

CONSTRUCTION PLANS FOR  
 A LIFT STATION AND FORCE MAIN IN CONNECTION WITH CONSTRUCTION OF  
**LATERAL 236, MAIN 5, SANITARY SEWER NO. 22**  
 (LIFT STATION AND FORCE MAIN TO SERVE LOT 1, BLOCK 1)

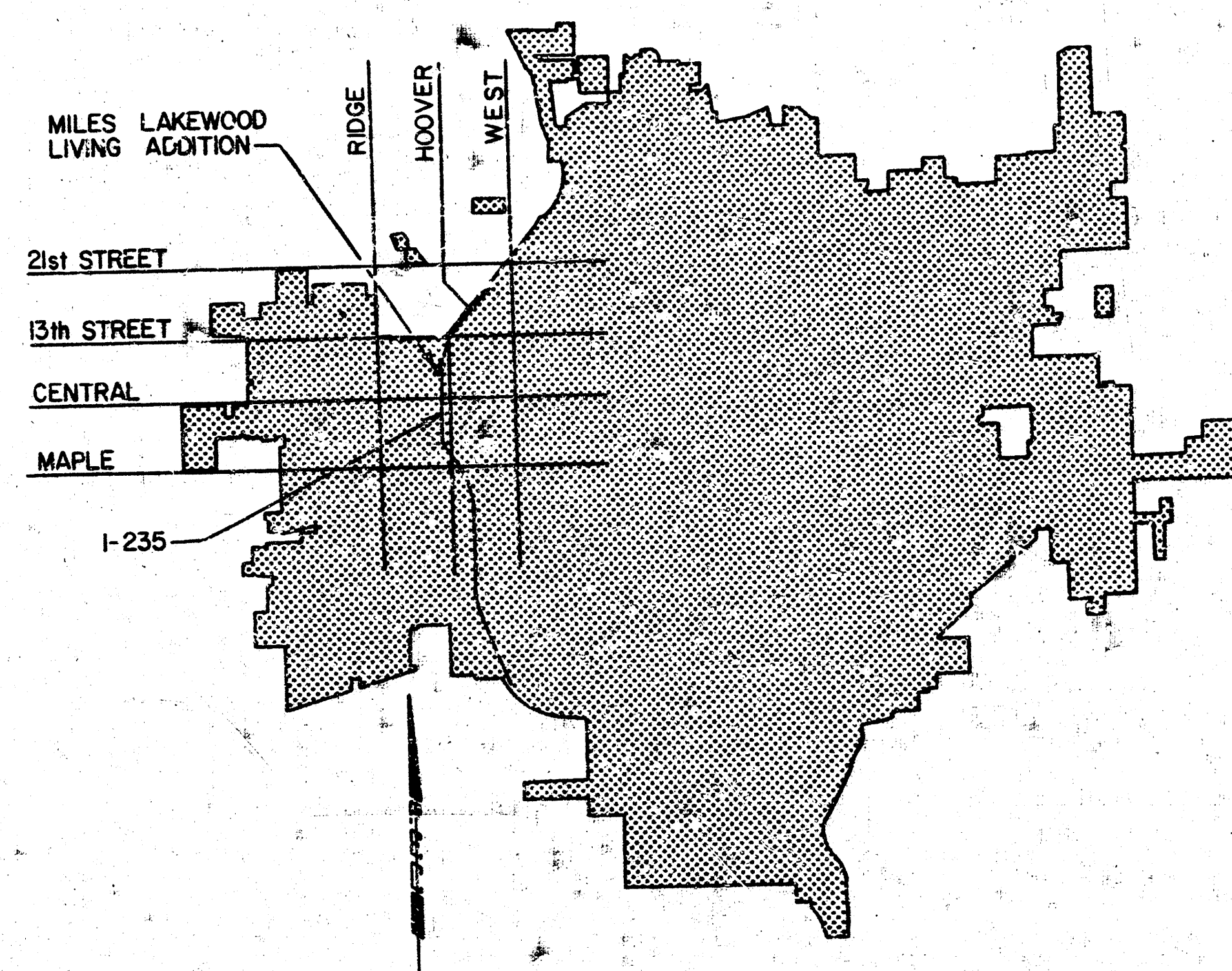
IN  
**MILES LAKEWOOD LIVING ADDITION**  
 (WEST OF I-235, NORTH OF 8th STREET)

**THE CITY OF WICHITA,  
 SEDGWICK COUNTY, KANSAS**

*As Built  
 J.L.H.  
 8-83*

INDEX OF SHEETS

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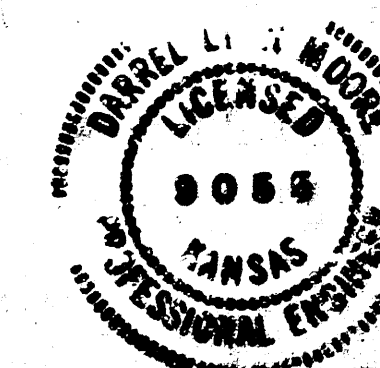
LOCATION MAP

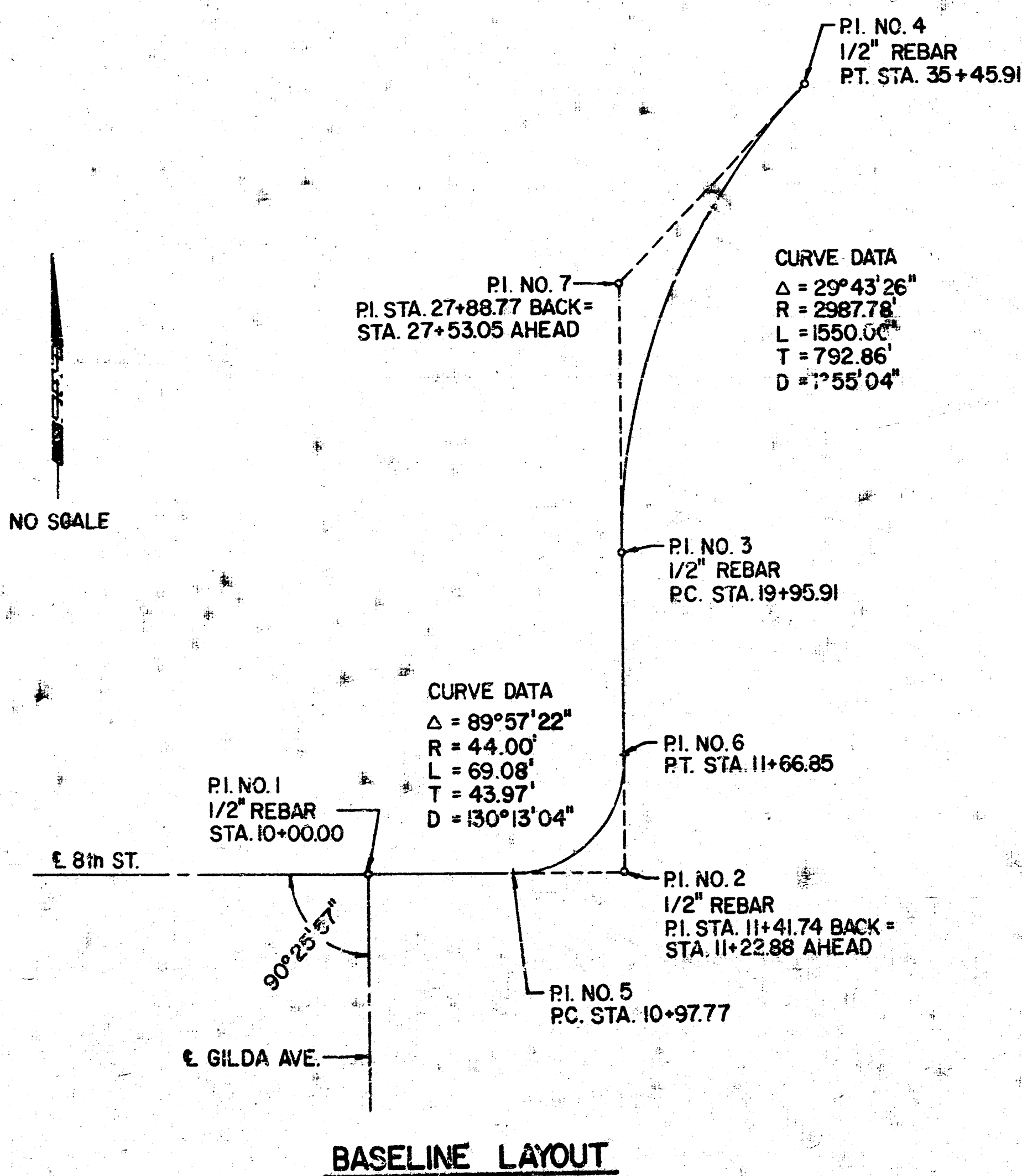
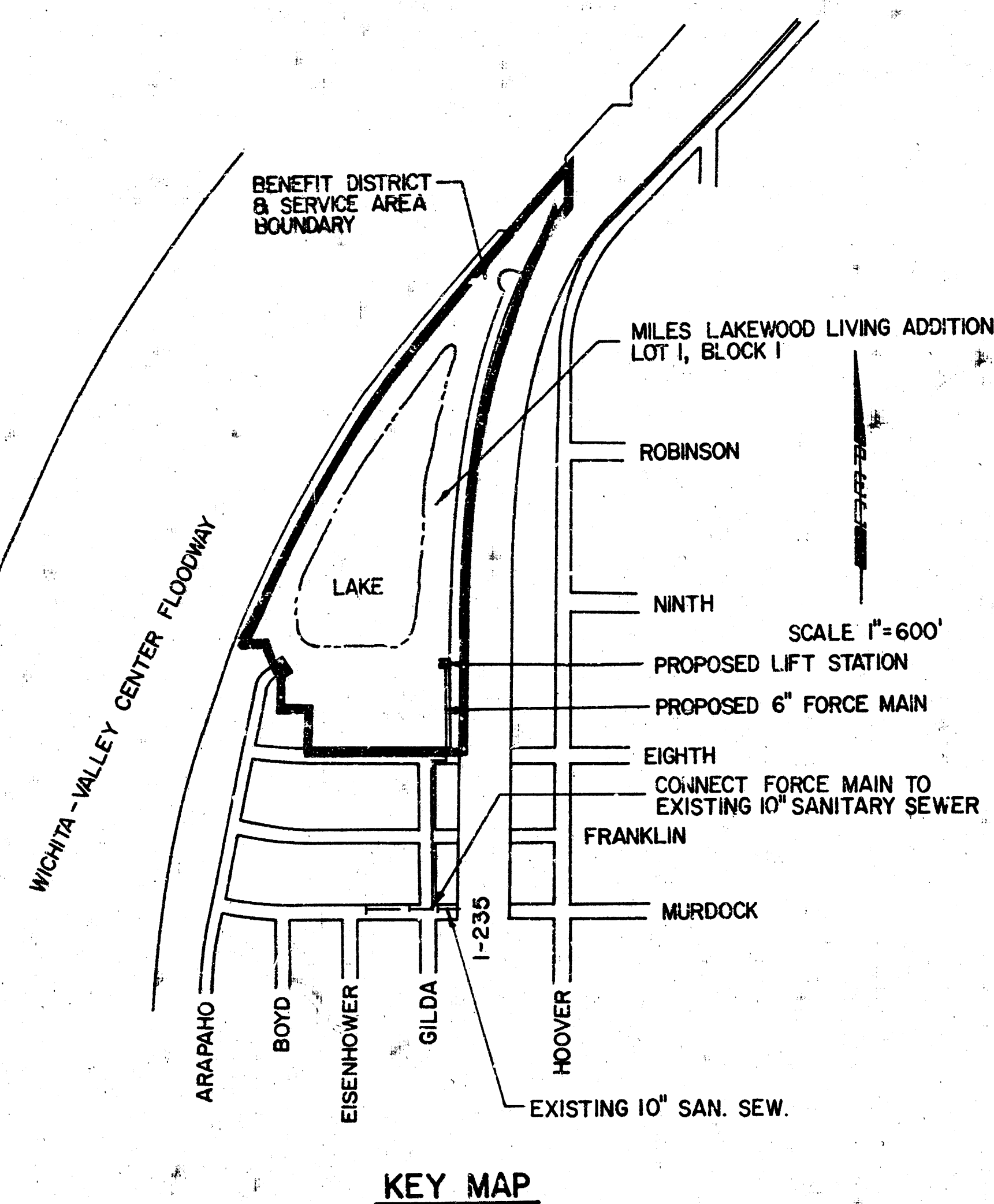
CITY OF WICHITA PROJECT NO. 468-76-245-81226-000-000-001

**OCTOBER, 1982**

PLANS PREPARED BY

**PROFESSIONAL ENGINEERING CONSULTANTS, P.A.  
 ENGINEERS  
 WICHITA, KANSAS**





BENCH MARK LIST

|          |                                                                                                                                             |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| B.M. #1  | - BASE LINE STA. 22+25, 59' RT. CHISELED " " AT THE SOUTHWEST CORNER OF LIGHT POLE BASE. ELEV. = 127.66 (CITY DATUM)                        |
| B.M. #2  | - BASE LINE STA. 32+50, 47' RT. TOP OF RCP UNDER INTERSTATE 235. ELEV. = 125.64 (CITY DATUM)                                                |
| B.M. "A" | - WEST RIM MANHOLE 148' + SOUTH OF THE CENTER LINE OF 8th AND 8' WEST OF THE SOUTHEAST CORNER OF 8th AND GILDA. ELEV. = 124.02 (CITY DATUM) |
| B.M. "B" | - NORTHWEST CORNER OF CONCRETE PORCH ON HOUSE AT 906 ARAPAHO. ELEV. = 125.94 (CITY DATUM)                                                   |

BASELINE P.I. REFERENCE TIES

|                                          |                                                                                                                                                         |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| P.I. NO. 1 - 1/2\"                       | 42.31' SE, CHIS \"+\" IN TOP OF CURB EAST SIDE OF GILDA<br>40.78' SW, CHIS \"+\" IN TOP OF CURB WEST SIDE OF GILDA                                      |
| P.I. NO. 2 - 1/2\"                       | 23.93' W, TOP OF INTERSTATE 235 R/W MONUMENT<br>30.70' SSE, TOP OF INTERSTATE 235 R/W MONUMENT<br>59.85' ENE, CHIS \"+\" @ SW COR. LIGHT POLE FOR I-235 |
| P.I. NO. 3 - 1/2\"                       | 72.00' NE, CHIS \"+\" @ HW COR. LIGHT POLE FOR I-235<br>23.88' W, TOP OF INTERSTATE 235 R/W MONUMENT<br>76.71' SE, NAIL & SHINER IN WEST SHOULDER I-235 |
| P.I. NO. 4 - 1/2\"                       | 72.21' NE, NAIL & SHINER IN WEST SHOULDER I-235 (40' N OF LIGHT POLE)<br>81.89' SE, NAIL & SHINER IN WEST SHOULDER I-235 (40' S OF LIGHT POLE)          |
| P.I. NO. 5 - P.C. CURVE AT 8TH AND GILDA |                                                                                                                                                         |
| P.I. NO. 6 - P.C. CURVE AT 8TH AND GILDA |                                                                                                                                                         |
| P.I. NO. 7 - P.I. CURVE ALONG GILDA      |                                                                                                                                                         |

Northwest corner of Lot 1, Block 3 of Avery Addition To Wichita, Kansas  
1\" Galv. Iron Pipe. (SEE SHT. 5)

Northeast corner of Lot 5, Block 2 of Avery Addition to Wichita, Kansas  
1\" Galv. Iron Pipe. (SEE SHT. 5)

Northwest corner of Lot 1, Block 4 of Avery Addition to Wichita, Kansas  
1\" Ga. Iron Pipe. (SEE SHT. 5)

BASELINE DATA

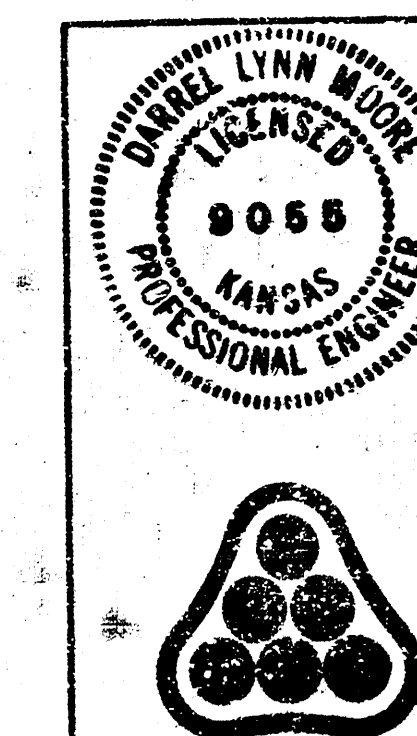
| P.I. NO. | BASELINE STATION             | COORDINATES |           |
|----------|------------------------------|-------------|-----------|
|          |                              | NORTH       | EAST      |
| 1        | 10+00.00                     | 5000.0000   | 5000.0000 |
| 2        | 11+44.74 BK.<br>11+22.88 AH. | 5000.0000   | 5141.7400 |
| 3        | 19+95.91                     | 5873.0298   | 5141.0712 |
| 4        | 35+45.91                     | 7354.7298   | 5533.0528 |
| 5        | 10+97.77                     | 5000.0000   | 5097.7700 |
| 6        | 11+66.85                     | 5043.9700   | 5141.7063 |
| 7        | 27+88.77 BK.<br>27+53.05 AH. | 5.8895      | 5140.4639 |

Note: Southeast corner of Miles Lakewood Living Addition = 5029.9786 N, 5113.7178 E.

# GENERAL NOTES

- ALL CONSTRUCTION AND MATERIALS TO COMPLY WITH CITY OF WICHITA SPECIFICATIONS AND STANDARDS.
- ALL ELEVATIONS SHOWN ARE CITY OF WICHITA DATUM (USGS-1187.4-CITY DATUM).
- THE CONTRACTOR SHALL LIMIT THE EXTENT OF TRENCH TO REMAIN OPEN OVERNIGHTS AND WEEKENDS TO LESS THAN 50 FEET.
- AT LEAST 24 HOURS PRIOR TO BEGINNING EXCAVATION (EXCLUDING WEEKENDS AND HOLIDAYS), THE CONTRACTOR SHALL CONTACT THE UTILITY LOCATION SERVICE \"XAN-DIG-IT\" AT (316) 267-2889 TO REQUEST THE FOLLOWING UTILITY COMPANIES TO LOCATE ANY EXISTING LINES WITHIN THE PROJECT AREA: GAS SERVICE COMPANY, K.G.B.E., SOUTHWESTERN BELL TELEPHONE COMPANY, THE WICHITA WATER DEPARTMENT, AND AIR CAPITAL CABLEVISION. THE CONTRACTOR SHALL ALSO CALL THE UTILITY LISTED BELOW AT LEAST 48 HOURS PRIOR TO BEGINNING EXCAVATING (EXCLUDING WEEKENDS AND HOLIDAYS) TO REQUEST LOCATION OF EXISTING UTILITIES WITHIN THE PROJECT AREA.
 

ARKLA GAS COMPANY  
1630 SOUTH BAEHR  
WICHITA, KANSAS 67209  
(316) 542-8350  
MR. HERSHEL RUMTON
- THE CONTRACTOR SHALL AVOID REMOVAL OR TRIMMING OF ANY TREES WHERE POSSIBLE WHERE THE CONTRACTOR BELIEVES THE REMOVAL OR TRIMMING IS UNAVOIDABLE, HE SHALL COORDINATE SUCH WORK WITH THE ENGINEER.
- TREE REMOVAL AND TREE TRIMMING SHALL BE DONE BY THE CONTRACTOR UNDER THE SUPERVISION OF THE ENGINEER AND SHALL BE CONSIDERED AS SUBSIDIARY TO OTHER ITEMS OF WORK.
- WHERE REMOVAL OF EXISTING FENCES PARALLEL TO THE CONSTRUCTION IS DEEMED NECESSARY BY THE CONTRACTOR, THE CONTRACTOR SHALL COORDINATE REMOVAL WITH THE ENGINEER. REMOVAL AND RESETTLEMENT OF FENCES SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED AS SUBSIDIARY TO THE OTHER ITEMS OF WORK.
- TREES REMOVED, TREE TRIMMINGS, FENCES AND OTHER DEBRIS SHALL BE HAULED FROM THE SITE BY THE CONTRACTOR AND WASTED AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL RESTORE ALL DITCHES, SWALES, ROAD SHOULDERS, ENTRANCES, AND BANK LINES TO THEIR ORIGINAL SLOPES AND GRADES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS FLOW OF SEWAGE THROUGH CONSTRUCTION. CONTRACTOR'S PROPOSED METHOD FOR MAINTAINING SEWAGE FLOW SHALL BE APPROVED BY THE ENGINEER. CONTRACTOR MAY CONSTRUCT ADDITIONAL MANHOLES TO FACILITATE MAINTAINING SEWAGE FLOW. TYPE AND LOCATION OF EXTRA MANHOLES TO FACILITATE HANDLING OF SEWAGE SHALL BE AS APPROVED BY THE ENGINEER. COST OF MAINTAINING FLOW OF SEWAGE THROUGH CONSTRUCTION WILL NOT BE PAID FOR DIRECTLY AND THIS COST SHALL BE CONSIDERED AS SUBSIDIARY TO THE OTHER ITEMS OF WORK. NO PAYMENT WILL BE MADE FOR EXTRA MANHOLES CONSTRUCTED BY THE CONTRACTOR TO FACILITATE HANDLING SEWAGE THROUGH CONSTRUCTION AS THIS COST SHALL BE CONSIDERED SUBSIDIARY TO THE OTHER ITEMS OF WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PRESERVING PROPERTY IRONS. THE CONTRACTOR SHALL BE REQUIRED TO RE-ESTABLISH ANY PROPERTY IRONS WHICH ARE DAMAGED OR DESTROYED BY HIS CONSTRUCTION OPERATIONS. SUCH IRONS SHALL BE RE-ESTABLISHED BY A LICENSED LAND SURVEYOR OR A LICENSED PROFESSIONAL ENGINEER IN ACCORDANCE WITH STATE LAWS. ALL COSTS FOR THIS WORK SHALL BE SUBSIDIARY TO THE OTHER ITEMS OF WORK.
- RISERS AND ADDITIONAL STUBS SHALL BE INSTALLED ON THIS PROJECT TO SERVE INDIVIDUAL'S LOTS WHEN ORDERED BY THE FIELD ENGINEER. RISER CONSTRUCTION SHALL CONFORM TO CITY OF WICHITA SPECIFICATIONS AND STANDARDS. LOCATIONS OF THE ENDS OF THE RISERS SHALL BE MARKED BY FASTENING GREEN COLORED PLASTIC TAPE TO THE END OF THE RISER AND BROUGHT TO THE GROUND SURFACE AS THE EXCAVATION IS BACKFILLED SUCH THAT THE COLORED TAPE WILL BE VISIBLE WHEN THE PROJECT IS COMPLETED. ALL RISERS SHALL BE CONSTRUCTED USING S.D.R. 23.5 A.B.S. OR P.V.C. PIPE.
- THE CONTRACTOR SHALL DEPOSIT ALL EXCESS EXCAVATED SOIL WITHIN THE BOUNDARIES PROVIDED BY THE DEVELOPER.
- CONTRACTOR TO BEGIN CONSTRUCTION WITHIN 10 DAYS AFTER ISSUANCE OF WORK ORDER, AND SHALL COMPLETE THE WORK WITHIN 120 WORKING DAYS THEREAFTER.



|                                                                                                                                                                                                                                                                                                                                                          |          |         |          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|----------|
| No.                                                                                                                                                                                                                                                                                                                                                      | Revision | By      | Date     |
| CITY OF WICHITA<br>LATERAL 236, MAIN 5, SANITARY SEWER NO. 22<br>MILES LAKEWOOD LIVING ADDITION<br><b>KEY MAP &amp; GENERAL NOTES</b><br>R.W. BRUGGEMAN, P.E. - DIRECTOR OF ENGINEERING/CITY ENGINEER<br>CITY OF WICHITA PROJECT NO. 468-76-245-BI226-000-000-001<br><b>PROFESSIONAL ENGINEERING CONSULTANTS, P.A.</b><br>ENGINEERING<br>WICHITA, KANSAS |          |         |          |
| Designed by                                                                                                                                                                                                                                                                                                                                              | DLM      | Job No. | 62181-1  |
| Drawn by                                                                                                                                                                                                                                                                                                                                                 | CHK      | Date    | Oct 1982 |
|                                                                                                                                                                                                                                                                                                                                                          |          | Sht.    | 2 of 7   |



# PUMPING STATION SPECIFICATIONS

## A. General:

The contractor shall furnish and install one factory-built, automatic pumping station as manufactured by Smith & Loveless Division, Ecodyne Corporation, Lenexa, Kansas or an equal, approved by the Engineer prior to the bidding. The station shall be complete with all needed equipment, factory-installed on a welded steel base with fiberglass cover.

The principal items of equipment shall include two vertical, close-coupled, motor driven, vacuum primed, non-clog sewage pumps; valves; internal piping; central control panel with circuit breakers; motor starters and automatic pumping level controls; heater; ventilating blower; priming pumps and appurtenances; and all internal wiring.

## B. Operating Conditions:

Each pump shall be capable of delivering 270 GPM of raw unscreened sewage against a total dynamic head of 13.2 feet. The maximum allowable speed shall be 900 RPM. The rated horsepower of each pump motor shall be 2.0. The maximum static suction lift shall be 15 feet.

All openings and passages shall be large enough to permit the passage of a sphere 3" in diameter and any trash or stringy material which will pass through a 4" house-collection system. The anticipated operating head range is from 11.5 feet minimum to 14.5 feet maximum.

## C. Construction:

### 1. General:

The station shall be constructed in one complete factory-built assembly. It shall be sized to rest on the top of the wet well as detailed in the construction drawings. The supporting floor plate shall be minimum 3/8" thick steel with broken down edges or other reinforcing, as required, to prevent deflection and insure an absolutely rigid support.

The pump station shall be enclosed by a hinged fiberglass cover. The cover shall have a suitable drip-lip around the edge and shall be provided with a hasp and staple connection to the floor plate to allow the pump chamber to be locked with a padlock.

The cover shall have a latch mechanism to keep the cover open under load. Adjustable ventilating louvers shall be provided on each end of the fiberglass cover which are capable of being closed during cold weather operation.

A steel manway cover located exterior of the fiberglass pump chamber shall be provided, complete with padlocking provisions. The manway shall be an integral part of the station floor plate and provide access to the wet well.

A stanchion with lifting eye shall be provided to lift each pump. The lifting arm shall have a hook over the center of the motor to support a hoist (provided by others) to facilitate easy removal of the motors, impellers and pumps from the station.

The pump volutes and discharge piping shall be mounted in relation to the floor plate as detailed in the construction drawings.

### 2. Welding:

All steel structural members shall be joined by electric arc welding with welds of adequate section for the joint involved.

### 3. Protection Against Corrosion:

After welding, all inside and outside surfaces of the structure shall be blasted with steel grit to remove rust, mill scale, weld slag, etc. All weld spatter and surface roughness shall be removed by grinding. Immediately following the cleaning, a single heavy inert coating shall be factory-applied to all inside and outside surfaces prior to shipment. This coating shall be "Versapox" epoxy resin especially formulated by Smith & Loveless for abrasion and corrosion resistance. The dry coating shall contain a minimum of 85% epoxy resin with the balance being pigments and thixotropic agents.

## D. Sewage Pumps:

The pumps shall be 4-inch vertical, non-clog sewage pumps of heavy cast iron construction, especially designed for the use of mechanical seals and vacuum priming. In order to minimize seal wear caused by lateral movement of the shaft, the shaft bearing nearest the pump impeller shall be locked in place so that end play is limited to the clearance within the bearing. To minimize seal wear resulting from shaft deflection caused by the radial thrust of the pump, the shaft from the top of the impeller to the lower bearing supporting the impeller shall have a minimum diameter of 1 1/8" for motor frame sizes 213 through 266; 1 1/2" for motor frame sizes 324 and 326; and 3" for frame 364 and larger. The dimension from the lowest bearing to the top of the impeller shall not exceed 6'.

The bearing nearest the impeller shall be designed for the combined thrust and radial load. The upper bearing shall be free to move linearly with the thermal expansion of the shaft and shall carry only radial loads.

The shaft shall be solid stainless steel through the pump and bottom bearing to eliminate corrosion within the pump or its mechanical seal. Removable shaft sleeves will not be acceptable if the shaft under the sleeves does not meet the specified minimum diameter.

The pump impellers shall be of the enclosed type made of close-grained cast iron and shall be balanced. The impeller shall be keyed with a stainless steel key and secured to the motor shaft by a stainless steel cap screw with a Nylock or other suitable self-locking device. The impeller shall not be screwed or pinned to the motor pump shaft and shall be readily

removable without the use of special tools. To prevent the buildup of stringy materials, grit and other foreign particles around the pump shaft, all impellers less than full diameter shall be trimmed inside the impeller shroud. The shroud shall remain full diameter so that close minimum clearance from shroud to volute is maintained. Both the end of the shaft and the bore of the impeller shall be tapered to permit easy removal of the impeller from the shaft.

The pump shall be so constructed so as to permit priming from the low pressure area behind the impeller. Priming from high pressure connections tending to cause solids to enter and clog the priming system, will not be acceptable. The priming bowl shall be transparent to enable the operator to monitor the priming level.

The pump shall be arranged so that the rotating element can easily be removed from the volute without disconnecting the electrical wiring or disassembling the motor, impeller, backhead or seal, so that any foreign object may be removed from the pump or suction line.

The pump shaft shall be sealed against leakage by a single mechanical seal constructed so as to be automatically drained and primed each time the pump is drained and primed. Water which lubricates the mechanical seal shall be automatically drained from around the seal if the pump loses prime, in order to allow both the pump and the seal to be drained, thereby preventing freezing and breakage of the seal during power outages in sub-freezing temperatures.

The seal shall be of carbon and ceramic materials with the mating surfaces lapped to a flatness tolerance of one light band. The rotating ceramic shall be held in mating position with the stationary carbon by a stainless steel spring.

The pump volute shall be furnished with mounting lugs and be bolted to the station floor plate, forming a gas-tight seal.

## E. Motors:

The pump motors shall be vertical, solid shaft, NEMA P-base squirrel-cage induction type, suitable for 3-phase, 60-cycle, 240-volt electric current. They shall have Class F insulation, suitable for temperatures up to 105° C. Insulation temperature shall, however, be maintained below 80° C. The motors shall have normal starting torque and low-starting current, as specified by NEMA Design B characteristics. They shall be open drip-proof design with forced air circulation by integral fan. Openings for ventilation shall be uniformly spaced around the motor frame. Leads shall be terminated in a cast connection box and shall be clearly identified.

The motors shall have 1.15 service factor. The service factor shall be reserved for the owner's protection. The motors shall not be overloaded beyond their nameplate rating, at the design condition, nor at any head in the operating range as specified under Operating Conditions.

The motor-pump shaft shall be centered, in relation to the motor base, within .005". The shaft runout shall not exceed .003".

The motor shaft shall equal or exceed the diameter specified under sewage pumps, at all points from immediately below the top bearing to the top of the impeller hub.

A bearing cap shall be provided to hold the bottom motor bearing in a fixed position. Bearing housing shall be provided with fittings for lubrication as well as purging old lubricant.

The motor shall be fitted with heavy lifting eyes, each capable of supporting the entire weight of the pump and motor.

## F. Controls:

The control equipment shall be mounted in a NEMA Type 1 steel enclosure with a removal access cover. The circuit breakers, starter reset buttons, and control switches shall be operable without removing the access cover, for deadfront operation.

A grounding type convenience outlet shall be provided on the side of the cabinet for operation of 115 volt AC devices.

Thermal magnetic air circuit breakers shall be provided for branch disconnect service and short circuit protection of all motor control and auxiliary circuits.

Magnetic across-the-line starters with under-voltage release and overload coils for each phase shall be provided for each pump motor, to give protection against single phasing. Each single phase auxiliary motor shall be equipped with an over-current protection device in addition to the branch circuit breaker, or shall be impedance protected. All switches shall be labeled and a coded wiring diagram shall be provided.

To control the operation of the pumps with variations for sewage level in the wet well, a minimum of four (4) sensory displacement switches shall be provided. A minimum of 30' of cord shall be provided with each switch to eliminate the hazards created by splicing. The cord shall have a corrosion resistant vinyl jacket and be multi-stranded in order to prevent fatigue.

An automatic alternator with manual switch shall be provided to change the sequence of operation of the pumps after each pump cycle. The manual switch shall allow for either pump to be selected as base pump or for automatic alternation.

Protections shall also be made for the pumps to operate in parallel should the level in the wet well continue to rise above the starting level for the low level pump.

Each pump shall have a running-time meter mounted in the control panel. The "H-O-A" switches in the control panel shall include pump status indicator lights for "pump required", "pump running", and "pump fail".

All internal wiring, limit switches, connections, and lights shall be provided with the pumping station by the manufacturer.

## G. Vacuum Priming System:

A separate and independent priming system shall be furnished for each sewage pump, providing complete standby operation. Each priming system shall include a separate vacuum pump. Vacuum pumps shall have corrosion resistant internal components. They shall each be capable of priming the sewage pump and suction piping in not greater than 60 seconds, under rated static suction lift conditions of 20' at mean sea level.

Each priming system shall be complete with vacuum pump, vacuum control solenoid valve, prime level sensing probe, and a float operated check valve installed in the system ahead of the vacuum pump to prevent liquid from entering the vacuum pump. The float-operated check valve shall have a transparent body for visual inspection of the liquid level and shall be automatically drained when the vacuum pump shuts off.

The priming system shall automatically provide positive lubrication of the mechanical seal each time the sewage pump is primed. To prevent excessive stoppage due to grease accumulation, no passageway in the priming system through which sewage must pass shall be smaller than the equivalent of a 2 1/2" opening.

## H. Environmental Equipment:

A ventilating blower shall be provided, capable of delivering 250 cfm at 0.1" static water pressure, in order to remove the heat generated by continuous motor operation. The ventilating blower shall be turned on and off automatically by a pre-set thermostat. The ventilating blower shall be rigidly mounted from the station floor. The discharge outlet shall have a thick resilient gasket which will match with a lowered opening in the fiberglass cover to seal the discharge to the cover when the cover is closed. An electric heater controlled by a pre-set thermostat shall be furnished. The heater shall be rigidly mounted in the station to prevent removal.

## I. Sewage Piping:

The pump suction shall be drilled and tapped for a 125 pound American Standard flange for ready connection of the suction riser. The discharge line from each pump shall be fitted with a clapper-type check valve and full port eccentric plug valve. Size, location, and quantity of check valves and plug valves shall be as shown on the construction drawing. Four inch size 3-way plug valves in lieu of separate full port valves will not be acceptable due to their inability to pass the industry standard 3" spherical solid. The check valve shall be of the spring-loaded type with external lever arm and a resilient seat for added assurance against vacuum leaks. An operating wrench shall be provided for the plug valves.

Protrusions through the floor plate shall be gas-tight where necessary to effect sealing between the equipment chamber and the wet well. Bolted and sealed joints shall be provided at the volutes or suction pipes in order to prevent corrosive, noxious fumes from entering the station. The lift station manufacturer shall extend the suction and discharge connections below the floor plate at the factory, so that field connections can be made without disturbing the gas-tight seals.

The manufacturer of the lift station shall provide a compression-type sleeve coupling for installation in the common discharge pipe.

## J. Terminal Test Strip And Test Light:

The manufacturer shall provide a terminal test strip and 120 volt neon test light within the control panel for the operator's use in determining a malfunction in the various control components. All test points shall be wired to the terminal test strip. A step by step troubleshooting guide shall be furnished to assist the operator in testing each component. This test system shall have the capability of testing at least the following components: control circuit breaker, H.O.A. switches, alternator, float switches, electrode relays, vacuum pump relays, vacuum pumps, capacitors, resistors and diodes.

## K. Alarms:

The pumping station shall include an alarm system compatible with the City of Wichita alarm system for pumping stations. The alarm system shall detect "high water", "pump fail", and "interruption of normal power" conditions. The alarm conditions shall be indicated by lights in the control panel and shall be transmissible over telephone lines to the Wichita Central Maintenance Facility.

The Contractor shall provide the necessary telephone connections and testing to complete the remote alarm system.

All internal wiring, limit switches, and connections required for sensing and indication of the "high water" and "pump fail" alarm conditions shall be provided with the pumping station by the manufacturer.

## L. Factory Tests:

All components of the pump station shall be given an operational test of all equipment at the factory to check for excessive vibration, for leaks in all piping or seals, for correct operation of the vacuum priming and control systems and all auxiliary equipment. Pumps shall take suction from a deep well, simulating actual service conditions.

## M. Spare Parts:

A complete replacement pump shaft seal assembly shall be furnished with each lift station. The spare seal shall be packed in a suitable container and shall include complete installation instructions. A spare volute and seal gasket shall be provided. A spare filter element for the seal filter shall be provided.

### Installation And Operating Instructions:

Installation of the pump chamber shall be done in accordance with the written instructions provided by the manufacturer.

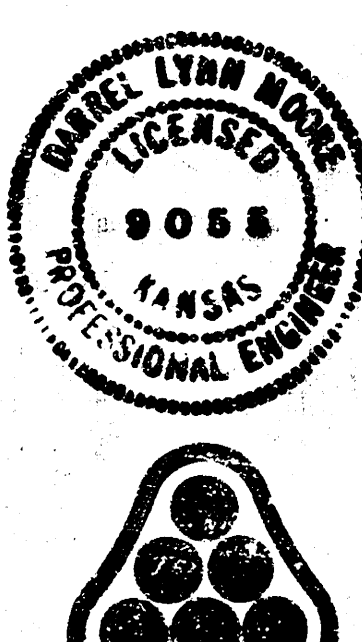
Operation and maintenance manuals shall be furnished which will include parts lists of components and complete service procedures and trouble-shooting guide.

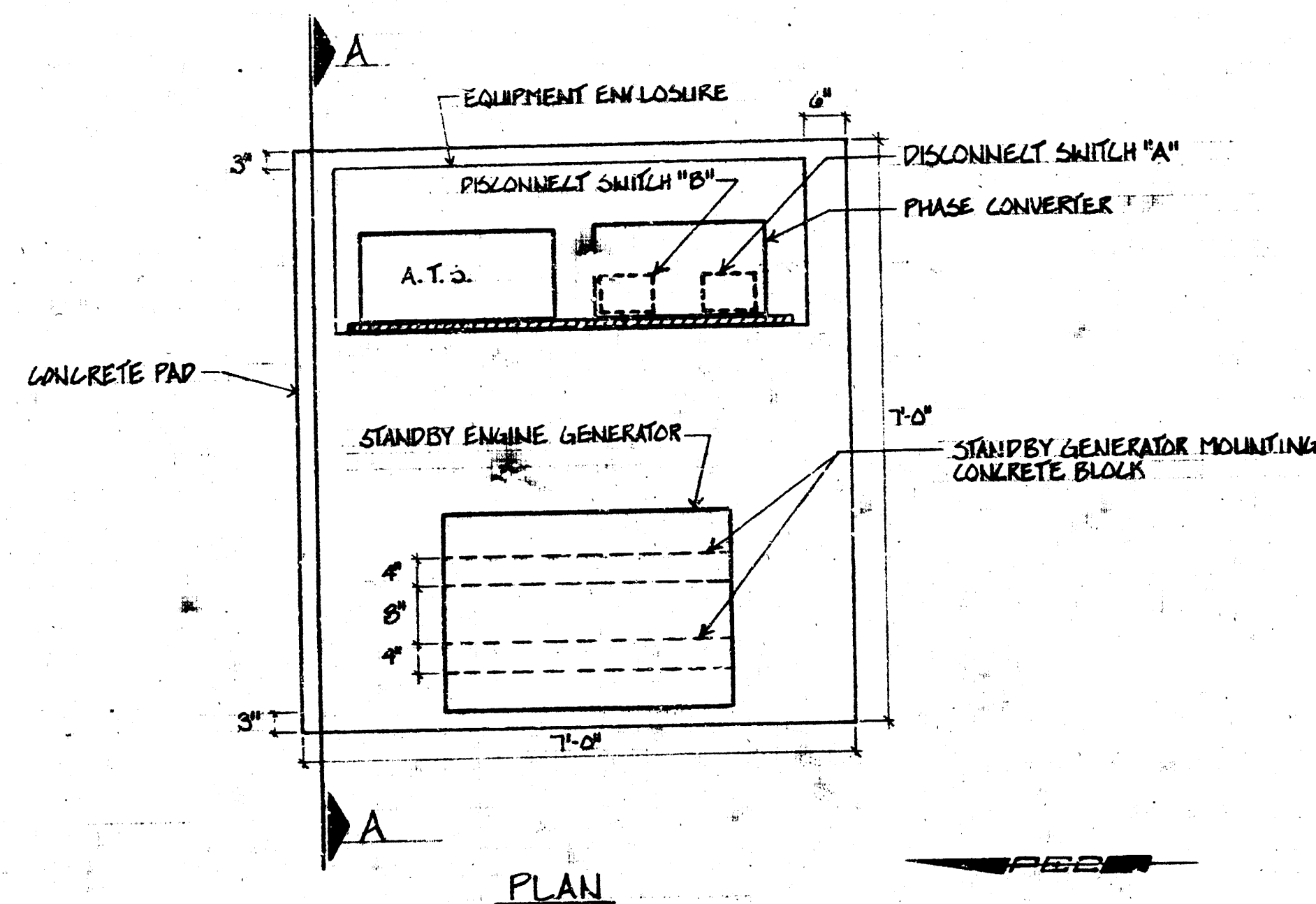
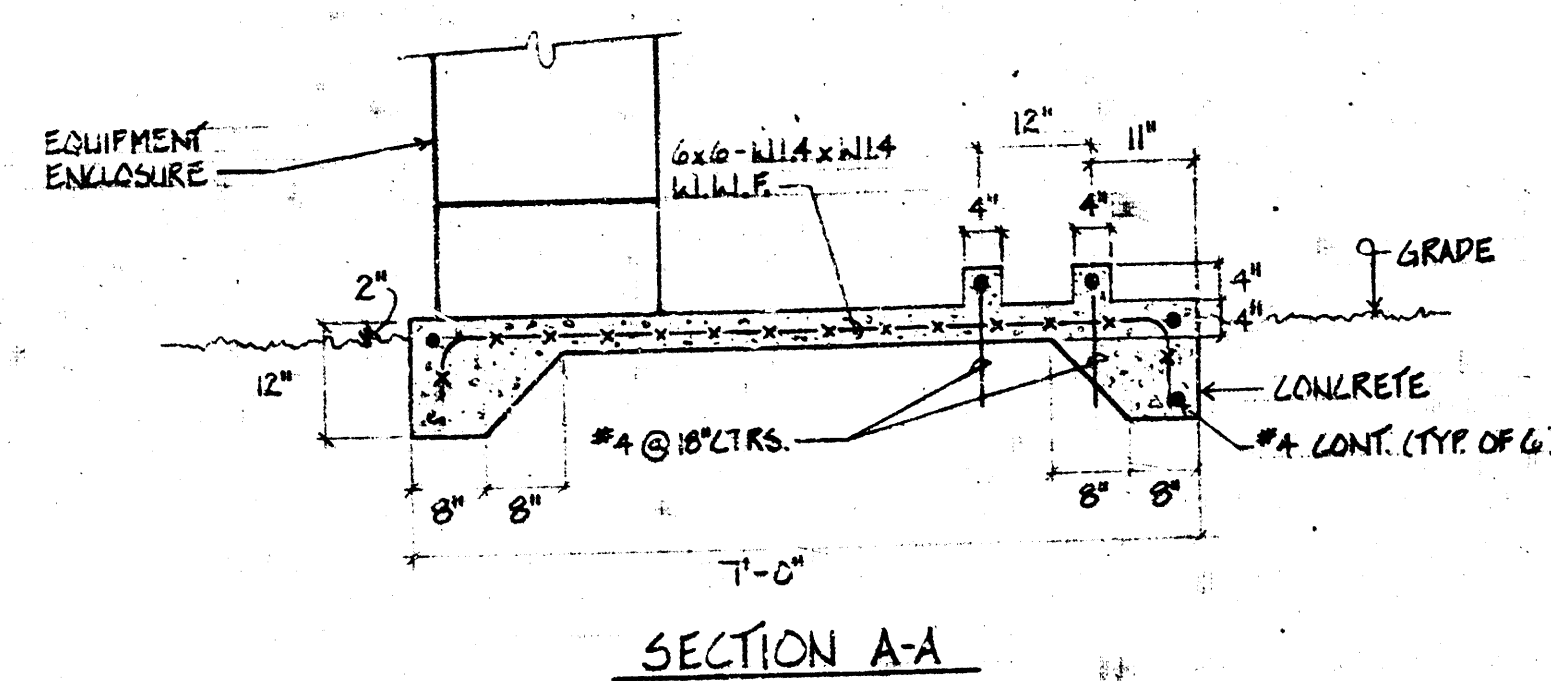
## N. Guarantee:

The manufacturer of the lift station shall have a minimum of five years' experience in the design and manufacture of vacuum-priming type factory-built automatic pumping stations and shall guarantee the structure and all equipment to be free from defects in materials and workmanship for a period of up to one year from date of start-up, not to exceed 18 months from the date of shipment.

Warranties and guarantees by the suppliers of various components in lieu of a single-source responsibility by the Manufacturer will not be accepted. The Manufacturer shall be solely responsible for the guarantee of the station and all components.

In the event a component fails to perform as specified or is proven defective in service during the guarantee period, the Manufacturer shall provide a replacement part without cost to the owner. He shall further provide, without cost, such labor as may be required to replace, repair or modify major components such as the pumps, pump motors and sewage piping manifold.

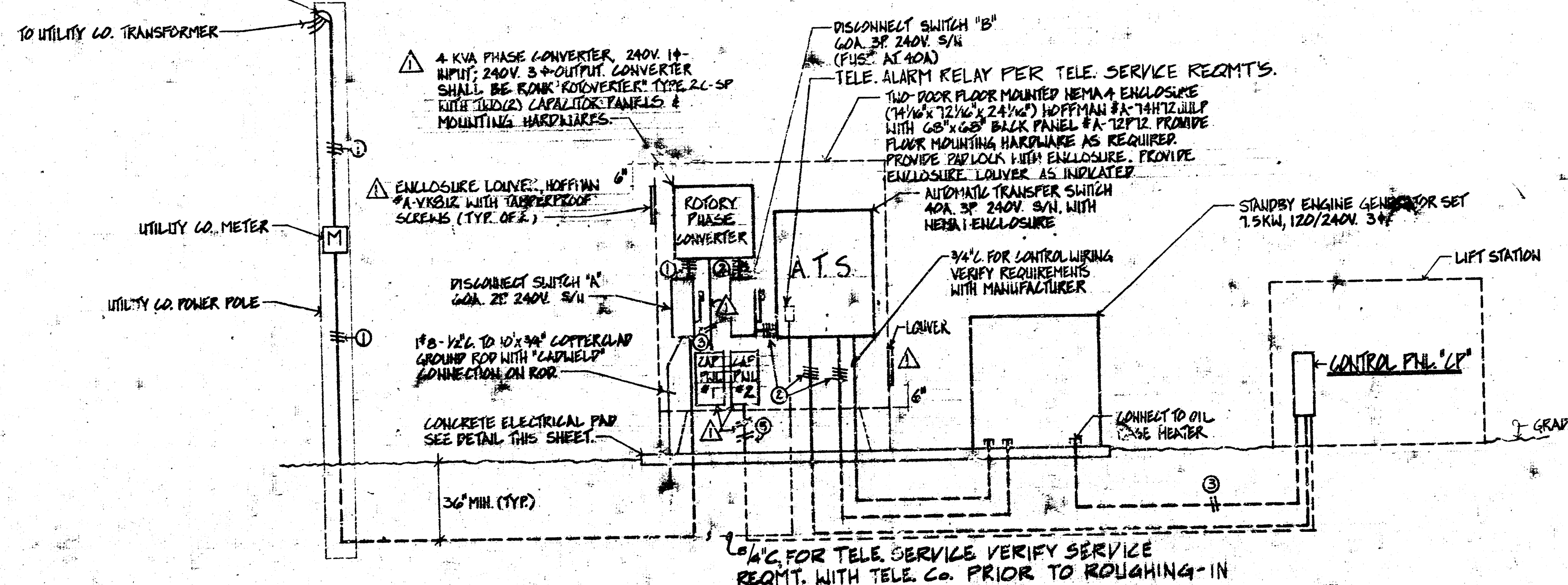
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|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------|--------|------|
|  | No.                                                                                                                  | Revision | By     | Date |
|                                                                                       | CITY OF WICHITA<br>LATERAL 236, MAIN 5, SANITARY SEWER NO. 22<br>MILES LAKEWOOD LIVING ADDITION                      |          |        |      |
|                                                                                       | <b>LIFT STATION SPECIFICATIONS</b>                                                                                   |          |        |      |
|                                                                                       | R.W. BRUGGEMAN, P.E. - DIRECTOR OF ENGINEERING/CITY ENGINEER<br>CITY OF WICHITA PROJECT NO. 468-76-245-81226-000-001 |          |        |      |
|                                                                                       | <b>PROFESSIONAL ENGINEERING CONSULTANTS, P.A.</b><br>ENGINEERS<br>WICHITA, KANSAS                                    |          |        |      |
| Designed by <i>DLM</i>                                                                | Job No. <i>82101-1</i>                                                                                               | Sh.      | 4 of 7 |      |
| Drawn by <i>DEP</i>                                                                   | Date <i>Oct 1982</i>                                                                                                 |          |        |      |



DETAIL - ELECTRICAL EQUIPMENT PAD  
SCALE: 1/2" = 1'-0"

NOTE: VERIFY EXACT DIMENSIONS WITH EQUIPMENT PROVIDED.

SERVICE WEATHERHEAD AND CONDUIT RISER. VERIFY REQUIREMENTS WITH UTILITY CO. PRIOR TO ROUGHING-IN.



| CONTROL PANEL "CP" |    |                                 |    |                     |   |                     |   |                 |   |
|--------------------|----|---------------------------------|----|---------------------|---|---------------------|---|-----------------|---|
| CIRCUIT NO.        |    | CIRCUIT BREAKER (AMPS/POLARITY) |    | STARTER (SIZE/ROLE) |   | LOAD DESCRIPTION    |   | FEEDER SCHEDULE |   |
| 1                  | 20 | 20                              | 20 | 10                  | 3 | PUMP NO. 1          | ① | ②               | ③ |
| 2                  | 20 | 20                              | 20 | 10                  | 3 | PUMP NO. 2          | ① | ②               | ③ |
| 3                  | 20 | 20                              | 20 | 10                  | 3 | CONTROL POWER       | ① | ②               | ③ |
| 4                  | 20 | 20                              | 20 | 10                  | 3 | WATER JACKET HEATER | ① | ②               | ③ |
| 5                  | 20 | 20                              | 20 | 10                  | 3 | ALIV. POWER         | ① | ②               | ③ |
| 6                  | 20 | 20                              | 20 | 10                  | 3 | SPARE               | ① | ②               | ③ |

NOTE: CONTROL PANEL "CP" WILL BE FURNISHED BY LIFT STATION SUPPLIER. PROVIDE CIRCUIT BREAKERS & STARTERS AS SCHEDULE INDICATES.

| FEEDER SCHEDULE |                   |
|-----------------|-------------------|
| DESIG.          | SIZE              |
| ①               | 3/4" THIN IN 1/2" |
| ②               | 1/2" THIN IN 3/4" |
| ③               | 2" THIN IN 1/2"   |
| ④               | 5" THIN IN 1/2"   |
| ⑤               | 4" THIN IN 1/2"   |

#### ELECTRICAL SPECIFICATION

##### A. General Instructions:

###### 1. Codes, Permits and Inspections:

- Wiring in accordance with latest edition National Electrical Code (NEC) and/or applicable local, state and utility company rules, laws and ordinances.
- Secure all permits, inspections required for the installation of electrical work.

###### 2. Verifications:

- Verify mounting heights, locations of electrical equipment before installation or roughing-in.
- Verify exact location of electrical service entrance including point of service, system characteristics.

###### 3. Wiring Methods:

- This Contractor shall coordinate his work under this specification with the work of other trades wherein it may be interrupted. Install equipment in proper sequence so as not to interfere with the progress of other trades, and give the other trades all necessary information for making proper provisions for installation of his equipment.
- All materials shall be new, carry the Underwriter's label or be "listed" by that group, and be fully equal to makes specified.
- Use only insulated copper conductors in conduit. Use flexible conduit for connections to motors.

#### Tests:

- This Contractor responsible for performing all tests necessary to prevent concealment of defective or improper work.
- Upon completion of work, test installation thoroughly and render it free from shorts, grounds or improper connections.

- Guarantee - This Contractor shall guarantee that all defective items of workmanship, material, labor or mechanical operation developing within one (1) year from date of final acceptance of completed installation shall be replaced to the complete satisfaction of the Owner.

- Workmanship - Electrical equipment shall be installed in neat, workmanlike manner. Unsightly installations shall be removed or reworked at no additional expense to the Owner.

#### B. Electrical Equipment:

##### 1. Conduits:

- All conduit in earth, concrete, below concrete on earth, exposed to weather, and for feeders and service entrance shall be rigid steel conduit. Fittings shall be fully approved in accordance with N.E.C.
- Conduit installed and sized according to code requirements and protected from damage during construction.
- Conduit may be re-routed where such action does not adversely affect the intended design or circuiting.

##### 2. Conductors:

- Conductors shall be copper, generally with 600 volt rated insulation. Branch circuit wiring min. size #12 Type "TH" or as required. Service entrance feeder conductors combination Type THW. Low voltage wire Type TH or THF in #18 gauge unless noted otherwise. All other special types shall be as required by N.E.C.
- All conductors color coded with type and size marking. All connections to service equipment, feeder panels shall be made with solderless lugs. All splices, taps, connections to service entrance conductors shall be made by bronze solderless lugs. All other splices, connections shall be soldered or pressure type connectors.
- Insulate joints, splices with Scotch #33 plastic tape or plastic moulded jackets.

##### 3. Outlet Boxes:

- Outlet boxes, galvanized steel of type and size approved for particular installation requirements.
- All boxes, firmly secured to equipment housing.

##### 4. Safety Switches:

- Furnish safety switches of size and type indicated on drawings. Heavy duty switches fusible, unless indicated otherwise.

##### 5. Fuses:

- Furnish, install, Bus Fusetron dual element fuse for each active fuseholder, sized as scheduled or required; no substitution.

##### 6. Wiring for Lift Station:

- Contractor shall provide all wiring as required for the system operation in lift station. ALL WIRING TO BE IN CONDUIT.

##### 7. Grounding:

- Provide system ground as required by N.E.C. and utility company.
- Bond mechanical equipment frames.
- Bond all service entrance equipment and conduit system.

#### C. 7.5 KW Natural Gas Engine-Driven Standby Electric Generating System:

- General - The installation of a standby electric generating system shall include an Onan 7.5kW-18R Series electric plant rated for continuous standby service at 7.5KW 120/240 V., 3 Phase, 4 Wire, .8 power factor, 60 cycle. The system shall be a package of new and current equipment consisting of:

- A gas engine driven electric plant to provide electric power.
- An automatic load transfer control to provide automatic starting and stopping of the plant and switching of the load.
- Mounted accessories as specified.
- An automatic load transfer control to provide automatic starting and stopping of the engine and switching of the load.

This system shall be completely built, tested and shipped by a manufacturer who has been regularly engaged in the production of such equipment for the past ten years, and who has parts and service facilities locally available. The performance of the electric plant shall be certified by an independent testing laboratory as to the plant's full power rating and voltage and frequency regulation.

- Control - A control box mounted atop the alternator shall contain start and stop switch for manual operation and remote control terminals for connection to the automatic load transfer control panel.

- Electric Plant Mounting - The plant shall be provided with shock or anti-vibration mounts for mounting on concrete base.

##### 4. Accessories:

- All accessories need for the proper operation of the plant shall be furnished. These shall include a starting silencing muffler; flexible exhaust connection; starting batteries; battery cables; fuel filter, solenoid and lines; secondary regulator; shut-off valve; emergency hand crank, detailed operation and maintenance manuals with parts list; automatic load transfer control; hot air duct adapter; flexible fuel connections; 40A., 3-pole, 240V., disconnect circuit breaker; weather protective housing; oil-bath heater; optional onan fuel carburetor and low oil pressure shutdown.

##### 5. Automatic Load Transfer Control:

- The complete control shall be designed, built and tested by the manufacturer of the alternator. It shall include the necessary relays and component parts, together with UL listed and tested electrically or mechanically interlocked contactor, and shall provide the following functions:

- Upon power line outage, automatically start the plant and when the plant comes up to voltage, disconnect the load circuits from the main line and transfer them to the standby plant's output.
- Upon power line return, transfer the load circuits back to the line and stop the plant.
- Automatic Operation, Stopping, Checking or providing manual cranking of the plant by means of a 4-position, manual control selector switch.
- A cranking limiter shall be provided to protect the batteries and starting circuit. It will open the starting circuit in approximately 45 seconds if the plant has not started within that time.
- Clock exerciser to automatically start the plant at regular intervals and allow the plant to run for an adjusted time period without taking over the load.

- Each contact pole of the main transfer device shall be double break design, with solid silver cadmium contacts, capable of handling both non-inductive and inductive loads and allow forrush currents of 20 times the continuous rating. Contact pressure shall be maintained by a coil spring, not a part of the current carrying path. The ampere rating of the transfer switch shall be sufficient to handle the capacity of the plant and loads being transferred.

- The control shall contain a 12-volt, fused, battery trickle charging circuit with a rheostat and ammeter to maintain starting batteries fully charged.

- The Control shall be rated at 40 amperes, 240 volts with solid neutral bus.

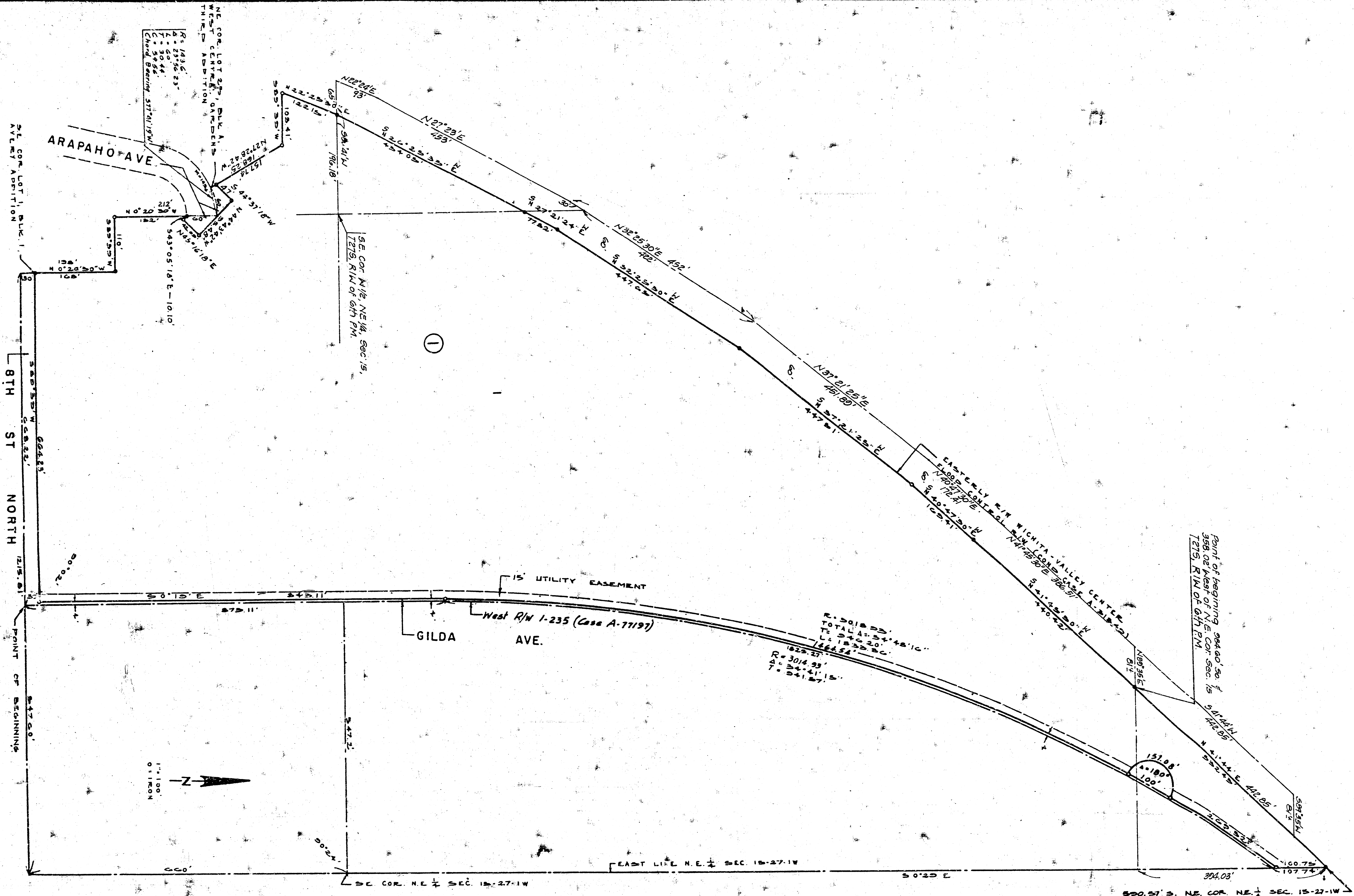
- Required Optional Accessories: time delay starting, time delay retransfer, time delay stopping, exerciser clock, normal and emergency lamps.

- Auxiliary Contacts: contact closes when normal power fails. Single pole, single throw, normally open, separate relay auxiliary contacts rated 10-amp, 600-volts shall be provided for operation of the alarm relay.

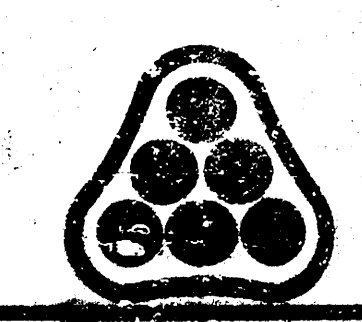
##### 6. Caution Sign:

- Contractor shall install a minimum 8" x 11" white plastic panel secured to housing of generator with 3/8" high stencilled red letters: "Caution: this engine starts automatically. It may start at any time." Letters shall be neat and legible. Panel shall be visible to anyone approaching the generator plant.

|                     |                                                                                                                                                                                                                                                                                                                                          |                 |                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------|
|                     | GENERAL REVISIONS                                                                                                                                                                                                                                                                                                                        |                 | E.W. JAN. 1983 |
|                     | No.                                                                                                                                                                                                                                                                                                                                      | Revision        | By Date        |
|                     | CITY OF WICHITA<br>LATERAL 236 MAIN 5, SANITARY SEWER NO. 22<br>MILES LAKEWOOD LIVING ADDITION<br><b>ELECTRICAL DETAILS</b><br>R.W. BRUGGEMAN, P.E. - DIRECTOR OF ENGINEERING/CITY ENGINEER<br>CITY OF WICHITA PROJECT NO. 468-78-245-81226-000-001<br><b>PROFESSIONAL ENGINEERING CONSULTANTS, P.A.</b><br>ENGINEERS<br>WICHITA, KANSAS |                 |                |
|                     | Designed by E.W.                                                                                                                                                                                                                                                                                                                         | Job No. 82184-1 | Sheet 5 of 7   |
| Drawn by B.S., C.M. |                                                                                                                                                                                                                                                                                                                                          | Date NOV. 1982  | 15             |



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| No.                                                                                                                                                                                                                                                                                                                                                           | Revision        | By     | Date |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|------|
|                                                                                                                                                                                                                                                                                                                                                               |                 |        |      |
| CITY OF WICHITA<br>LATERAL 236, MAIN S, SANITARY SEWER NO. 22<br>MILES LAKEWOOD LIVING ADDITION<br><b>MILES LAKEWOOD LIVING</b><br>FINAL PLAT<br>R.W. BRUGGEMAN, P.E. - DIRECTOR OF ENGINEERING/CITY ENGINEER<br>CITY OF WICHITA PROJECT NO. 468-76-245-B226-000-500-001<br><b>PROFESSIONAL ENGINEERING CONSULTANTS, P.A.</b><br>ENGINEERS<br>WICHITA, KANSAS |                 |        |      |
| Designed by                                                                                                                                                                                                                                                                                                                                                   | Job No. 82181-1 | Sht. 6 | of 7 |
| Drawn by                                                                                                                                                                                                                                                                                                                                                      | Date Oct 1988   |        |      |

