL ANALYSIS AND PEER REVIEW

All numerical analyses, including manual calculations, mapping, and computer modeling will be documented and subjected to quality control review in accordance with ERT SOP 2005, Numerical Analysis and Peer Review. All records of numerical analyses will be legible, reproduction-quality and complete enough to permit logical reconstruction by a qualified individual other than the originator.

5.0 AUDITS AND CORRECTIVE ACTION

ERT conducts periodic audits to assess the level of adherence to QA policies, procedures and plans.

Whenever quality deficiencies are observed that warrant immediate attention, formal corrective action request forms are issued to the project manager by the Quality Assurance Department. The QA Department retains one copy of the form when it is issued. The project manager completes the form and signs it when corrective action has been implemented, and returns the original to the QA Officer to close the loop.

The Quality Assurance Department maintains a record of all corrective action requests and reports their status to ERT management in a quarterly report.

Should an audit be conducted on the W105 activities, RTCC will be apprised of the audit findings and of any corrective action that is requested and performed.

SECTION C
HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

for the

Reilly Tar & Chemical Corp.
St. Louis Park Site, Well 105 Modification
(Name of Site/Facility)

Located in

St. Louis Park, Minnesota
(City) (State)

Project Number: D722-261

Division Number: 120

Date: October 27, 1986

Prepared By: Kevin Powers

Date: 10/27/86

Approved By: Peter Shanahan
for Project Manager

Date: 10/29/86

Keith M. Whitemore
for Health & Safety Manager

Date: 10/29/86

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SITE DESCRIPTION

FACILITY DESCRIPTION: ACTIVE? YES_____ NO___X___

An 80 acre site located in St. Louis Park, Minnesota, bordering the western edge of Minneapolis. The site was formerly occupied by a Reilly Tar and Chemical Corporation coal tar distillation and wood treating plant. The plant began operations in 1917 and ceased operations in 1971. The entire facility was razed and the land leveled in 1972. The site has since come to be used for various private and public projects, including a condominium development, a public park and minor commercial developments.

HISTORICAL INFORMATION: From 1917 to 1972 Reilly Tar and Chemical Corporation operated a wood treating and coal tar distillation plant at the site. During this time both wood treating waste products and coal tar distilling waste products entered the ground. The site apparently received contaminants from process and handling operations, direct discharge of wastewater, and inadvertent discharges such as from spills, leaks and storm water runoff.

COMPOUNDS OF CONCERN: Coal tar and creosote; particularly phenols and a wide array of polynuclear aromatic hydrocarbons including, but not limited to, Benzo(a)Pyrene, Benz(a)Anthracene and Quinoline.

PHYSICAL STATE OF COMPOUNDS: Not contained; contaminants in ground water and shallow soils.

SCOPE OF WORK

PROPOSED DATE(S) OF FIELD ACTIVITY: To be determined

PERSONNEL REQUIREMENTS:

NAME	RESPONSIBILITY
Bill Gregg	Coordinate Pump Installation
Subcontractor	Perform Pump Installation
RTCC Engineer	Coordinate Trench Excavation and Sewer Line Connection
Subcontractor	Perform Trench Excavation and Sewer Line Connection

TRAINING REQUIREMENTS: Respirator training and respirator fit test.

PROPOSED ON-SITE ACTIVITIES: Pump installation on existing well and connection to sewer system for pump effluent.

SCOPE OF WORK: Well 105 is to be modified by the installation of a permanent pump and connection of the pump discharge line to the sewer system. To make this connection, a trench must be dug from the well to the underground sewer system.

HAZARD EVALUATION

WASTE CHARACTERISTICS:

X	A. TOXIC*		E. SOLUBLE		I. HIGHLY VOLATILE
	B. CORROSIVE		F. INFECTIOUS		J. EXPLOSIVE
	C. RADIOACTIVE		G. FLAMMABLE		K. REACTIVE
	D. PERSISTENT		H. INGITABLE		L. INCOMPATIBLE
					M. NOT APPLICABLE

*May be toxic depending upon route and nature of exposure.

TOPOGRAPHICAL HAZARDS: None known at this time

OPERATIONAL HAZARDS: Drilling rig, trench excavation by backhoe, foundation excavation for pumphouse.

NOTES OF INTEREST: The walls of trenches greater than 4 feet in depth must be adequately shored or sloped to the angle of repose. For average soil, an angle of repose of 45 degrees is recommended. For loose or sandy soil an angle of 30 degrees is recommended. Access to trenches greater than 4 feet in depth should be by ladders which extend to the bottom of the trench and at least 3 feet above the surface of the ground. Contaminated soils & gas may be encountered during work

OVERALL HAZARD: X LOW ____ MEDIUM ____ HIGH

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PERSONAL PROTECTION REQUIREMENTS

RESPIRATORY PROTECTION REQUIREMENT: LEVEL D (modified)

SPECIFICATIONS: MSA Comfo II with Type GMC-H cartridges

MODIFICATIONS: Respiratory protection required if working in a trench in which liquids are present, in the vicinity of trench excavation if VOC's are detected in the breathing zone by an HNU reading of 10 units or greater, or if odors or dust becomes objectionable.

PROTECTIVE CLOTHING REQUIREMENT:

X WORK CLOTHES/COVERALLS (long sleeved)

X CHEMICAL PROTECTIVE CLOTHING. TYPE? - Tyvek - for personnel entering trench

___ WORK SHOES (STEEL TOE/SHANK)

X BOOTS. TYPE? Slush type

X GLOVES. TYPE? Nitrile - for handling contaminated soil

X HARD HAT

___ FACE SHIELD

X SAFETY GLASSES/GOGGLES

MODIFICATIONS: Hard hat/safety glasses required within a 25' foot radius of operating backhoe. Face shield required for personnel working in trench if ~~liquids~~ are present.

corrosive materials in gas or soil

MONITORING REQUIREMENTS:

1) INSTRUMENT: HNU PI-101

MONITORING PROCEDURE: Monitor breathing zone during trench excavation

2) INSTRUMENT:

MONITORING PROCEDURE

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DECONTAMINATION PROCEDURES

EQUIPMENT/SOLVENTS/SOLUTIONS: Alconox, clean water

DECONTAMINATION PROCEDURE(S):

1) ITEM(S): Gloves, boots and other equipment ~~as necessary~~

PROCEDURE: Wash with alconox detergent and rinse with clean water

2) ITEM(S):

PROCEDURE:

DISPOSAL PROCEDURE: General refuse for all consumables.

SPECIAL INSTRUCTIONS:

NOTE: The above specified decontamination procedures pertain to the decontamination of personal protective equipment only. Procedures for the decontamination of sampling tools and other related equipment should conform with ~~applicable ERT Standard Operating Procedures~~. QAPP.

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EMERGENCY REFERENCE

AMBULANCE: 920-2345 or 911

POLICE: 920-2345 or 911

FIRE: 920-2345 or 911

HOSPITAL: Methodist Hospital

Location: 6500 Excelsior Blvd.
St. Louis Park, Minnesota
932-5000

DIRECTIONS TO HOSPITAL: MAP INCLUDED? Yes

Directions to Methodist Hospital: From the site on Louisiana Ave., take Louisiana Ave., south to Highway 7 (approx. 0.6 miles). Go east on Highway 7 to Brunswick Avenue (approx. 0.6 miles). Turn right on Brunswick and proceed south to Excelsior Blvd. (approx. 0.8 miles). Turn right on Excelsior and proceed west past Dakota Ave. (approx. 0.2 miles). Methodist Hospital is on the north side (right) of Excelsior Blvd. immediately after Dakota Ave.

POISON CONTROL CENTER: 347-3141

NATIONAL RESPONSE CENTER: 1-800-424-8802

IN THE EVENT OF AN EMERGENCY,

ALL OF THE FOLLOWING MUST BE CONTACTED

- ERT Representatives:

Kevin Powers, Health & Safety Manager Concord, MA	617-369-8910 x 314 617-773-0484 (home)
Scott Whittemore, Quality Assurance Manager Concord, MA	617-369-8910 x 291 603-888-1174 (home)
William Gregg, Project Manager Minneapolis, MN	612-541-1642 612-938-1772 (home)

- Agency Representatives:

Douglas J. Robohm, MPCA Roseville, MN	612-296-7288
Daniel J. Bicknell, EPA Region V Chicago, IL	312-886-7341

- Client Repretatative:

John C. Craun, Reilly Tar & Chemical Corp. Indianapolis, IN	317-248-6426

NEAREST PHONE:

Park Tavern (Bowling Alley)
3401 Louisiana Avenue

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NON-RESPONSIVE

Map of St. Louis Park and Control Well Locations

8606083

SECTION D
COMMUNITY RELATIONS PLAN

Construction of the source control well at W105 will be undertaken pursuant to the provisions of the Consent Decree and Remedial Action Plan for the Reilly Tar & Chemical Corporation St. Louis Park, Minnesota NPL site. All community relations programs related to this work will be coordinated through the following agencies:

United States	Ms. Judy Beck U.S. Environmental Protection Agency Region V (312) 353-1325
State of Minnesota	Ms. Sharon Brustman Minnesota Pollution Control Agency (612) 296-7769
City of St. Louis Park	Ms. Sharon Klumpp City of St. Louis Park (612) 924-2523

APPENDIX A
CONTRACT SPECIFICATIONS

CONTRACT SPECIFICATIONS

FOR

WELL 105

IRONTON-GALESVILLE AQUIFER

SOURCE CONTROL

REILLY TAR & CHEMICAL CORP.

1510 MARKET SQUARE CENTER

151 NORTH DELAWARE STREET

INDIANAPOLIS, IN 46204

LEWIS D. LOCKE, JR.
CIVIL ENGINEER
017565 0
STATE OF MINNESOTA

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Lewis D. Locke, Jr.

Date OCT 31 1986 Reg. No. 017565 0

PUMPING FACILITY ENGINEERING SPECIFICATIONS

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SECTION 100

SUMMARY OF WORK

101 SCOPE OF WORK

The work consists of the complete finish of the Well 105 Ironton-Galesville Aquifer, Source Control Pump House at _____Oxford St., St. Louis Park, MN. The work is to be completed as per this specification and Reilly Tar & Chemical Corp. drawings 861737-001 and 603.

102 OWNER RESPONSIBILITIES

The Owner will have a Representative available for field Consultation.

The Owner will furnish site elevations prior to letting the work for bids.

The Owner will furnish all required construction and permanent permits.

103 CONTRACTOR RESPONSIBILITIES

The Contractor will supply the Owner with a schedule of construction before the work begins and with a revised and updated schedule weekly as the work progresses.

The Contractor will arrange for a temporary water supply and temporary electrical service connection during the construction period.

The Contractor shall provide project management to ensure completion of the work on schedule.

The Contractor will be responsible for base lines and bench marks for subcontractor use.

The Contractor must notify the Owner 3 days in advance of any utility tie-in or any work that will interrupt normal activity around the job site.

Coordination between the Contractor and the Subcontractors must be maintained in order to meet the schedule.

All applicable Codes and Safety Regulations will be followed by every Contractor and his workers.

The Contractor shall provide five copies of all equipment warranties, operating instructions, installation instructions, maintenance instructions and parts list for each piece of equipment installed shall be provided to the owner on completion of the work.

The Contractor shall provide temporary baricades and fencing.

The Contractor shall ensure that at the end of each working day, positive drainage shall be provided.

The Contractor shall ensure that the topsoil is removed to its entire depth, in the areas of new construction and stockpile topsoil which will be required for finish grading.

The Contractor shall see that areas that are to have topsoil removed shall first be cleared of excessive vegetation, rubbish and debris.

The Contractor shall see that stockpiled topsoil is replaced in lawn areas prior to sodding and or seeding to a minimum depth of 6 inches. Remove all stones larger than 2 inches.

The Contractor will be responsible for site restoration to near original condition. Sod shall be placed where necessary to return site to original conditions or to prevent erosion otherwise graded areas shall be seeded.

The Contractor shall be responsible for layout of his Work, including lines and elevations. Each Subcontractor shall field verify all dimension relating to his work, as shown on the Drawings, and report any errors or discrepancies to the General Contractor before commencing work.

The Contractor is responsible for the protection of his Work from adverse weather. He shall provide, at all times, all means and methods for weather protection as necessary for the satisfactory execution and performance of his work.

104 GUARANTEES

A written one year guarantee is required to cover all installed material, equipment and labor not otherwise covered by manufacturers warranties. Exceptions to this are the roof (2 yrs) and caulking (5 yrs).

All guarantees will begin at the Owners recognized date of substantial completion.

105 TEMPORARY FACILITIES

The Contractor will furnish a project office at the site with a telephone for business use to all personnel. Toilet facilities will be provided by the Contractor.

Storage facilities are to be provided by the Contractor. Set-up location must be approved by the Owner. If the set-up location interferes with work later in the job, relocation may be required.

The Electrical Subcontractor will furnish all temporary electrical for lights and outlets at the beginning of the job. This temporary work is to be included in the Contract Bid. This work must meet the appropriate codes and regulations.

The Electrical Subcontractor is also responsible for removal of this equipment when no longer needed.

Fire extinguishers will be provided by the Contractor at required locations on the job site. Each Subcontractor is responsible for providing his own extinguishers during any cutting or welding. Certain Owner designated locations will require Owner approval before welding or cutting can be done.

Project Sign: If required, the Contractor will provide and maintain a Project Sign as approved by the City and the Owner. No other signs are allowed except as required for safety, security, or traffic control; or without the permission of the Contractor.

106 MEETINGS

Prior to Contract award, the leading Bidder will be required to attend a pre-award meeting. At this time the bid and all applicable Contract Document information will be reviewed. A preliminary schedule will be provided for Contractor input. The Contractor should also be ready to provide information on Subcontractors, Suppliers, material and equipment delivery times, personnel etc.

At any time during the job, the Owner may call a progress meeting in the St. Louis Park area. These meetings may require attendence by the Contractor, Subcontractors and Material Suppliers.

107 SHOP DRAWINGS

Shop drawings and product data must be received by the Owner with sufficient time for approval. Contractor or Supplier delay in forwarding drawings and data for approval will not be viewed as an acceptable reason for schedule extension.

Seven (7) copies of all approved drawings and data will be supplied to the Owner for further distribution.

108 CLEAN-UP

The Contractor and each Subcontractor will be responsible for site clean-up during the job. A trash container will be supplied by the Contractor.

109 PROJECT CLOSEOUT

The Mechanical and Electrical Subcontractors must submit five (5) sets of operating and maintenance manuals to the Owner before final payment will be made. These manuals will contain the following:

- Contractor and Supplier List
- Guarantees
- Wiring and control diagrams
- Operating instructions
- Maintenance instructions
- Parts lists
- Any other information relating to supplied equipment and materials

The Contractor and all Subcontractors must submit a Contractor and Supplier List and a written guaranty.

The Contractor will be responsible for keeping a set of as-built drawings on site for updating changes. It is the responsibility of each Subcontractor to note all changes related to his work on this set.

SECTION 200

MECHANICAL WORK

201 GENERAL

This Section describes work, equipment and materials to be furnished by the Mechanical Subcontractor.

All mechanical systems are to be finished to a ready-to-operate condition. The Mechanical Contractor is responsible for completing all mechanical systems except for power wiring tie-ins.

The accompanying drawings have been drawn to scale and have some listed dimensions. Care has been taken to maintain accuracy, but it remains the Contractors responsibility to verify the scaled and listed dimensions.

The Mechanical Subcontractors Bid shall include a list describing the major types of equipment and materials to be used. After acceptance of the bid, changes to this list will not be allowed.

The Mechanical Contractor will assume all responsibility for conforming to rules and regulations of the applicable government agencies and utilties.

The plumbing installation will comply with all requirements of the Minnesota Department of Health and the Uniform Plumbing code.

The mechanical installation will comply with the Uniform Mechanical Code.

All installed work will comply with rules and recommendations of the National Fire Protection Association.

Shop drawings and operation and maintenance manuals must be supplied as described in the SUMMARY OF WORK.

202 SYSTEM TESTING

Every piping system will be flushed clean prior to pressure testing.

Testing procedures for various piping systems are as follows:

- Discharge water	- All lines pressured to 150 psi for 1 hour with no loss of pressure.
- Drain piping	- All lines pressurized with 15 psig air with no more than 3 psig loss in 15 minutes.

203 MECHANICAL EQUIPMENT SPECIFICATIONS

Discharge Gate Valve 1 1/2" NPT (Powell Fig. 500)

Pressure Gauges (2) 0-100 psi (Ashcroft 1279 (*) 54 1/2" TA Lower 1/2 NPT 0-100 psi)

Flow Controller 1 1/2" NPT (Kates Flow Control 4FA1-1)

Sample Line Valve and Pressure Gauge Shutoff Valve (3)
1/2" NPT, ball type (Powell Fig. 4210B 1/2")

Flow Meter 1 1/2"NPT (Hersey Turbine Meter with totalizer
MVR100-C-I-150-T-G-N

Backflow Check Valve 2", spring closing (TRW
Mission Duo Check II K15 HMF 2")

204 GENERAL PIPING MATERIALS

The Mechanical Contractor is to furnish all piping, valves and accessories to complete the work as described by the Contract Documents. Substitutions may be made for specified items with approval from the owner.

The list of acceptable manufacturers is as follows:

- Gate and check valves: Nibco/Scott, Crane, Powell, Lunken, TRW Mission Heimer, Walworth, Jenkins or Stockman

- Ball valves: Wolverine Brass Works, Nibco/Scott, Hammond, Powell, Jamesbury, Metraflex or Dyna-Quip

All flange connections are to have 1/16" full face "Cranite" gaskets coated with a thread lubricant when installed.

205 GENERAL PIPING INSTALLATION

All piping must be installed and routed in a neat and orderly manner with sufficient clearances for maintenance unless otherwise indicated on the drawings.

206 GAUGES

Acceptable guage manufacturers are Ashcroft, Marsh, Trerice, Duro, Danton, Cambridge, American Air Filter or Dryer.

Typical guages shall be similar to the following:

- Ashcroft 1279

207 DISCHARGE WATER PIPING

Piping will be part low carbon steel galvanized Sch 40 with screwed and flanged fittings, part polyethylene coated carbon steel Sch 40 and part cast iron as indicated on the drawings.

208 DRAIN PIPING

Piping will be part cast iron and part polyethylene coated carbon steel Sch 40 as indicated on the drawings.

209 GENERAL EQUIPMENT INFORMATION

The Mechanical Subcontractor is responsible for complete purchasing and installation of all equipment other than as noted in the Drawings and Specifications. This work includes supports and all connections except power wiring to the unit.

All equipment is to be completely installed to a ready to operate state, including any lubrication, alignment and adjustments.

SECTION 300

ELECTRICAL WORK

301 GENERAL

This section describes work, equipment and materials to be furnished by the Electrical Subcontractor.

The Electrical Subcontractor will assume all responsibility for conforming to all rules and regulations of the applicable government agencies and utilities.

The Electrical Subcontractor is responsible for verification of dimensions that affect his work. Any minor deviations caused by interferences shall be considered a part of the job and the owner will not be held responsible for any reimbursement.

All electrical equipment must be U. L. approved and meet all other applicable code requirements.

All permits and inspections required for completion of electrical work are to be arranged and paid for by the Owner.

All electrical materials and equipment shown on the Contract Drawing and listed in the Specifications must be provided by the Electrical Subcontractor unless otherwise noted.

Shop Drawings and Operations and Maintenance Manuals must be supplied as described in the SUMMARY OF WORK.

302 TEMPORARY WORK

The Electrical Subcontractor must supply temporary power supply pole and outlets to allow for convenient construction use.

303 ELECTRICAL EQUIPMENT SPECIFICATIONS:

Pump 3 Hp, 3ph, 240/208V 60He, 7 amps (furnished by Well Contractor)

Nema Size 0 starter (Square D class 8536, type SBW, Nema type 4 with Dual Push Button and pilot light control unit KXRG117, fused 120V control transformer & extra contact)
Hour meter non reset type (Redington 7526-002)
One 10 amp circuit breaker disconnect in load center (Square D Q0310) 3 pole, common trip with indicator

Heater 3KW, 10,239 Btuh, 240/208 V, 60Hz, 12.5 amps (Dayton 3E039)
One 15 amp ground fault circuit interupter circuit breaker disconnect in load center (Square D Q0215GFI)2 pole, common trip with indicator

Lights 2 units each unit having 2 lamps, 120V, 6Hz, 70 watts per fixture, .65 amps per fixture (Graybar Meter Miser Wrap-Arounds GMM-8-2224)
One 15 amp ground fault circuit interupter circuit breaker disconnect in load center for both lights (Square D Q0115GFI) 1 pole with trip indicator

Switch toggle type, 120V, 15 amp (Hubbell 1201 GRY)

Duplex Outlet corrosion resistant, 3 wire grounding, 125V 20 amp (Hubbell 53CM62)

One 20 amp ground fault circuit interupter circuit breaker disconnect in load center (Square D QO120GFI) 1 pole with trip indicator

Loadcenter circuit breaker type, 3ph, 4 wire, 120/240V, 100 amp main (Square D QO424M100) flush cover (Square D QOC430LF) Equipment Ground bar kit (Square D PK15GTA)

Safety Socket Box test-bypass type, 3ph, 4 wire, 240/120V, delta, 100 amp (Square D EM71NRB)

304 GENERAL MATERIALS

The following types of material and equipment should be used

- Service equipment, panelboards, safety switches, motor starters and other general purpose control devices	- Square D
- Wiring devices	- Hubbell, A.H. & H., P. & S. G. E., Sierra, Grouse-Hinds
- Finishing plates	- Sierra
- Lighting Fixtures	- Noted on Drawings or approved equal
- Lamps	- G.E., Sylvania or Westinghouse

Conduit can be U.L. approved heavy wall rigid or EMT where not otherwise specified. All fittings must be U.L. approved and electrically conductive. Minimum conduit size is 3/4" except where noted. Flexible conduit is 1/2" minimum.

Conduit runs shall be in the block walls and under the concrete floors unless otherwise indicated.

Wire and cable for general wiring shall be rated 600 volt. Conductors size #12 through #8 AWG shall have type TW, THW or THW/THHN insulating wall unless otherwise noted. Conductors sized #6 AWG and larger shall have type THWN, THW, THHN or XHHW insulating wall unless otherwise noted. Minimum conductor size must be #12 AWG. All wire terminating in light fixtures or at equipment should be heat resisting type. Wire must be sized so that voltage drop does not exceed 3% from branch panel to last outlet. Color coding should be Phase A - Black, Phase B - Red, Phase C - Blue, Neutral - White or Grey and Ground - Green. All wire must be 98% conductability soft drawn commercially pure copper.

Toggle switches and receptacles should have a grey finish. Finishing plates must be brushed stainless steel.

305 GENERAL INSTALLATION

The Electrical Subcontractor is responsible for all power tie-ins required for installed equipment.

All equipment, switches, panels, main circuits and feeder circuits that are installed by the Electrical Subcontractor should be identified by permanent labels.

The Electrical Subcontractor is responsible for all testing required to insure a complete and secure electrical system.

All conduit shall be hidden from view unless noted on drawings or approved by Owner. No runs will be installed diagonally. Conduit ran through outside walls must be sealed with appropriate material.

Wire must not be pulled using grease or oil. Only cable pulling compounds similar to Y - ER - EASE are to be used. Any required splicing will be done using approved splicing procedures and must be approved by Owner.

All wall mounted switch and outlet boxes must be flush mounted unless otherwise noted.

Mounting height of switch and outlet boxes and devices are to be as follow:

- Receptacle outlets	- 40" above floor
- Toggle switches	- 48" above floor

306 HEATER

The Electrical Subcontractor is responsible to furnish, install and wire the electric heater. The heating fixture is to be hung from the wall after the wall and ceiling painting are complete. The unit specified may be replaced with an equal unit. Such a unit shall have a built in hydraulic thermostat (35° to 85°F range), totally enclosed corrosion resistant elements finned and sheathed, quiet built in fan, totally enclosed shaded pole motor with sealed bearings (54° to 67°F heat rise), automatic-reset thermal cut-out disconnects for element and motor.

307 PANEL BOARD, STARTER AND METER BOX

100 amp, 3ph, 4 wire, 240/120 volt meter box is to be supplied and installed by the Electrical Subcontractor, the unit is to be equal to Square D.

Nema Size 0 starter is to be supplied and installed by the Electrical Subcontractor. The unit is to be equal to Square D. It is to be installed after the wall and ceiling painting are complete.

100 amp 240/120 volt circuit breaker panelboard complete with main breaker and listed number of individual breakers is to be supplied and installed by the Electrical Subcontractor. The panel should be equal to Square D.

308 GROUNDING

The conduit system ground must be continuous through all new construction. All equipment must be provided with a suitable ground. Green pigtails and jumpers are to be used with outlets, switches and all flexible conduits. All conduit ground must be tested to insure correct and complete ground and approved by Owner.

309 LIGHTING

The Electrical Subcontractor is responsible to furnish, install and wire all light fixtures. Ceiling fixtures will be hung after ceiling is painted. All ceiling fixtures must be self supporting and also secured to bar joists. All fixtures must be equipped with U. L. heat resistant wiring. Fixtures should have white finish on all metal.

310 SERVICE ENTRANCE WIRING

The service entrance wire size will be #2 AWG. The service entrance conduit will be routed underground to the nearest Power Company pole or ground mounted transformer. The bury depth shall be 18 inches to the center of the conduit. A 2 inch thick by 6 inch wide concrete cover shall be poured in the trench after 6 inches of fill has been compacted over the conduit. A yellow plastic warning tape shall be laid in the trench after 6 inches of soil has been compacted over the concrete cover. The remaining fill shall then be added and compacted. If a ground mounted transformer is to be utilized for the power supply the service entrance conduit shall terminate in the terminal cabinet of the transformer. If a pole mounted transformer is to be utilized for the power supply the service entrance conduit shall extend 12 feet up the pole and have a weather head. The General Contractor will be responsible for coordinating the electrical service connection.

SECTION 400

PAINTING

401 GENERAL

The Painting Subcontractor is responsible to furnish all supplies and labor to paint all interior walls, ceiling, door (interior and exterior), gutters, downspouts, exposed roof flashing, meter box and exposed conduit.

The painting schedule will consist of two segments. All sealing, priming and finish coats will be in the first segment. After other construction is complete touch up will be done.

Care must be taken to protect all adjacent surfaces during preparation and painting. All surfaces should be prepared to paint manufacturers recommendations before painting.

402 MATERIALS AND APPLICATION

Top Coat Paint colors to be used are as follows:

- All exterior metal doors, frames and meter socket box	- Glidden Professional Colors Aluminum
- All galvanized gutters, flushing, downspouts and conduit	- Glidden Professional Colors Aluminum
- All interior walls, ceilings, doors frames and conduit	- Glidden Professional Colors White

Paint types to be used are as follows:

- Exterior Primed Surfaces	- (2) coats Glidden #592
- Exterior Galvanized Surfaces	- (2) coats Glidden Epoxy Chromate Primer #5251/5252 - (2) coats Glidden #592
- Interior Block	- (1) coat Glidden Ultra Hide Block Filler #5317 - (2) coats Glidden Glid Guard Epoxy #5250/5242
- Interior Ceiling, bar joists and conduit (all galvanized)	- (2) coats Glidden Epoxy Chromate Primer #5251/5252 - (2) coats Glidden Glid Guard Epoxy #5250/5242
- Interior Primed metal door and frame	- (1) coat Glidden Universal Fast Dry Metal Primer #5210 - (2) Coats Glidden Glid Guard Epoxy #5250/5242

SECTION 500

DRIVEWAY AND ENTRY WALK

501 GENERAL

The Paving Subcontractor is responsible for labor, material and installation of the drive shown on Reilly Tar & Chemical Corp. drawing number 861737-001. The driveway is to be installed to meet the specifications of the City of St. Louis Park. The Paving Subcontractor is also responsible for the pump house entry walk as shown on Reilly Tar and Chemicals Corp. drawing number 861737-603.

All concrete shall be cured for a period of not less than 7 days. During this curing period, no part of the concrete shall be permitted to become dry. Curing shall be applied and maintained to prevent loss of water from concrete for the duration of the curing period.

Fresh concrete shall be protected from heavy rains, flowing water and mechanical injury. All concrete shall be protected from the sun and drying winds.

Sidewalks and other exterior slabs except vehicular traffic areas shall receive a hair broom finish in accordance with ACI 301, Section 1104(d) with a Class B. tolerance.

Exterior concrete slabs shall be cured with Sealtight WP-40 White-Pigmented Concrete Curing Compound as manufactured by W. R. Meadows Elgin, Illinois. or an equal product approved by the Owner. Application for this product shall be 300 square feet per gallon. Product shall meet specifications: ASTM C309, Type 2, Class A; AASHTO M148, Type 2, Class A; ANSI A 37.87, Type 2, Class A.

Concrete testing shall be done on a per truckload basis. Samples shall be taken per ASTM methods and tested by an independent testing laboratory. The laboratory shall be selected by the General contractor and approved by the Owner. The cost of sampling and testing shall be included in the bid price. The owner will evaluate the test results for acceptance or rejection.

SECTION 600

BUILDING

601 GENERAL

This portion of the contract includes the following:

- Foundation construction
- Masonry wall construction
- Wall, roof and floor insullation
- Concrete floor construction
- Brick veneer construction
- Bar joists and decking construction
- Roof scuttle
- Roofing, flashing, nailers, gutters and downspouts
- Door, frame, threshold, hinges, plates and handle
- Lockwork and door closer
- Caulking

All materials and labor required for complete finish are to be included.

All of the Work shall meet the requirement of all governing codes, ordinances, laws, regulations, safety orders and directives.

602 EXCAVATION AND BACKFILL

Provide all equipment, material and labor to excavate for foundations, footings, stoops, sidewalks, curbs, retaining walls and similar items, all to the lines and grades indicated herein and on the drawings.

Excavate to full depth and full width of foundations; allow ample room for forms where required. Excavation shall be held to a true line and grade. Bottom shall be level and free from loose material. Where bottom of footing is undercut, return to grade with concrete of same quality as specified for the footing of foundation.

Promptly backfill excavations as work permits, but not before walls have attained design strength. Shore walls and footings as required to prevent toppling, cracking, and misalignment.

All spaces excavated for and not occupied by structures shall be backfilled to subgrade with excavated materials from the site or bank-run gravel from off-site and thoroughly compacted in layers not to exceed 12" in depth. Backfill shall be compacted to a minimum of 95% of maximum density at optimum moisture content, as determined by Modified Proctor Test (ASTM D-1557). Backfill simultaneously on both sides of the structures.

Excess excavated material not used as backfill, but suitable for site fill, shall be used for site grading as directed by the Contractor.

Excavated material deemed unsuitable for backfilling or fill will be disposed of by the Owner.

Fill material required to complete the finish grading will be bank-run gravel for subgrade and top soil as required to meet the minimum coverage requirement of 6 inches. All additional materials for the building excavation and general site grading shall be provided by the Contractor.

Place granular drainage fill under the slab and compact. Depth of drainage fill shall be minimum 6 inches or as shown on drawings.

Earthwork density tests shall be required for each lift during construction. They shall be made by an independent testing laboratory selected by the Earthwork Subcontractor and approved by the Owner. Field density tests shall be taken at locations selected with a minimum of one per 150 sq. ft. per 2' lift. All tests required to bring compaction to the required density shall be paid for by the Building Earthwork Subcontractor.

603 CONCRETE

This section includes general requirements for the concrete Subcontractor and is intended to supplement the specifications listed on the drawings.

Reinforcing bars shall conform to the requirements of ASTM A-615 "Specifications for Deformed Billet-Steel Bars for Concrete Reinforcement. The grade of steel to be as shown on drawings.

Welded wire fabric shall conform to the requirements of ASTM A-185, "Standard Specifications for Welded Steel Wire Fabric for Concrete Reinforcement".

Expansion Material shall be ASTM D1752, Type III, preformed, self-expanding strips formed of cork particles with a nonbitumen, isolable resin binder, similar to "W.R. Grace Code No. 4324."

Vapor barrier material shall be 6 mil polyethylene ASTME-96.

All materials and labor required for complete finish are to be included.

All of the Work shall meet the requirement of all governing codes, ordinances, laws, regulations, safety orders and directives.

Provide Expansion Joint Material where indicated on Drawings. Install preformed, self-extending granulated cork strips full depth of joints.

Interior concrete slabs shall be cured with Clear Bond as manufactured by Guardian Chemical Company, Atlanta, Georgia or approved equal by the Owner that can be applied in one coat at the rate of 400 square feet to the gallon and shall meet ASTM C309 (Type 1), TTC-00800 (GSA-Fss), CRD-C-300 and U.S. Corps of Engineers Abrasion Test Method.

Preparation: All work shall be in accordance with ACI-614-59, "Recommended Practice for Measuring, Mixing and Placing Concrete". ACI-614-59 will be republished as ACI-304. All construction debris and extraneous matter shall be removed from within the forms. Struts, stays, bracing and blocks, servicing temporarily to hold the forms in correct shape and alignment, shall be removed. All concrete shall be place on clean damp surfaces, free from water, or upon properly consolidated fills.

Vibration: Concrete shall be consolidated by means of mechanical vibrating. Vibrators shall be inserted and removed vertically at regular intervals to insure uniform consolidation. In no case shall vibrators be used to transport concrete inside the forms. Internal vibrators shall maintain a speed of not less than 7,000 impulses per minute when in operation. At least one standby vibrator shall be on hand at all times.

Cold Weather Batching: No frozen materials or materials containing ice shall be used in cold weather. Temperatures of materials including mixing water, shall not exceed 140°. When placed in forms, the concrete shall have a temperature between 50°F. and 90°F. Work shall be in accordance with ACI-306, "Recommended Practice for Winter Concreting".

Top surface of footings shall receive a floated finish with a Class B tolerance (1/4 inch in 10 feet).

All interior floor slabs shall receive a troweled finish in accordance with ACI 301, Section 1104(c) with a Class A tolerance (1/8 inch in 10 feet).

All concrete shall be cured for a period of not less than 7 days. During this curing period, no part of the concrete shall be permitted to become dry. Curing shall be applied and maintained to prevent loss of water from concrete for the duration of the curing period.

Fresh concrete shall be protected from heavy rains, flowing water and mechanical injury. All concrete shall be protected from the sun and drying winds.

604 HARDWARE SPECIFICATIONS

Door Lockset (to match existing City Utility Dept. Facilities and keyed alike)

Roof Scuttle Pad Lock (Master, keyed to City Utiltity Dept. System)

Door Closer (Yale Series 50, standard door closer #54)

Door Hinges (3) Full Mortise, standard weight, wrought steel, Anti-friction ball bearing, non rising pin, flush tip, Non-Removable Pins, Satin Chrome finish (Stanley FBB179-26D-NRP)

Roof Scuttle (Bilco Type S-50)

605 MASONRY WALL CONSTRUCTION

The door opening shown on the drawing is to have a reinforced lintel. Construction materials should be 6" & 12" ASTM C90, Grade N, Type 1 hollow core block and Type S mortar.

Face brick shall be standard size (2-1/4" x 3-3/4" x 8"), grade SW, conforming to ASTM designation C216. Color and style to be specified by the Owner.

Wall reinforcing shall be truss type, 9 gauge steel wire conforming to ASTM A82, with side rods deformed. Placed as shown on drawings. Standards: Truss-Mesh (Hohmann & Barnard) - Dur-O-Wall (Dur-O-Wall Mfg. Co.) - Keywall Truss (Keystone).

Mortar joints which are to be exposed or painted shall be struck off flush with the wall surface and when the mortar is partially set, shall be firmly compacted with a round jointing tool. Mortar joints in the face of walls to be covered shall be struck off flush with the face of the wall.

The Masonry Subcontractor shall cooperate with all trades and be responsible for cutting, patching and building-in all work as required.

The door frame is to be grouted

Set and build-in flashings and counter flashings, expansion joints, frames, sleeves, lintels, and anchor inserts, furnished under other Sections, which are incidental to, or support masonry.

Anchors embedded in masonry shall be furnished and installed by the Masonry Contractor. Size and spacing will be shown on drawings.

Flashing, expansion and control joints shall be built-in to masonry and placed as the work progresses. Provide weep holes 24" o.c. at bottom of walls (floor line) and bottom of flashings.

Exterior brick and stone walls above grade shall receive silicone or stearate water-repellent, applied in accordance with manufacturer's instructions. Standards: Toch Brothers - Supertox; Sonneborn S-X Hycon; Toch Brothers Limestone Supertox; Sonneborn Hydrocide Unipel.

All permanently exposed masonry walls, including partitions shall be thoroughly cleaned down on completion, damaged surfaces repaired or replaced and mortar joints pointed to leave the work in a condition acceptable to the Owner. Cleaning and pointing shall be started at the top and worked down. Cleaning of MASONRY, except concrete block and stone, shall be done with fiber brushes using soap powder boiled in water, adding clean, sharp, fine sand to the soap and water mixture where necessary. Excess MORTAR STAINS shall be removed and the entire surfaces rinsed with clean water. Cut out defective mortar joints where necessary and fill the crevices solidly with motar and tool as specified. EXPOSED CONCRETE BLOCK to be rubbed with stone to eliminate excess mortar. Point up all surfaces and leave walls in a condition acceptable to the Owner.

No masonry work shall be permitted when the temperature is less than 32 degrees F. or below 40 degrees F. and falling, unless the following precautions are taken:

1. Below 40 degrees F. but above 32 degrees F.: Heat mortar mixing water, but not above 160 degrees F. Plastic sheets or tarpaulins shall be placed over the newly laid walls.

2. Below freezing, but above 0 degrees F.: In addition to the preceding requirements, sand shall be heated, but not scorched. The working area shall be enclosed with protective coverings and artificial heat shall be provided. When the temperature falls below 20 degrees F., all concrete masonry units shall be heated to at least 50 degrees F. at the job site by the Contractor.

3. Below 0 degrees F.: Construction shall be stopped unless the enclosure is complete and tight. Observe all preceding requirements.

   Masonry shall be protected against freezing for at least 48 hours.

   No masonry shall be laid with or on frozen materials.

606 SUPPLY AND INSTALL DOOR

Hollow metal door and frame are to be supplied and installed. Doors are to be Steelcraft Corp. or approved equal. Door and frame are to be factory primed. Frame is to be grouted. The door is to be fitted with a top cap.

The frame is to be checked for level during construction to assure it remains plumb.

Finish hardware shall be equal to the following:

- Hinges	- Hager, Stanley, McKinney
- Door closer	- Sargent & Co., Yale
- Threshold	- National Guards Products Co.
- Butts	- The Stanley Works

607 SUPPLY AND INSTALL LOCKWORK

The lockwork to be used is as follows:

- Door	- To match existing city installations
- Roof Scuttle	- Master, pad lock

All lockwork except pad lock is to be satin chrome and be keyed to meet City of St. Louis Park specifications.

608 CAULKING

Provide all labor, materials, and equipment necessary for complete caulking work as shown on drawings and specified herein.

All caulking work shall be performed by an experienced, competent Caulking Contractor as per requirements herein.

Interior Caulking: same as exterior.

Exterior Caulking: shall be of a color to closely match the mortar color, 2 part polysulfide base (Thiokol) sealant material meeting requirement of American Standard Specifications for Sealing Compounds for the Building Trade, A116.1 1960 of Shore A or approved equal.

Primer: colorless by caulking manufacturer.

All materials shall be used in accordance with their manufacturer's latest printed instructions.

Caulk expansion joints, control joints, and around entire perimenter of doors and other openings and joints where caulking is otherwise indicated or obviously required on exterior of building(s).

Mix compounds which require field mixing as per manufacturer's instructions. Apply with gun especially for compound, to attain a smooth finish surface, free of wrinkles, air pockets and holes. Compress into joint with tooling rods or paddles to insure conformance of compound to even the smallest surface irregularity. Depth of joint shall be as recommended by Manufacturer of the sealant material. Pack joints required with sealant backer to bring voids to required depth before caulking.

SECTION 700

DISCHARGE PIPE AND GRAVITY DRAIN

701 GENERAL

This Section describes work, equipment and materials to be furnished by the Sewer Subcontractor.

All sewer systems are to be finished to a ready-to-operate condition. The Sewer Subcontractor is responsible for completing all sewer systems except for pump discharge and floor drain piping installed under the building foundation and slab.

The accompanying drawings have been drawn close to scale and have some listed dimensions. Care has been taken to maintain accuracy, but it remains the Contractor's responsibility to verify the scaled and listed dimensions.

The Sewer Subcontractor bid shall include a list describing the major types of equipment and materials to be used. After acceptance of the bid, changes to this list will not be allowed.

The Sewer Subcontractor will assume all responsibility for conforming to rules and regulations of the applicable government agencies and utilities.

The Sewer installation will comply with all specifications of the City of St. Louis Park. All piping that is not installed at a depth of 8.5 ft. shall have a covering of Dow Styrofoam F.B. (or equal) 4 ft. wider than the pipe and 1.5 inches thick for each foot less than 8.5 ft.

The invert elevations of the discharge and drain pipes are to be 4 feet below grade except for the drop to the tie in point elevation.

Excavations shall meet local and state safety regulations as applicable.

Backfilling is to be done to the specifications of the City of St. Louis Park.

Elevation and layout drawings will be provided to the City by the Sewer Subcontractor.

All construction permits will be obtained by the owner.

702 LAYING OF PIPE

All pipe shall be laid on undisturbed earth. If earth is disturbed or soft to the loose earth should be cleared out and replaced with compacted gravel.

703 DRAINAGE AND SEWAGE CONTROL

The Subcontractor shall remove by well points, pumping, bailing, or other acceptable method any water which may accumulate or be found in the trenches or other excavations to be made. He shall take all necessary precautions to keep the trenches and other excavations entirely clear of water during construction of sewers and structures. Newly laid concrete shall be adequately protected from injury resulting from ground water or sewage or from the handling or disposal of water or sewage. No drainage ditches shall be placed within the area to be occupied by any structure except as permitted by the Contractor. Upon completion of new construction, existing sewers shall be restored or otherwise provided with adequate outlets. Permits will be obtained by the owner if necessary.

The Subcontractor shall at all times have upon the job sufficient pumping equipment ready for immediate use to carry out the intent of this section.

This Subcontractor shall at no time permit effluent contaminated by raw sewage to enter any storm sewer or open ditch.

Where existing sewers or drains are encountered in this work, adequate provisions shall be made for diverting the flow in the existing sewers so that the excavation will be kept dry during the progress of the construction work. Upon the completion of the construction work, the existing sewers shall be restored or otherwise provided with an adequate outlet as directed by the Owner.

704 BACK FILLING

As soon as practicable after the pipes or conduits are constructed and inspected, the trench shall be backfilled. At the sides and top from the subgrade to a level at least one foot above the top of the pipe, selected granular material shall be deposited and carefully compacted by hand or machine tamping or water flushing in layers not to exceed six inches in depth.

In undeveloped property the backfilling shall be completed using the available excavated material, free from boulders, rock, stones, lumber, masonry, debris, or organic material. No stones over ten inches in size shall be used in the backfill. this remaining backfilling of the trench shall be carried up to limits directed by by the owner with suitable allowance for shrinkage.

Backfilling in areas beneath streets or other paved areas shall be accomplished with bank-run gravel and thoroughly compacted in layers not to exceed 8" in depth for the full depth of the trench. Backfill shall be compacted to a minimum of ~~90%~~ 95% maximum density at optimum moisture content, as determined by the Modified Proctor Test, ASTM D-1557. Subcontractor shall maintain all such areas in a condition ~~satisfactory to~~ the city until permanent repairs are made.

If there is not sufficient excavated material suitable to meet the requirements for backfilling material, the Subcontractor shall make up the deficiency by transporting suitable surplus material from excavations on other parts of the Work to complete the backfill. If still deficient then material shall be hauled from offsite by the Subcontractor.

All material hauled on site for fill or backfill shall be loose dry earth, sand, gravel or bank-run gravel. Aminimum of 6 inches of topsoil shall be used to cover all backfilled and filled areas.

Wherever gas mains, water mains, sewers, etc. cross the sewer trench, 3000 psi design strength concrete shall be used for backfill beneath them. This backfill shall extend from the bottom of the trench up to spring line of the pipe crossing the trench. A rough wooden form shall be used to hold the concrete in place. The thickness of the backfill shall be 6 inches greater than the diameter of the crossing pipe. Concrete so required shall be considered as an addition to the Work.

705 DISPOSAL OF UNSUITABLE MATERIAL

Excavated material shall be used in backfilling around sewers and other structures unless determined by the Owner to be unsuitable. Unsuitable material will be disposed of by the Owner.

706 ROADWAY REPAIR

This work shall include the replacement of all roadway surface damaged or removed due to the construction of the sewers and appurtenant structures. All such work shall be done in accordance with the specifications of the City of St. Louis Park. No permanent road surface repair shall be made until the backfill in the trench and around manholes has settled and the city has given their approval to make such repairs. The maintenance of temporary road surfaces during the peirod of settlement is specified hereinbefore under 704 BACKFILLING. All repairs shall be same type and at least equal to existing pavements. Edges of existing pavement parallel to trench shall be cut to a neat line prior to making a repair.

All the work necessary to make repairs to road surfaces will be included in the bid for sewer construction.

707 WATER TESTS OF DISCHARGE AND DRAIN PIPES

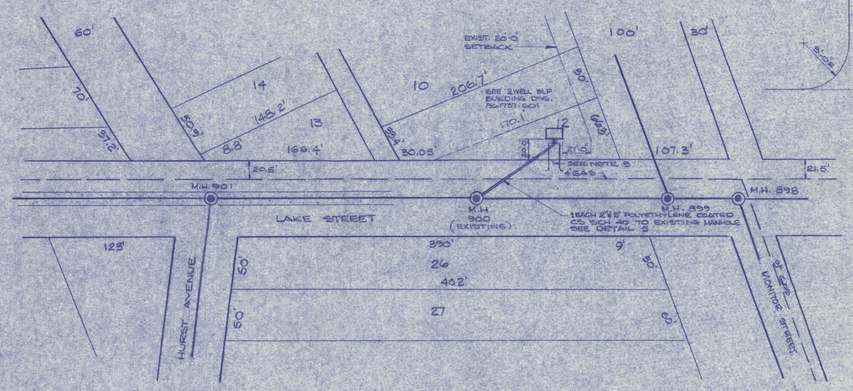
See Mechanical Work Section 202 System Testing. – detail proc, equipt.

708 PIPING MATERIALS

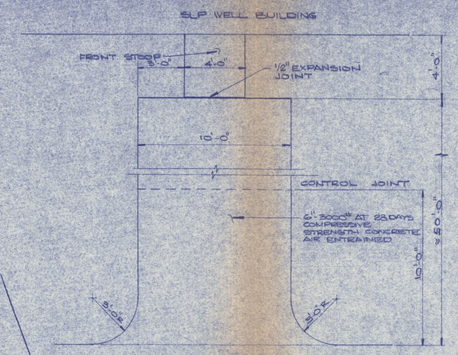
See Mechanical Work Sections 207 Discharge Water Piping and 208 Draining Piping.

709 DRYWELLS

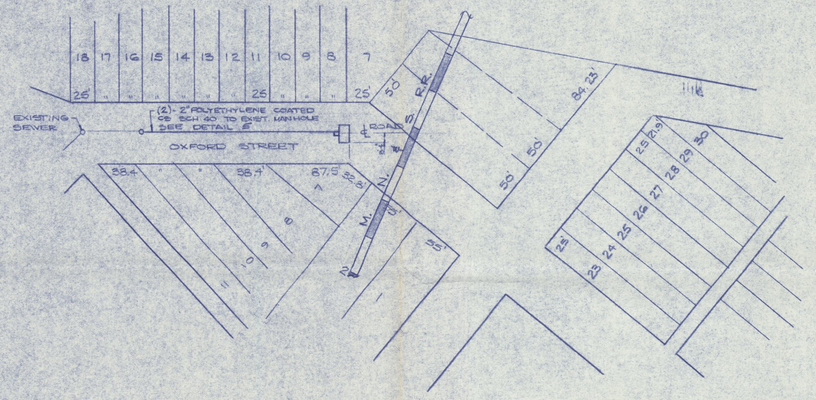
Shall be installed per the specifications on the drawings.



DETAIL 1
LAKE STREET 2 WELL SLP BLDG
SCALE: 1" = 60'

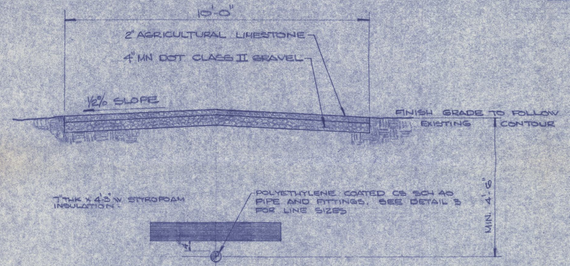


DETAIL "A"
CONCRETE DRIVE
SCALE: 1/4" = 1'-0"

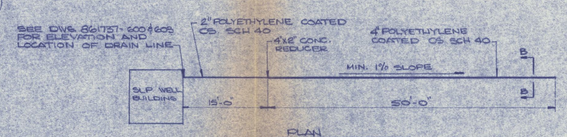


SEE DWGS. 861757-602 FOR BUILDING DETAILS

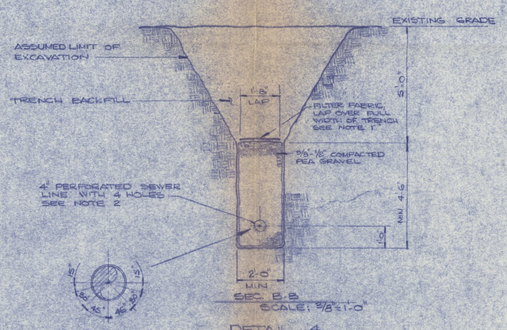
DETAIL 2
OXFORD ST. 1 WELL SLP BLDG.
SCALE: 1" = 60'



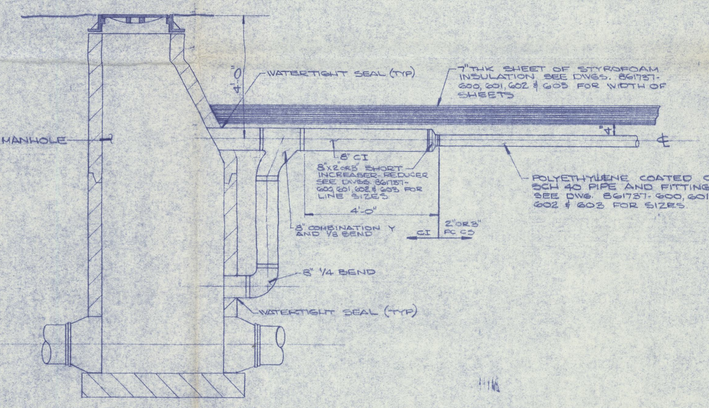
SEC. A-A
GRAVEL DRIVE
SCALE: 1/2" = 1'-0"



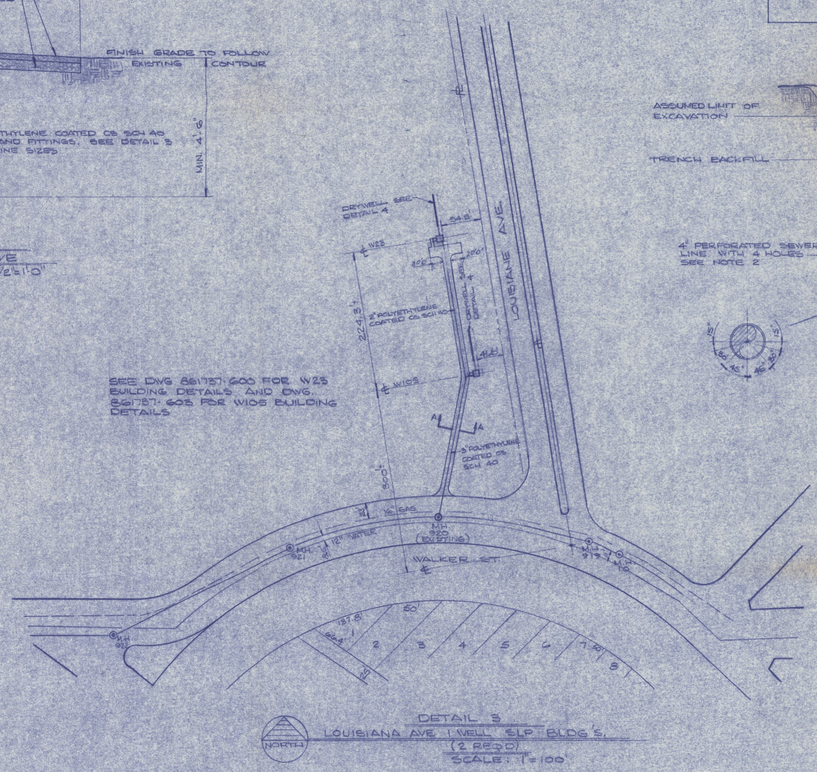
PLAN
SCALE: 3/32" = 1'-0"



DETAIL 4
DRYWELL (2 REQ'D)
SCALE AS NOTED



DETAIL 5
PRESSURE DRAIN CONNECTION TO EXISTING MANHOLE
NO SCALE



SEE DWG 861757-600 FOR W25 BUILDING DETAILS AND DWG. 861757-603 FOR W105 BUILDING DETAILS

DETAIL 3
LOUISIANA AVE. 1 WELL SLP BLDG'S.
(2 REQ'D)
SCALE: 1" = 100'

NOTES:

1. FILTER FABRIC TO BE MIRAFI 140S. END OF PIPE TO BE CAPPED AND FILTER FABRIC LAPPED TO COMPLETELY ENCLOSE THE TRENCH.
2. PROVIDE 1/4" HOLES @ 3" O.C. THE ENTIRE LENGTH OF THE 50'-0" DRAIN.
3. EXTEND DRIVE TO STREET.

PRELIMINARY
NOT TO BE USED
FOR CONSTRUCTION
REILLY TAR & CHEMICAL CORP.

NOV 3 1986

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Date July 22, 1986 Reg. No. 017565 0

LEWIS D. LOCKE JR. CIVIL ENGINEER 017565 0 STATE OF MINNESOTA

PHOTOSTAT	DATE:
MICRO FILM	DATE:

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK'D	APP'D
III	10/24/86	AK	REVISED INLET LINE SIZE AND ARRANGEMENT TO EXISTING MANHOLES		
II	10/16/86	AK	CHANGE ORIENTATION OF WELL HOUSES, CHANGED NOTE 1, ADDED NOTES 2 & 3 AND DETAILS 3 & 4 SEC. A-A, B-B, GRAVEL DETAILS		
I	7/7/86	AK	ADDED DETAILS 4 & 5 CALLED OUT NEW LINES & M.H.'S		

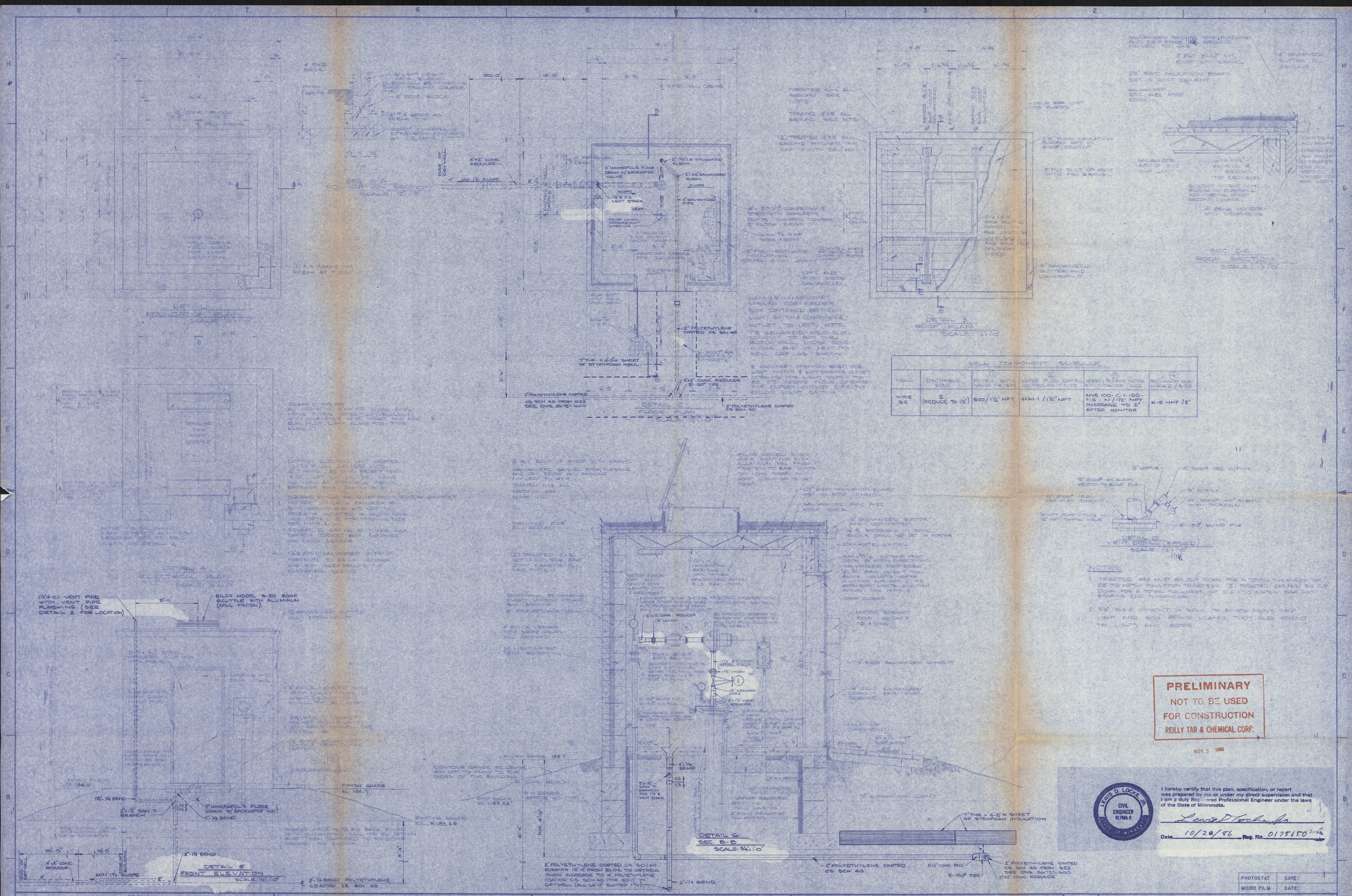
REFERENCE DRAWINGS

DRAWING NUMBER	DESCRIPTION

REILLY TAR & CHEMICAL CORPORATION
INDIANAPOLIS INDIANA

St. Louis Park Well Locations

DRAWN BY	DATE	CHECKED BY	DATE	PLANT	REVISION
AK	6/27/86		6/27/86	St. Louis Park, Minn.	III
SCALE		APPROVED BY	DATE	DRAWING NUMBER	
INDICATED			6/27/86	861757-001	



NOTES:

1. TREATED 4x4 MUST BE CUT DOWN FOR A TOTAL THICKNESS OF 2½" TO MATCH INSULATION THICKNESS. (2) TREATED 2x6 MUST BE CUT DOWN FOR A TOTAL THICKNESS OF 2½" TO MATCH BAR JOIST BEARING END THICKNESS.
2. 3/4" RIGID CONDUIT IN WALL TO BOXES ABOVE BAR JOIST AND BOX BELOW. LOOPED, THEN FLEX CONDUIT TO LIGHT AND HEATER.

WELL COMPONENT SCHEDULE

WELL	DISCHARGE SIZE	① PROVELL GATE VALVE F6/S2B	② GATES FLOW CONTROL CONTROLLER / SIZE	③ HERSEY TURBINE METER WITH TRANSDUCER / SIZE	④ TRU-FLOW DUAL CHECK II / S2B
W105 SC	2 (REDUCE TO 1½")	S00/1½" NPT	4FAI-1/1½" NPT	MVR 100-C-1-150-T-G-N/1½" NPT INCREASE TO 2" AFTER MONITOR	K-15 HMF/2"

PRELIMINARY
NOT TO BE USED
FOR CONSTRUCTION
REILLY TAR & CHEMICAL CORP.
NOV. 3, 1986

LEWIS D. LOCKE JR. CIVIL ENGINEER 017565.0 STATE OF MINNESOTA

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Lewis D. Locke Jr.

Date 10/20/86 Reg. No. 017565

PHOTOSTAT	DATE:
MICRO FILM	DATE:

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK'D	APP'D

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK'D	APP'D

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK'D	APP'D

REFERENCE DRAWINGS

DRAWING NUMBER	DESCRIPTION

REILLY TAR & CHEMICAL CORPORATION
INDIANAPOLIS INDIANA

W105 SOURCE CONTROL WELL BLDG.

DRAWN BY	DATE	CHECKED BY	DATE	PLANT	REVISION
PAL	10/20/86		10/20/86	ST. LOUIS PARK, MINN.	
SCALE		APPROVED BY	DATE	DRAWING NUMBER	
NOT INDICATED			10/20/86	86-751-608	