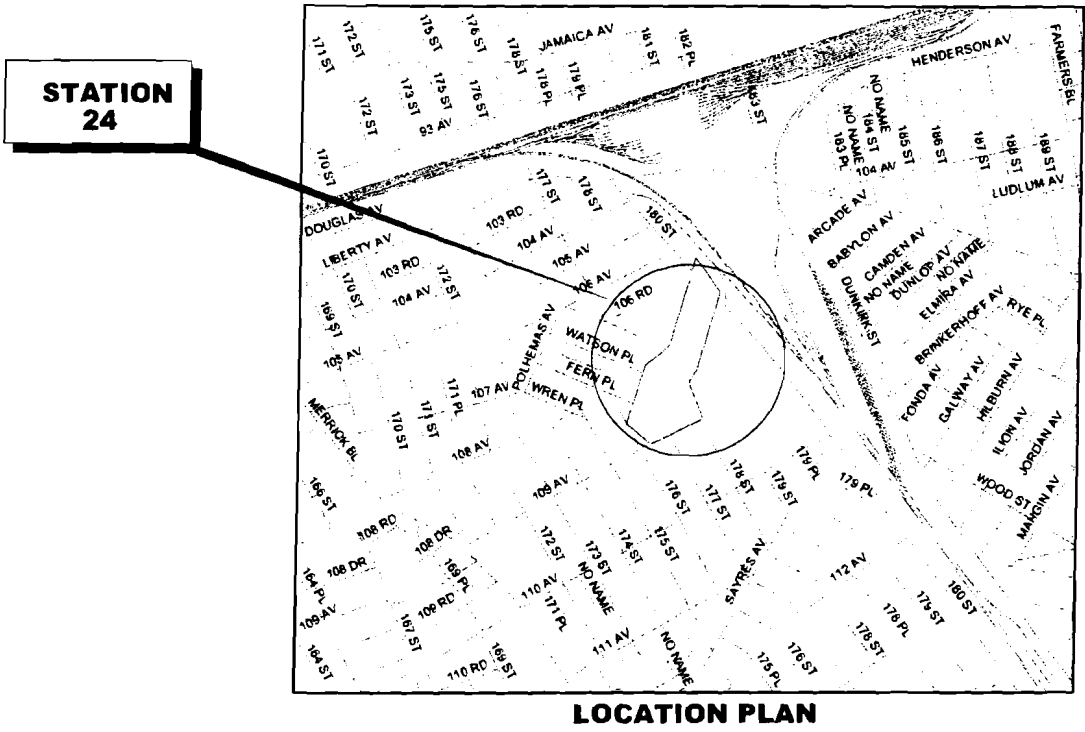


CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
IN THE
BOROUGH OF QUEENS, NEW YORK
SYSOPS - 13G - STRUCTURES AND EQUIPMENT
STATION 24 GROUNDWATER REMEDIATION PROJECT
FEBRUARY 2007



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MALCOLM PIRNIE, INC.
CONSULTING ENGINEERS
WHITE PLAINS, N.Y.

SYMBOLS

SITE WORK

	EXISTING BUILDINGS, STRUCTURES, ETC.
	NEW BUILDING, STRUCTURES ETC.
	UNDERGROUND STRUCTURE
	NEW PIPE OR UTILITY
	EXISTING PIPE OR UTILITY
	EXISTING STORM DRAIN
	EXISTING WATER MAIN
	EXISTING GAS LINE
	EXISTING ELECTRIC UTILITY
	EXISTING BLOW OFF LINE
	EXISTING PIPE OR UTILITY TO BE ABANDONED
	EXISTING PIPE OR UTILITY TO BE DEMOLISHED
	SOIL BORING
	UTILITY POLE
	LIGHT POLE
	SPOT ELEVATION
	CATCH BASIN
	CAPPED OR PLUGGED PIPE
	MANHOLE
	JUNCTION BOX
	ELECTRICAL HANDHOLE
	EXIST. FIRE HYDRANT
	NEW FIRE HYDRANT
	NEW CONTOUR
	EXIST. CONTOUR
	TREE
	CONCRETE CURB
	PROPERTY LINE
	CENTER LINE
	STATION
	FLOW ARROW
	DIRECTION OF TRAFFIC
	NEW PIPE
	EXISTING PIPE
	EXISTING CHAIN LINK FENCE

PIPING SYMBOLS

	EXISTING FACILITIES OR WORK INCLUDED IN OTHER CONTRACTS
	WORK INCLUDED UNDER THIS CONTRACT
	GATE VALVE
	PLUG VALVE
	CHECK VALVE
	BALL VALVE, OPEN
	BALL VALVE, NORMALLY CLOSED
	BUTTERFLY VALVE
	BACK PRESSURE VALVE
	FLANGED JOINT (FLG)
	MECHANICAL JOINT (MJ)
	FLOW ARROW
	FLEXIBLE COUPLING
	AIR RELEASE OR AIR/VACUUM RELEASE VALVE
	INJECTOR
	COMBINATION AIR RELEASE/VACUUM RELIEF VALVE

ABBREVIATIONS

SITE WORK

AET	- OVERHEAD TELEPHONE
ASPH	- ASPHALT
BIT.	- BITUMINOUS
BL	- BASELINE
BO	- BLOW OFF
CB	- CATCH BASIN
C	- CENTER LINE
CHEM	- CHEMICAL
CI	- CORROSION INHIBITOR
CL	- CHAIN LINK
CONC.	- CONCRETE
DC	- DEPRESSED CURB
Deg	- DEGREES
DIA	- DIAMETER
DR	- DRAIN LINE
DW	- DOMESTIC WATER
E	- ELECTRIC
EC	- END CURVE
EL	- ELEVATION
EMH	- ELECTRICAL MANHOLE
EP	- EDGE OF PAVEMENT
FDN	- FOUNDATION
FIN. FLR	- FINISHED FLOOR
FL	- FLOOR
FLG	- FLANGED
G	- GAS
GAC	- GRANULAR ACTIVATED CARBON
HH	- HANDHOLE
HP	- HIGH POINT
HYD	- HYDRANT
I.D.	- INSIDE DIAMETER
INV	- INVERT
JT	- JOINT
KVE	- ELECTRIC CABLE
LP	- LOW POINT
LVC	- LENGTH OF VERTICAL CURVE
MH	- MANHOLE
NTS	- NOT TO SCALE
O.C.	- ON CENTER
O.D.	- OUTSIDE DIAMETER
O.F.	- OVERFLOW
PERM.	- PERMANENT
PC	- POINT OF CURVATURE
PCC	- POINT OF COMPOUND CURVATURE
PRESS.	- PRESSURE
PT	- POINT OF TANGENCY
R	- RADIUS
PVC	- POINT OF VERTICAL CURVE
PVI	- POINT OF VERTICAL INTERSECTION
PVMT	- PAVEMENT
PVT	- POINT OF VERTICAL TANGENCY
R	- RADIUS
RED	- REDUCER
RPZ	- REDUCED PRESSURE ZONE
RW	- RAW WATER
S	- SANITARY SEWER
SHT	- SHEET
ST	- STORM
STA	- STATION
STA. EQ.	- STATION EQUATION
SW	- SIDEWALK
T/C	- TOP OF CONCRETE
TEMP.	- TEMPORARY
THK	- THICK
TOS	- TOP OF SLAB
TYP.	- TYPICAL
VFD	- VARIABLE FREQUENCY DRIVE
W	- WATER
WS	- WATER STOP

PIPE AND FITTINGS

BF	- BLIND FLANGE
BW	- BUTT WELDED
BZ	- BRAZED
C	- COMPRESSION
CIP	- CAST IRON PIPE
CISP	- CAST IRON SOIL PIPE
CS	- CARBON STEEL
DIP	- DUCTILE IRON PIPE
FLG	- FLANGED
FPT	- FEMALE PIPE THREAD
GR	- GROOVED FOR GROOVED END COUPLINGS
MJ	- MECHANICAL JOINT
PE	- PLAIN END
PLS	- PLASTIC LINED STEEL PIPE
PVC	- POLYVINYL CHLORIDE
S	- SCREWED
SS	- STAINLESS STEEL
SD	- SOLDERED
SW	- SOLVENT WELDED
T	- TITANIUM
WS	- WATER STOP

VALVES

BPV	- BACK PRESSURE VALVE
BV	- BALL VALVE
CV	- CHECK VALVE
GV	- GATE VALVE
NC	- NORMALLY CLOSED
PRV	- PRESSURE RELIEF VALVE
PV	- PLUG VALVE

MISCELLANEOUS

GAC	- GRANULAR ACTIVATED CARBON
-----	-----------------------------

GENERAL NOTES

- DRAWINGS WITH PREFIX LETTERS G, C, S, A, M, AND I SHOW WORK REQUIRED BY THE STRUCTURES & EQUIPMENT CONTRACT (SYSOPS-13G) WHICH IS TO BE PERFORMED BY THE GENERAL CONTRACTOR UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS ARE TO EDGE OF STRUCTURES, FACE OF CURBS OR EDGE OF PAVEMENTS UNLESS SPECIFICALLY INDICATED OTHERWISE NOTED.
- EXISTING UTILITIES AND BURIED PIPING LOCATIONS AND ELEVATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND ARE INTENDED ONLY TO INDICATE THE EXISTENCE OF SUCH UTILITIES AND PIPING IN AREA SHOWN. BEFORE PROCEEDING WITH WORK, THE CONTRACTOR SHALL VERIFY UTILITIES AND PIPING LOCATIONS IN THE FIELD AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL FACILITIES AT ALL TIMES. NO ROAD SHALL BE TAKEN OUT OF SERVICE EXCEPT TO ACCOMPLISH WORK REQUIRED UNDER THIS CONTRACT AND THEN ONLY AFTER AN ALTERNATIVE METHOD OF ACCESS HAS BEEN APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE TRENCH PLATES FOR VEHICLE CROSSINGS.
- ALL UTILITIES, BURIED PIPING AND BUILDINGS SHALL BE PROTECTED FROM ANY DAMAGE AS A RESULT OF THE WORK INCLUDED IN THIS CONTRACT. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AND/OR REPLACE TO THE SATISFACTION OF THE UTILITY OWNER CONCERNED OR THE DEP ALL DAMAGE TO ANY UTILITIES, PIPING OR BUILDINGS.
- EXISTING MANHOLES, FIRE HYDRANTS, VALVES AND INLETS SHALL BE ADJUSTED TO MEET THE PROPOSED GRADES.
- DEMOLITION OF EXISTING PAVEMENTS, CURBS, AND FENCING ARE SHOWN ON THE CIVIL DWGS.
- COORDINATES SHOWN ON THE DRAWINGS ARE IN THE TRANSVERSE MERCATOR PROJECTION FOR EASTERN NEW YORK AS ESTABLISHED BY THE UNITED STATES COAST AND GEODETIC SURVEY. ELEVATIONS OF BENCH MARKS AS GIVEN IN THE SPECIFICATIONS OR SHOWN ON THE DRAWINGS REFER TO THE NORTH AMERICAN VERTICAL DATUM NAVD83. ELEVATIONS WITH A MINUS SIGN BEFORE THE FIGURE INDICATE DISTANCES BELOW THE DATUM.
- HORIZONTAL COORDINATES ARE BASED UPON NAD 83(96) COORDINATE SYSTEM, LONG ISLAND ZONE. ELEVATIONS ARE REFERENCED TO THE NAVD 88 VERTICAL DATUM.
- AN ASTERISK (*) DENOTES DIMENSION OR ELEVATION TO BE DETERMINED ACCORDING TO EQUIPMENT ACTUALLY FURNISHED.
- PIPING SYMBOLS SHOWN FOR PICTORIAL PURPOSES ONLY. FOR ACTUAL JOINTS TO BE SUPPLIED BY CONTRACTOR, REFER TO DIVISION 15 OF THE SPECIFICATIONS.
- REFERENCE TO "ENGINEER" MAY REFER TO THE DESIGN ENGINEER, CONSTRUCTION MANAGER OR BOTH.
- THE SYSOPS-13G CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL EXCAVATION AND BACKFILLING WORK REQUIRED FOR WORK UNDER SYSOPS-13E CONTRACT IN ACCORDANCE WITH SPECIFICATIONS 02316G AND 02317G. THE RESPECTIVE CONTRACTORS SHALL COORDINATE THIS WORK.
- THE SYSOPS-13G CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF INSULATION AND ALUMINUM JACKETING SYSTEMS AS WELL AS EXCAVATION WORK AS REQUIRED UNDER SPECIFICATION 15771G FOR HEAT TRACING SYSTEMS TO BE INSTALLED AT STATIONS 22 AND 52. THE SYSOPS-13E CONTRACTOR SHALL PERFORM ALL HEAT TRACING, CONTROLS AND RELATED ELECTRICAL WORK. THE RESPECTIVE CONTRACTORS SHALL COORDINATE THIS WORK.

NOTE:
THIS IS A GENERAL ABBREVIATION AND SYMBOL LIST AND INCLUDES ABBREVIATIONS AND SYMBOLS THAT MAY NOT APPEAR ON THE DRAWINGS.

WARNING:
IT IS A VIOLATION OF SECTION 2201.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY MANNER ANY SPECIFICATIONS, PLANS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ALTERATION IS MADE, THE SEAL OF THE PROFESSIONAL ENGINEER IS A VIOLATION. THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A BRIEF DESCRIPTION OF THE ALTERATION.

DETAIL NUMBER

SECTION LETTER

DRAWING ON WHICH DETAIL IS CUT OR SHOWN

DRAWING ON WHICH SECTION IS CUT OR SHOWN

SECTION AND DETAIL KEY

REVISIONS			
NO.	BY	DATE	REMARKS

DES	SJS
DWN	GAD
CHK	NRM



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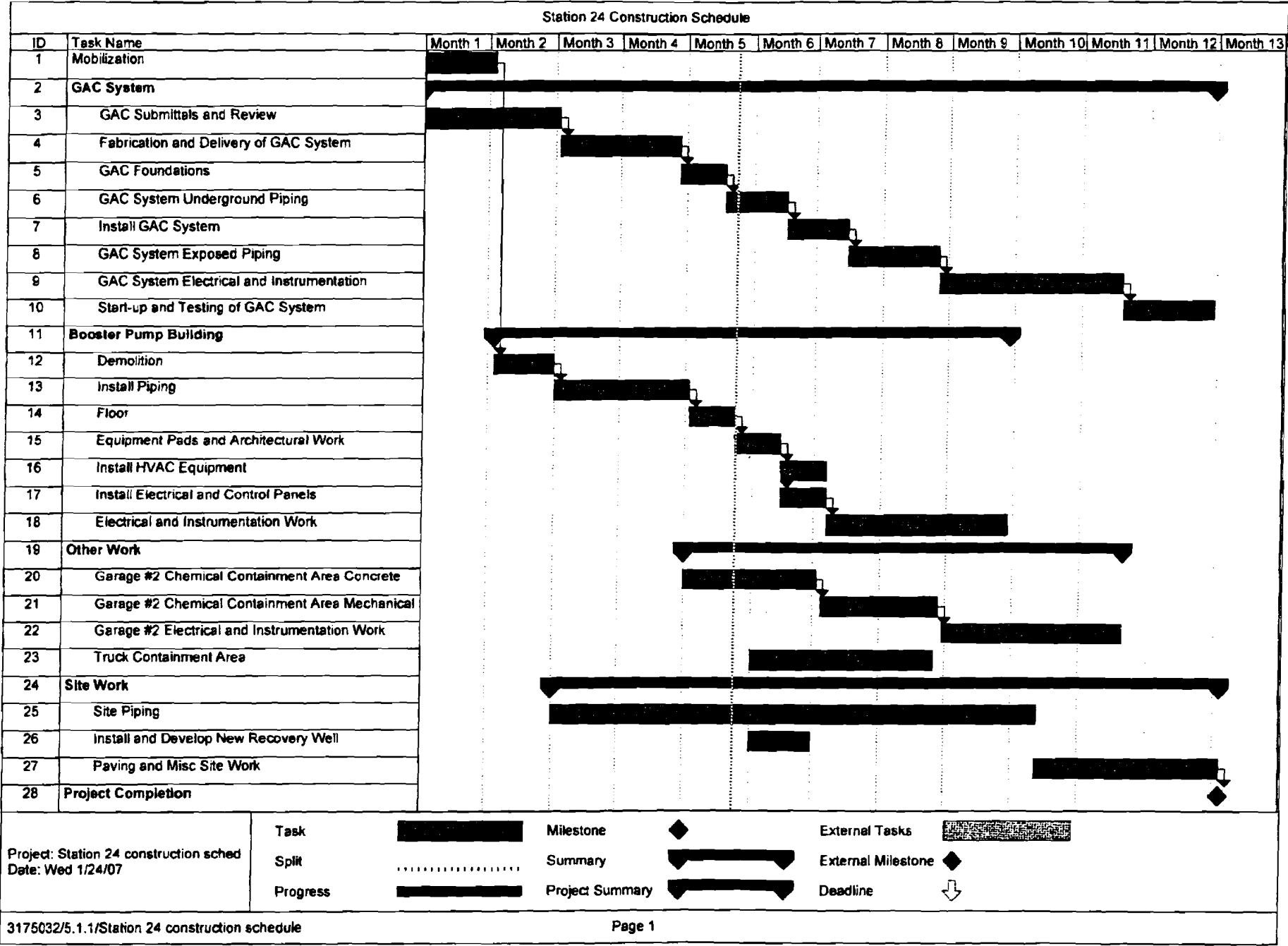
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BUREAU OF
WATER AND SEWER OPERATIONS



CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

STATION 24
GENERAL
GENERAL NOTES,
SYMBOLS AND LEGEND
NOT TO SCALE

DATE: FEBRUARY 2007
DWG. NO.: G-01



WARNING:
IT IS A VIOLATION OF SECTION 2206.2 OF THE NEW YORK STATE
ELECTION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE
DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN
ANY MANNER ANY RECORDING, PLATE OR REPORT TO WHICH
THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN
ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED,
THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND
THE VIOLATION ALTERED BY FOLLOWED BY HIS SIGNATURE, THE
DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REVISIONS			
NO.	BY	DATE	REMARKS

DES: SJS
DWN: GAD
CKD: NRM



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CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

STATION 24
GENERAL
CONSTRUCTION
SCHEDULE
NOT TO SCALE

DATE: FEBRUARY 2007
DWG. NO.: G-02

CLEAR EXISTING
GRASSED AREA
PER SPECIFICATION
02230-SITE CLEARING

REMOVE EXISTING
ASPHALT SURFACE

WELL 24B

RELOCATE
EXISTING
CONTAINERS
AS DIRECTED
BY ENGINEER

EMPLOYEE
WASH ROOM
(1 STORY)

OFFICE

REMOVE EXISTING OFFICE
AND CAP UTILITIES

178 TH ST.

EXISTING SOIL VAPOR
EXTRACTION SYSTEM

FILL
STATION

178 TH ST.

EXISTING RECOVERY
WELL #1

REMOVE EXISTING ENCLOSURE AND RETURN
TO THE DEP AS DIRECTED BY THE ENGINEER
CONCRETE PAD AND WELL TO REMAIN

109 TH AV

BOOSTER
PUMP
BUILDING
(1 STORY)

GARAGE #1
(1 STORY)

GARAGE #2
(1 STORY)

120'

60'

21'-4"

2'-8"

EXISTING SUMP TO BE ABANDONED
SEE NOTE 4 THIS SHEET
FILL IN AND CAP EXISTING 12" SEWER
CONNECTION
EXISTING 6" SEWER TO BE ABANDONED
IN PLACE

177 ST.

177 ST.

REMOVE
EXISTING GATE

REMOVE
EXISTING FENCE

EXISTING FENCE
TO REMAIN

REMOVE
EXISTING FENCE

GUARD BOOTH
TO REMAIN

PROPERTY
LINE

0 25 75
SCALE: 1" = 30'

GENERAL DEMOLITION NOTES:

1. THROUGHOUT THE DURATION OF THIS CONTRACT THE CONTRACTOR SHALL MAINTAIN SUFFICIENT WORK AND ACCESS AREA FOR FACILITY EMPLOYEES AND EQUIPMENT.
2. THE CONTRACTOR SHALL CONFINE HIS OPERATIONS TO THE INDICATED PROPERTY LINES. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR WORK OUTSIDE THESE BOUNDARIES WITHOUT WRITTEN APPROVAL FROM NEIGHBORING PROPERTY OWNERS, THE CITY OF NEW YORK OR OTHER AGENCIES WITH JURISDICTION.
3. WITHIN AREAS WHERE EXISTING PAVEMENT IS TO BE REMOVED, THE CONTRACTOR SHALL PROTECT AND LEAVE IN PLACE ALL MANHOLES, CATCH BASINS, UTILITY BOXES, UTILITY POLES AND TREES. ANY DAMAGE TO THESE ITEMS WILL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST.
4. THE CONTRACTOR SHALL NOTE THE POTENTIAL PRESENCE OF MERCURY IN AND AROUND THE EXISTING BLOW-OFF SUMP THAT IS TO BE ABANDONED. THE CONTRACTOR SHALL TAKE ONE REPRESENTATIVE SAMPLE OF THE SEDIMENT AND MATERIAL IN THE BOTTOM OF THE SUMP AND SHALL REMEDIATE ANY CONTAMINATION AT THE DIRECTION OF THE ENGINEER. THE CONTRACTOR MAY ALSO BE DIRECTED BY THE ENGINEER TO EXCAVATE SOIL AROUND THE SUMP. REMEDIATION WORK SHALL BE PAID FOR IN ACCORDANCE WITH DETAILED SPECIFICATION 01270. REMOVAL OF MERCURY CONTAMINATED MATERIAL SHALL BE PAID FOR IN ACCORDANCE WITH UNIT PRICE ITEM G-UP-2, DIFFERENTIAL COST FOR ADDITIONAL TESTING, HAULING AND DISPOSAL OF HAZARDOUS SOILS IN ACCORDANCE WITH G-UP-4 AND ADDITIONAL EXCAVATION IN ACCORDANCE WITH G-UP-5.

TJ Tucker, Young, Jackson, Tull Inc.
Consulting Engineers

REVISIONS				
NO	BY	DATE	REVISION	REMARKS

DES HMS
DWN ZK
CKD HMS



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CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

STATION 24
CIVIL
SITE DEMOLITION

SCALE: 1"=30'

DATE: FEBRUARY 2007
DWG. NO.: C-01

EXISTING GRASSED AREA TO BE PAVED W/6" GRAVEL BASE, 4" BITUMINOUS CONC. BASE COURSE AND 2" BITUMINOUS CONC. WEARING COURSE EXIST. TREES TO BE PROTECTED PER SPECIFICATION 01560

EXISTING PAVED AREA TO BE RE-PAVED W/ 6" GRAVEL BASE, 4" BITUMINOUS CONC. BASE COURSE AND 2" BITUMINOUS CONC. WEARING COURSE

178 TH ST.
SOIL VAPOR EXTRACTION SYSTEM

BLOCK 10261

GARAGE #1
(1 STORY)

EMPLOYEE WASH ROOM
(1 STORY)

GARAGE #2
(1 STORY)

NEW TRUCK CONTAINMENT AREA
SEE SHEET S-03 FOR DETAILS

NEW GAC UNITS ON CONCRETE PAD
SEE SHEET S-01 FOR DETAILS

BOOSTER PUMP BUILDING
(1 STORY)

NEW CONC. PADS FOR HVAC EQUIP.
SEE SHEET S-02 FOR DETAIL

EXISTING CONTOUR (TYP)

CONTINUOUS EARTH BERM
1:3 MIN - 1:5 MAX

SLOPE (TYP.)

NOTES:

1. PLANTING PERIOD: APRIL 15-JUNE 1 / AUG. 15-OCT. 15.
2. PLANTS SHALL BE 5'-6" IN HEIGHT.

NEW SHRUBS SPACED 6'-0" O.C.
SEE DETAIL 2 THIS SHEET

NEW RECOVERY WELL #2 AND NEW ENCLOSURE

NEW PROPERTY LINE BOX

NEW UTILITY TRANSFORMER AND CONCRETE PAD
SEE SHEET S-02 FOR DETAIL
RESTORE AREA PER SPECIFICATION 02910

4" EXTRA STRONG CONC. FILLED, GALV. STEEL PIPE X 7'-6" LG. (EPOXY PAINT)

NEW WELL ENCLOSURE ON EXISTING CONCRETE PAD

(4) - #6 W/#3 TIES @12" O.C.

SECTION 1
1/2"=1'-0"

BOLLARD DETAIL
DETAIL 1
NOT TO SCALE

PRUNE AS SPECIFIED

5/8" DIA. MIN. REINF. RUBBER HOSE
12 GAGE GALVANIZED WIRE ATTACH ABOVE FIRST BRANCH

2"x2" WOOD STAKES

CUT AWAY TOP 1/3 OF BURLAP

CONTINUOUS EARTH BERM

SLOPE (TYP.)

NOTES:
1. PLANTING PERIOD: APRIL 15-JUNE 1 / AUG. 15-OCT. 15.
2. PLANTS SHALL BE 5'-6" IN HEIGHT.

NEW SHRUBS SPACED 6'-0" O.C.
SEE DETAIL 2 THIS SHEET

NEW RECOVERY WELL #2 AND NEW ENCLOSURE

NEW PROPERTY LINE BOX

NEW UTILITY TRANSFORMER AND CONCRETE PAD
SEE SHEET S-02 FOR DETAIL
RESTORE AREA PER SPECIFICATION 02910

PLANTING AND STAKING DETAILS FOR ARBORVITAE (THUJA OCCIDENTALIS)

DETAIL 2
NOT TO SCALE

NOTES:

1. ALL EXISTING INFORMATION SHOWN INCLUDING STRUCTURES, UTILITIES AND ELEVATIONS IS BASED ON INFORMATION TAKEN FROM AN AERIAL AND GROUND SURVEY CONDUCTED FROM MARCH 2003 TO APRIL 2003 AND RECORD INFORMATION TAKEN FROM VARIOUS SOURCES. THE SURVEY WAS PERFORMED AND PREPARED BY MASSAND ENGINEERING 211-12 UNION TURNPIKE, BAYSIDE, NY 11364
2. HORIZONTAL COORDINATES ARE BASED UPON THE 83 (96) COORDINATE SYSTEM, LONG ISLAND ZONE. ELEVATIONS ARE REFERENCED TO THE NAVD 88 VERTICAL DATUM
3. INSTALL 9 GAGE GALVANIZED FABRIC PRIVACY SLATS WITHIN EXISTING FENCE. HOOVER FENCE COMPANY PRIVACY LINK OR EQUAL. COLOR AS DIRECTED BY THE ENGINEER.

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SCALE 1" = 30'

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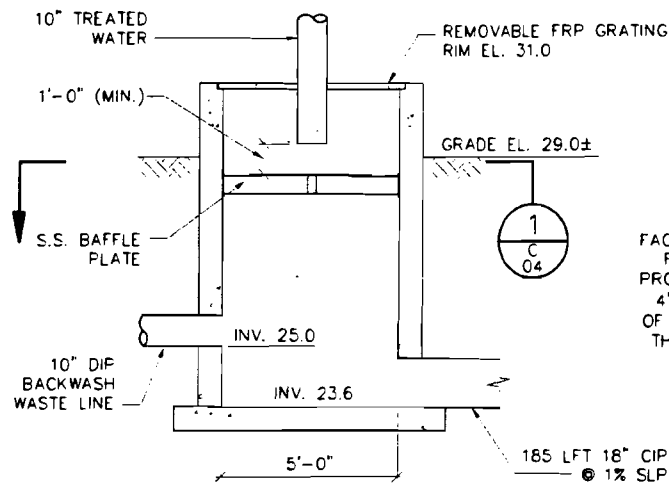
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BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

STATION 24
CIVIL
SITE PLAN

SCALE: 1"=30'

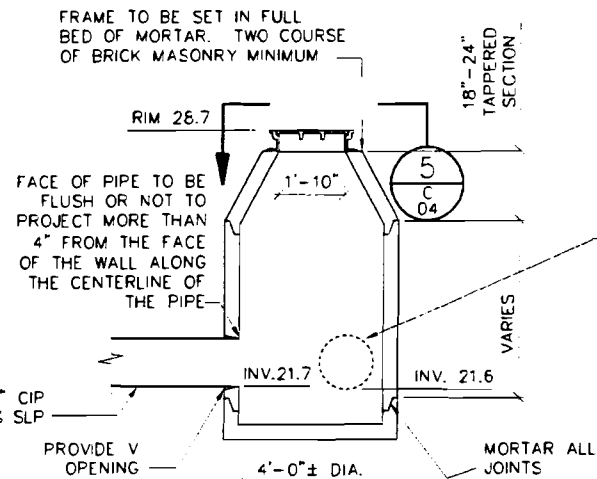
DATE: FEBRUARY 2007

DWG. NO.: C-03



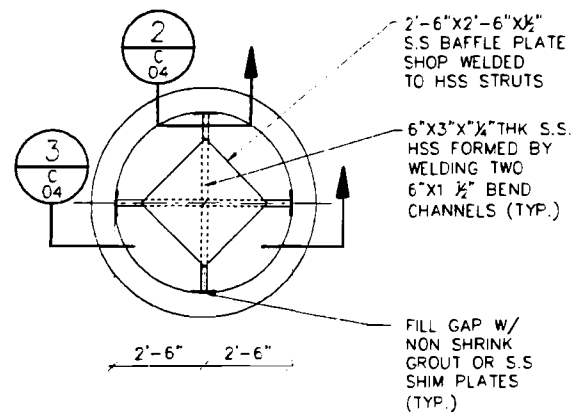
BLOW-OFF SUMP DETAIL

DETAIL 1
NTS C 02

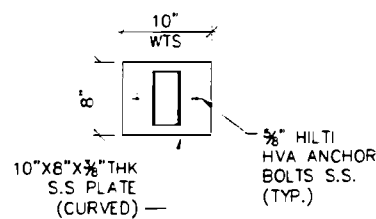


PRECAST CONCRETE MANHOLE DETAIL

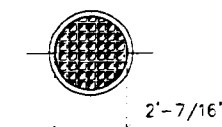
DETAIL 6
NTS C 02



SECTION 1
NTS C 04

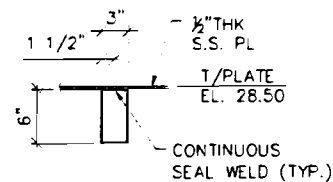


SECTION 2
NTS C 04

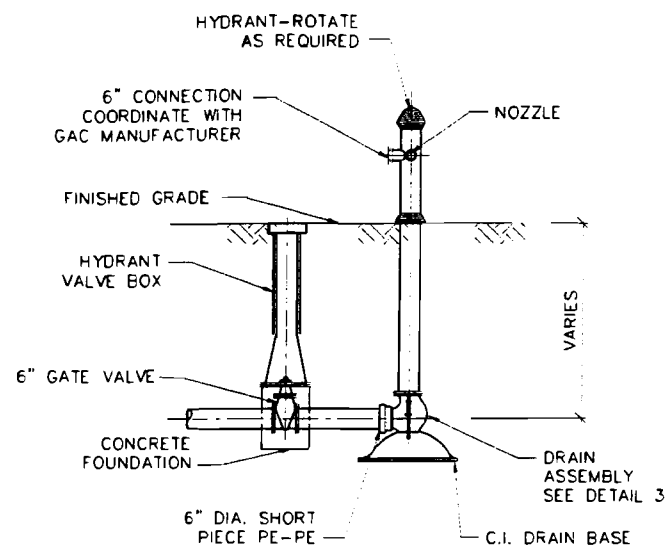


SECTION 5
NTS C 04

NOTE
MANHOLE FRAME AND CASTING
REFERENCE R-1718A SERIES BY
NEENAH FOUNDRY.

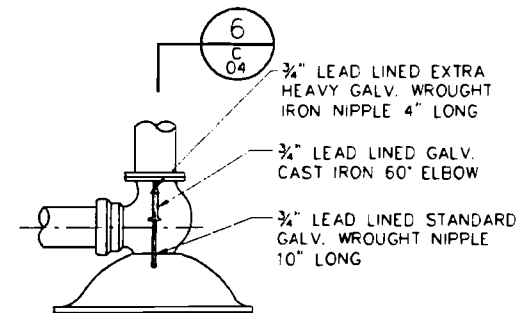


SECTION 3
NTS C 04



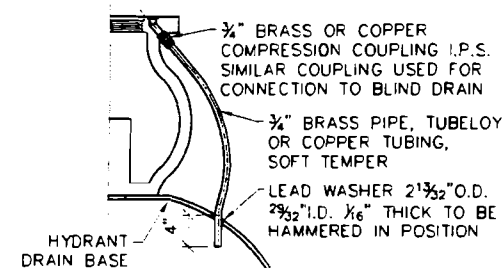
HYDRANT DETAIL

DETAIL 2
NTS C 02



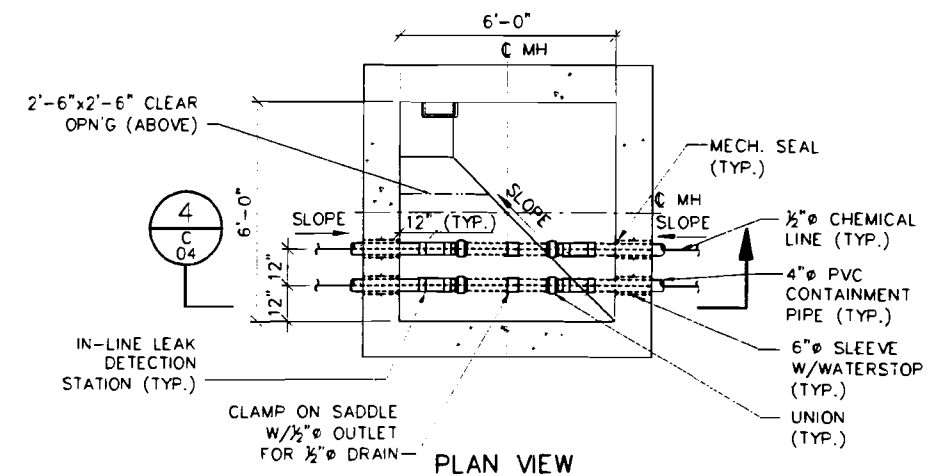
HYDRANT ON DRAIN-BASE

DETAIL 3
NTS C 04



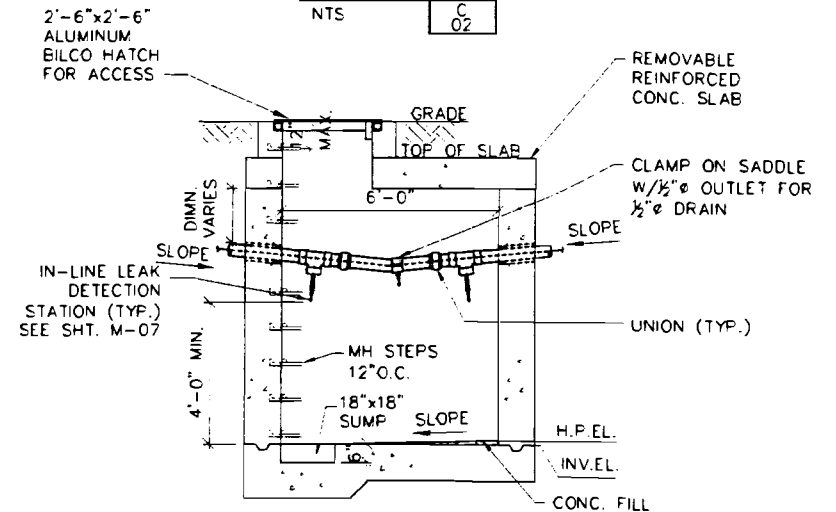
DRAIN ASSEMBLY

SECTION 6
NTS C 04



LEAK DETECTION MANHOLE

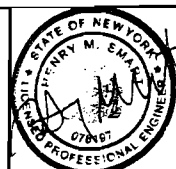
DETAIL 5
NTS C 02



SECTION 4
NTS C 04

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Consulting Engineers

NO.	BY	DATE	REVISIONS
1	HMS		
2	ZK		
3	HMS		



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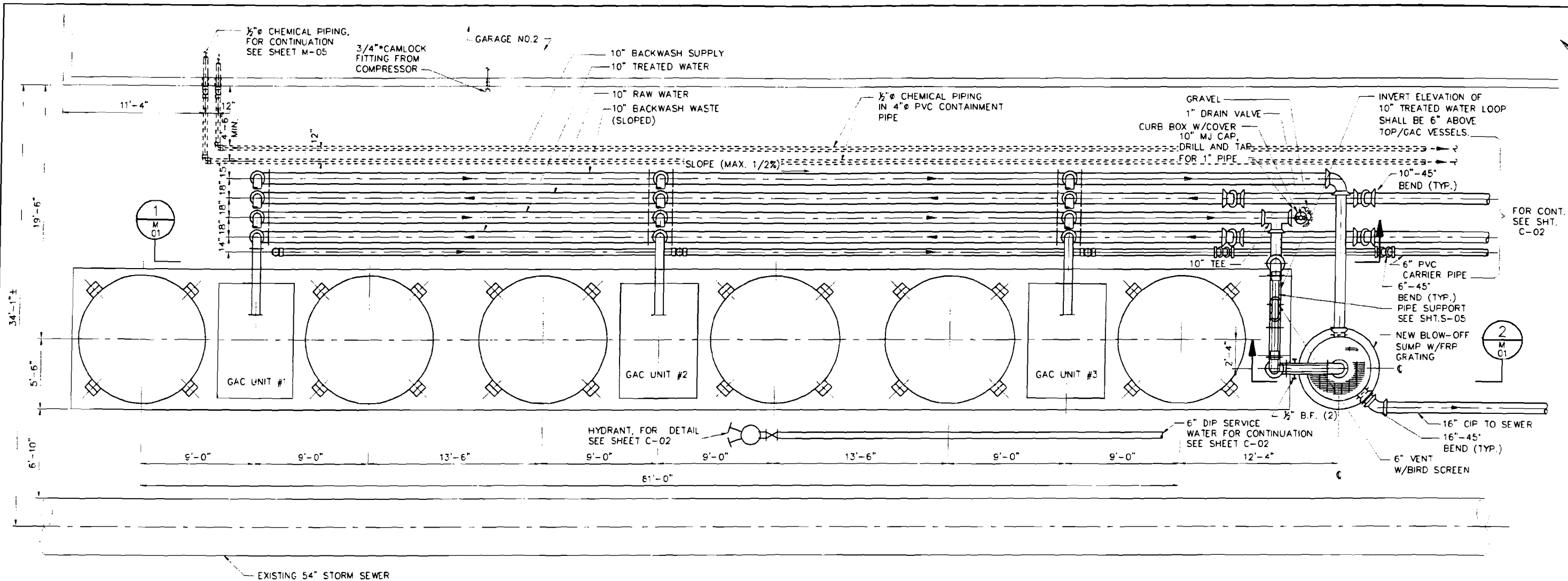
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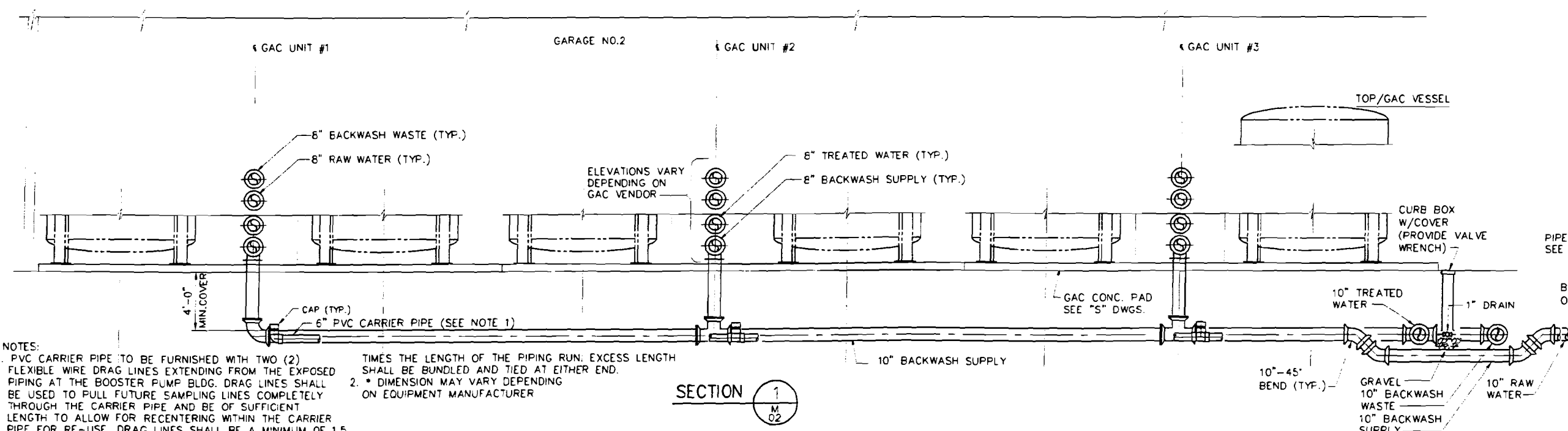
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STATION 24
CIVIL
UTILITIES PLAN
DETAILS

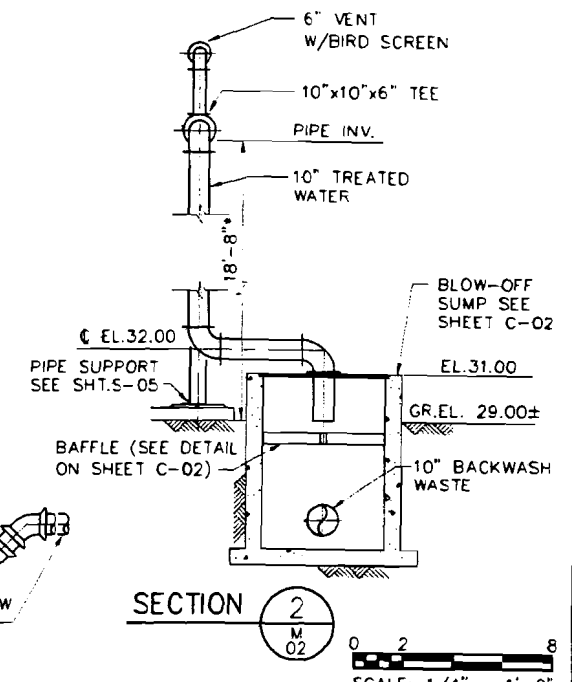
DATE: FEBRUARY 2007
DWG. NO.: C-04



PARTIAL PLAN



SECTION 1



SECTION 2

- NOTES:
1. PVC CARRIER PIPE TO BE FURNISHED WITH TWO (2) FLEXIBLE WIRE DRAG LINES EXTENDING FROM THE EXPOSED PIPING AT THE BOOSTER PUMP BLDG. DRAG LINES SHALL BE USED TO PULL FUTURE SAMPLING LINES COMPLETELY THROUGH THE CARRIER PIPE AND BE OF SUFFICIENT LENGTH TO ALLOW FOR RE-CENTERING WITHIN THE CARRIER PIPE FOR RE-USE. DRAG LINES SHALL BE A MINIMUM OF 1.5 TIMES THE LENGTH OF THE PIPING RUN. EXCESS LENGTH SHALL BE BUNDLED AND TIED AT EITHER END.
 2. * DIMENSION MAY VARY DEPENDING ON EQUIPMENT MANUFACTURER

NO.	BY	DATE	REVISIONS

DES: SJS
 DWN: DD/GD
 CDR: NRM



MALCOLM PIRNIE

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 DIRECTOR OF DISTRIBUTION OPERATIONS
 BUREAU OF WATER AND SEWER OPERATIONS

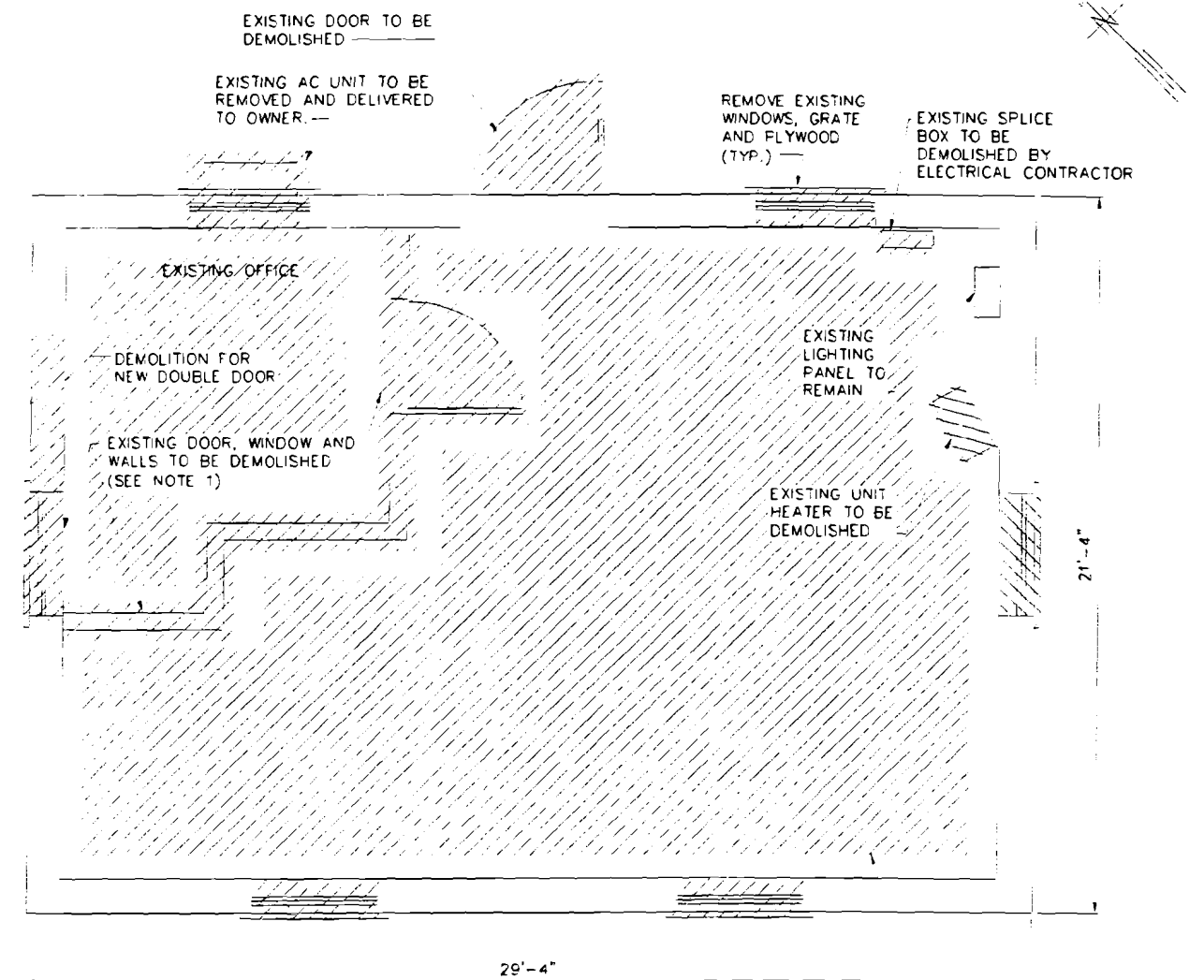
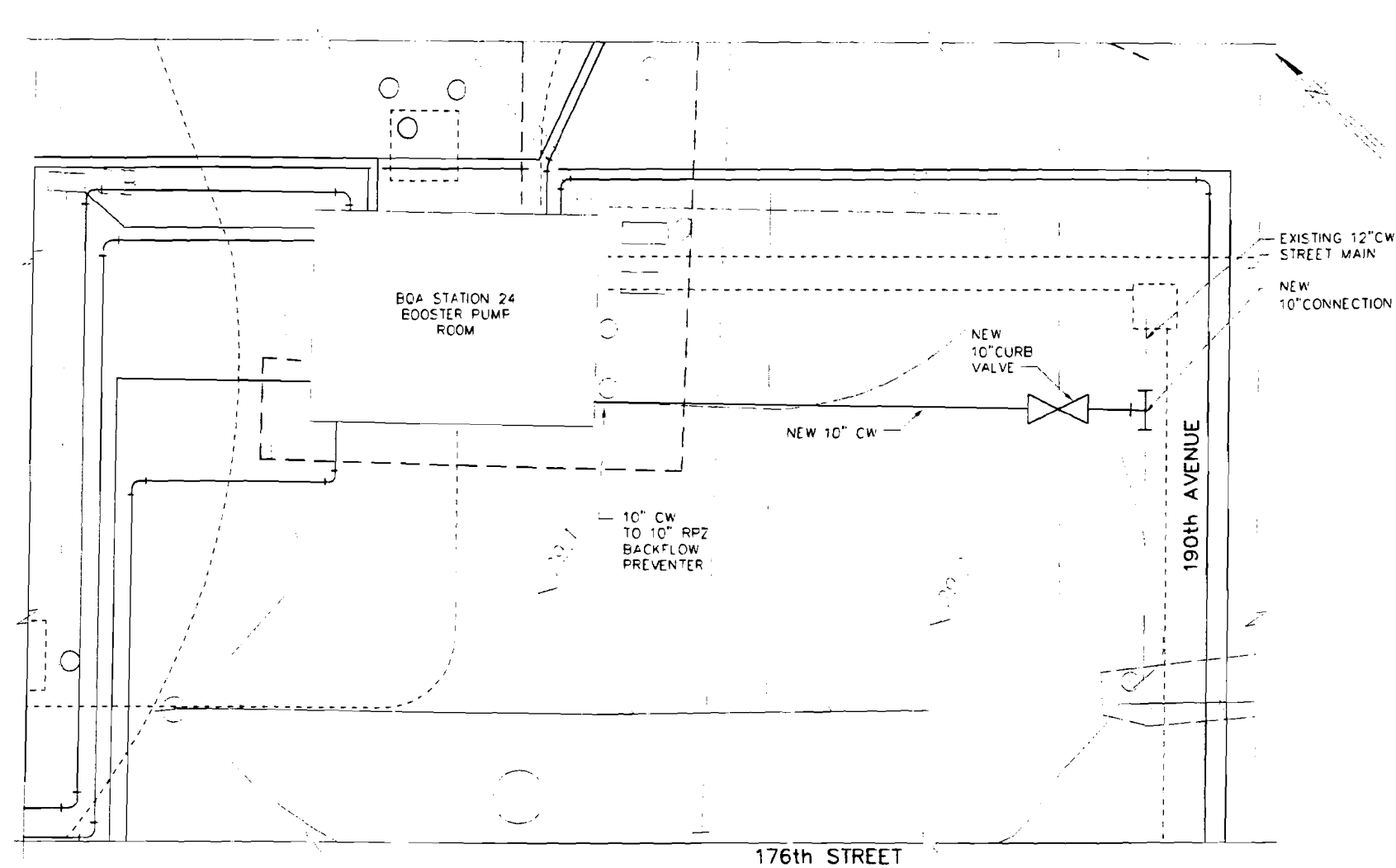


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 BUREAU OF WATER AND SEWER OPERATIONS
 STATION 24 GROUNDWATER REMEDIATION PROJECT
 SYSOPS-13G

STATION 24
 MECHANICAL
 GAC SYSTEM
 PLAN AND SECTION
 SCALE: 1/4" = 1'-0"

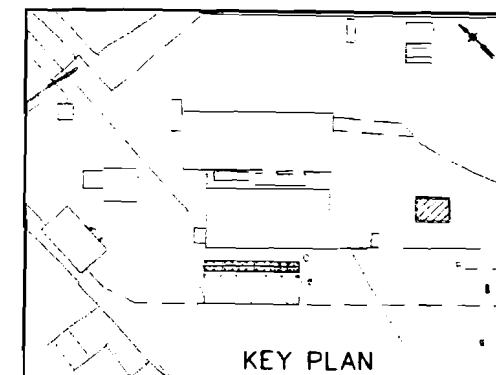
DATE: FEBRUARY 2007
 DWG. NO.: M-02

SCALE: 1/4" = 1'-0"



WINDOW NOTES

1. REMOVE EXISTING WINDOWS AND SECURITY SCREENS AND REPLACE WITH 8-INCH BY 8-INCH HEAVY WALLED GLASS BLOCK MASONRY.
2. ENGINEER SHALL SELECT ONE PATTERN OF HEAVY WALLED GLASS BLOCK FROM MANUFACTURER'S STANDARD AVAILABLE - FACE PATTERNS.
3. PROVIDE COMPLETE GLASS BLOCK MASONRY SYSTEM WITH ALL MANUFACTURER RECOMMENDED ANCHORS, MORTAR, FASTENERS AND JOINT REINFORCEMENT.
4. CONTINUOUS GALVANIZED STEEL PAINTED 8-INCH BY 3-INCH BY 1/8" GLASS BLOCK FRAME CONTINUOUSLY WELDED AT MITERED CORNERS, FASTENED TO BRICK WITH 3/8 INCH DIAMETER STAINLESS STEEL EXPANSION BOLTS 12-INCH ON-CENTER.

[illegible]

**MALCOLM
PIRNIE**

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Edward J. Coleman

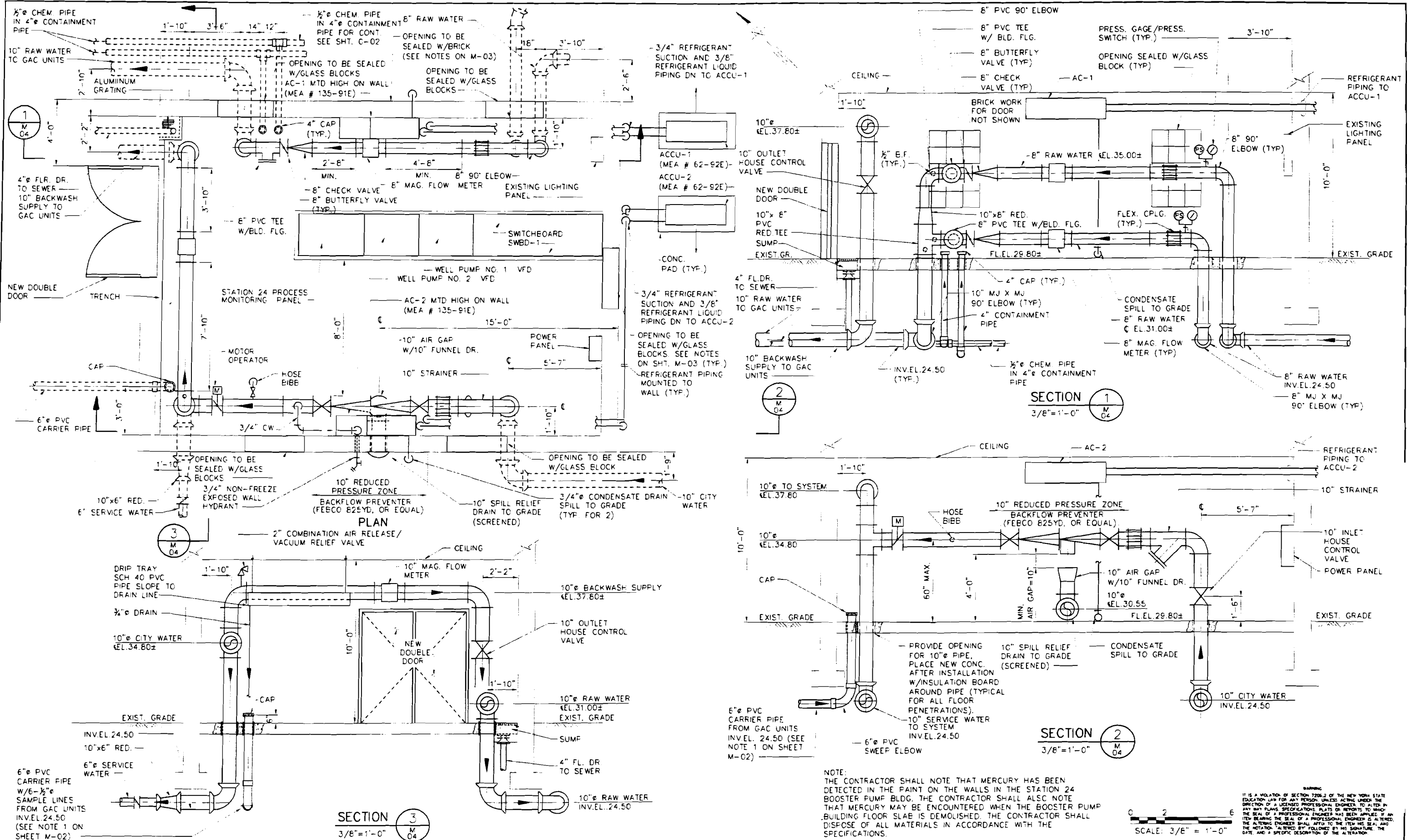
EDWARD J. COLEMAN, P.E.
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BUREAU OF
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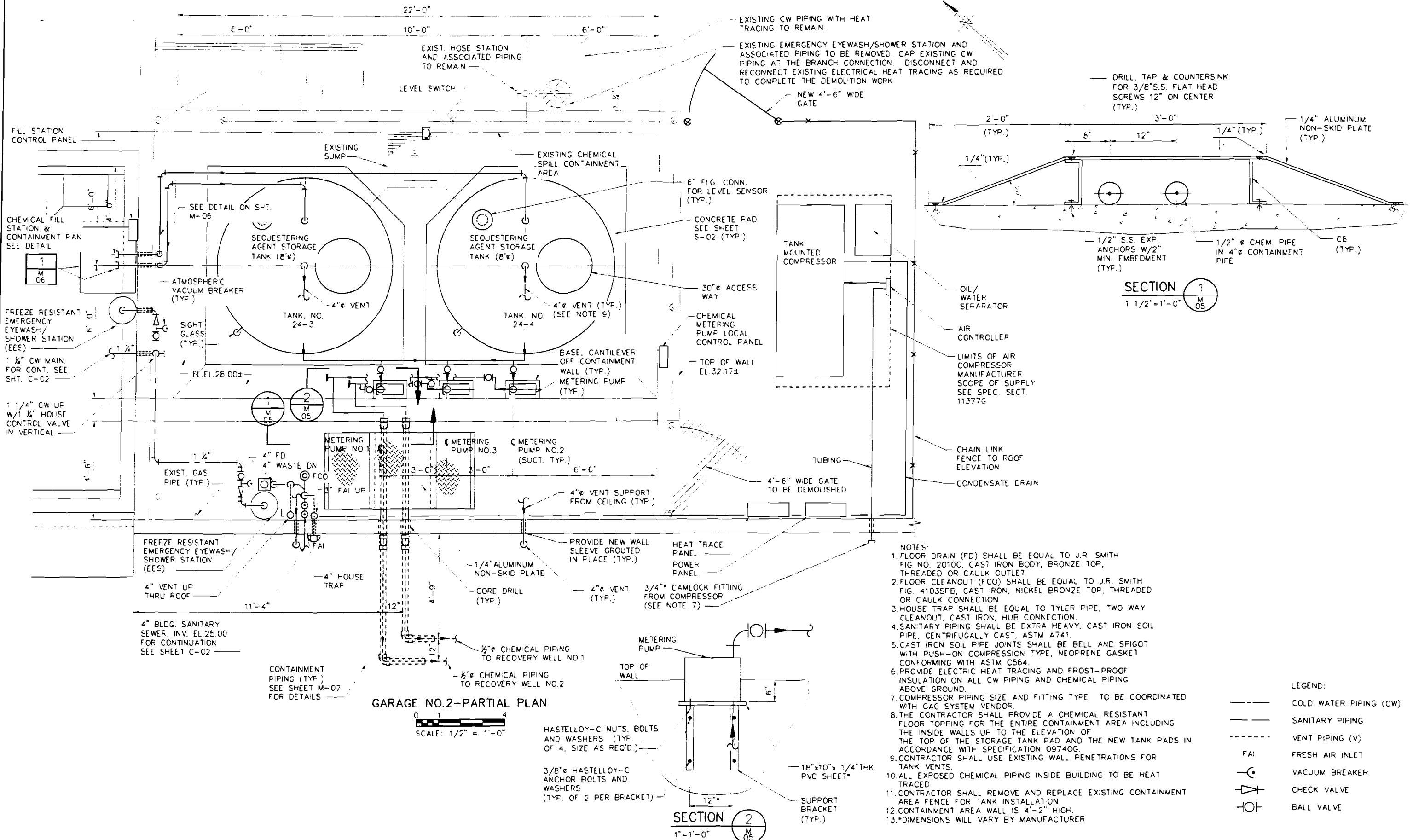
CITY OF NEW YORK
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BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

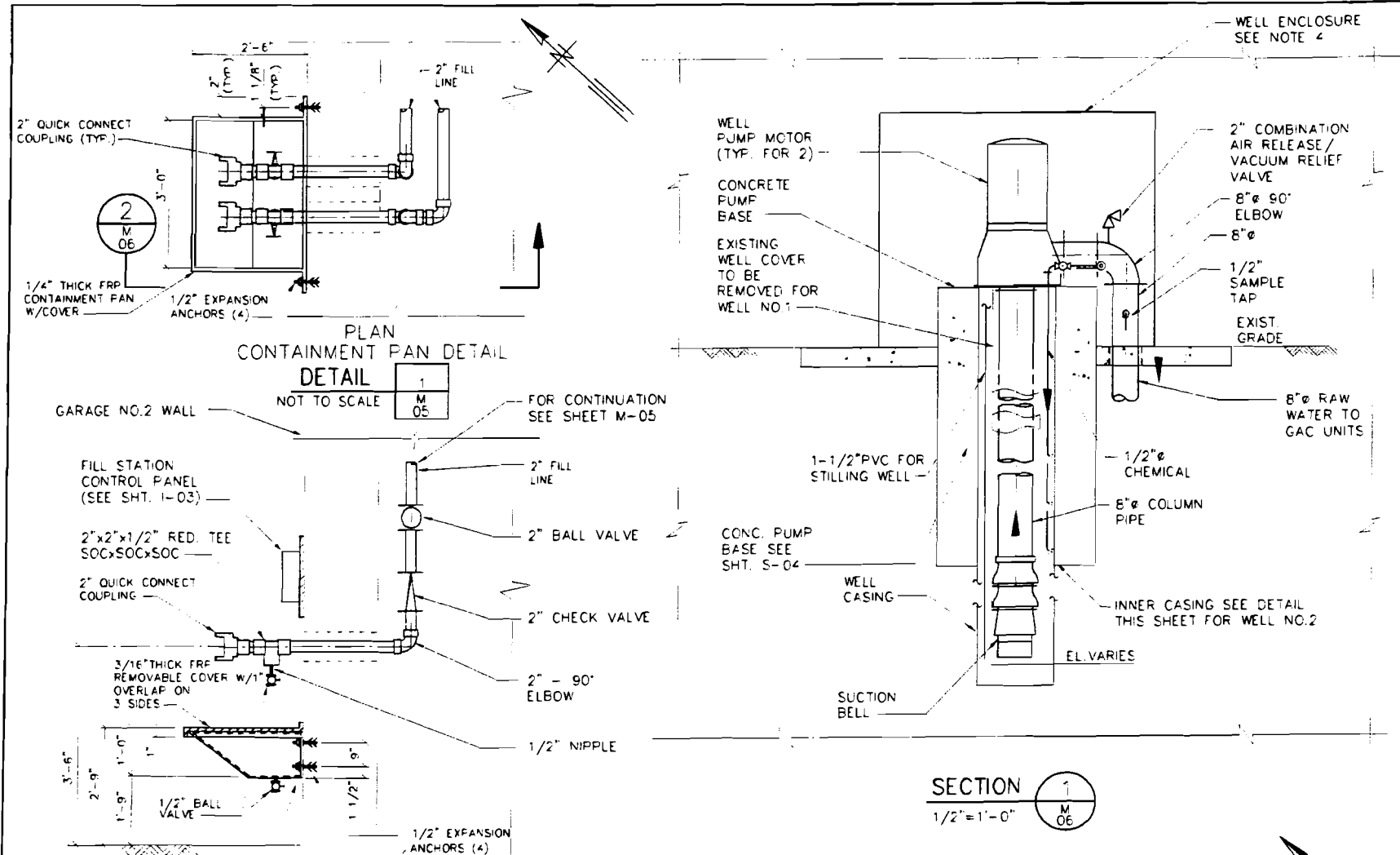
STATION 24
MECHANICAL
BOOSTER PUMP BLDG. PARTIAL
SITE PLAN AND DEMO. PLAN
SCALE: AS NOTED

DATE: FEBRUARY 2007
DWG. NO.: M-03



REVISIONS <table border="1"> <tr><th>NO.</th><th>BY</th><th>DATE</th><th>REMARKS</th></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>				NO.	BY	DATE	REMARKS													DESIGN DES: SJS DWN: GD CKD: NRM		APPROVED FOR THE CITY OF NEW YORK MALCOLM PIRNIE EDWARD J. COLEMAN, P.E. DIRECTOR OF DISTRIBUTION OPERATIONS BUREAU OF WATER AND SEWER OPERATIONS		CITY OF NEW YORK DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER AND SEWER OPERATIONS STATION 24 GROUNDWATER REMEDIATION PROJECT SYSOPS-13G		STATION 24 MECHANICAL BOOSTER PUMP BUILDING - PLAN AND SECTIONS SCALE: 3/8"=1'-0"		DATE: FEBRUARY 2007 DWG. NO.: M-04
NO.	BY	DATE	REMARKS																									

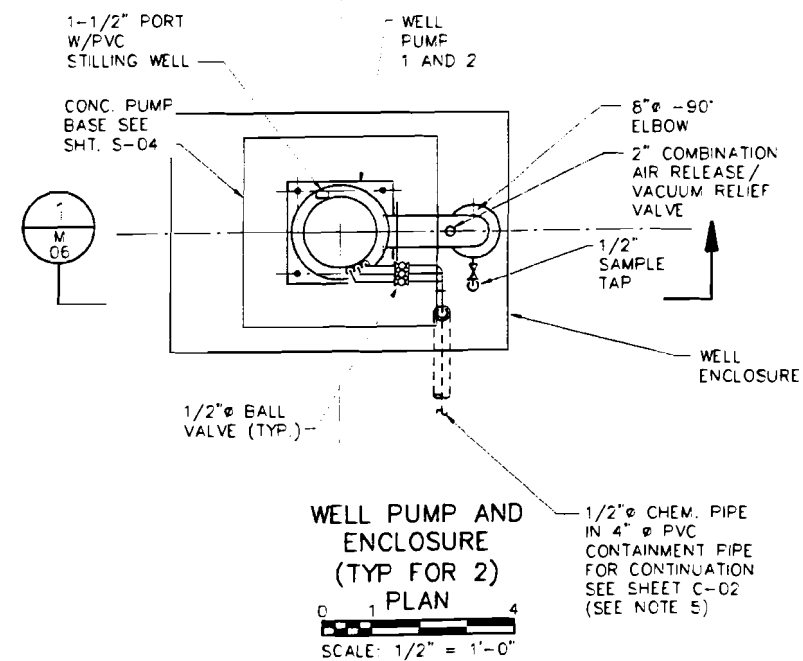




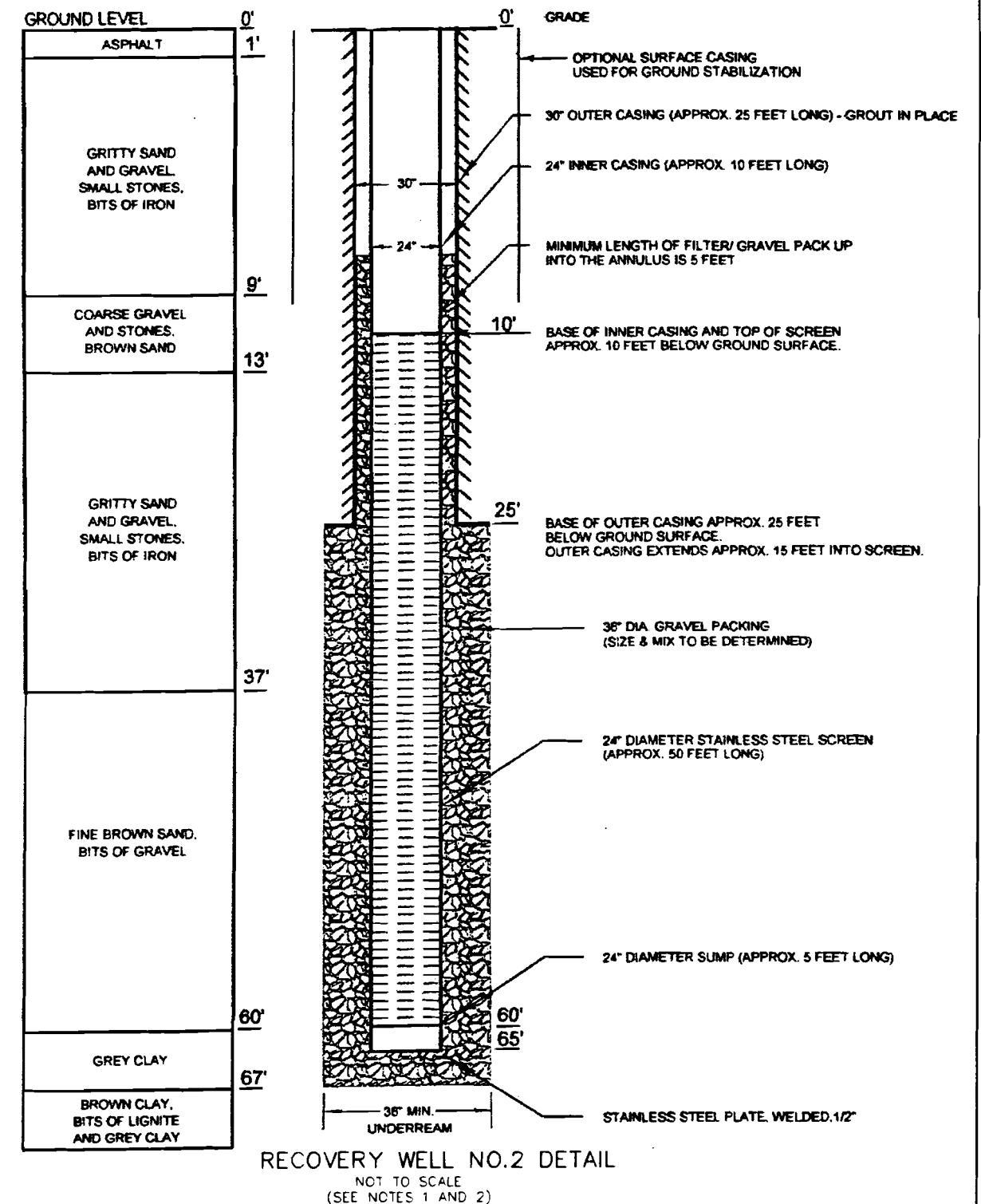
2'-6\"/>

SECTION 2
NOT TO SCALE
M 06

NOTE:
PIPING AND FITTINGS TO BE SOLVENT
WELDED PER SPEC. SECTION
15120G



WELL PUMP AND
ENCLOSURE
(TYP FOR 2)
PLAN
SCALE 1/2\"/>



RECOVERY WELL NO.2 DETAIL
NOT TO SCALE
(SEE NOTES 1 AND 2)

- NOTES:
1. GEOLOGICAL INFORMATION IS APPROXIMATE AND IS FOR INFORMATIONAL PURPOSES ONLY.
 2. DEPTHS BELOW GROUND ARE APPROXIMATE. BASE OF SCREEN MUST CORRESPOND TO BASE OF SAND UNIT, AND SUMP MUST BE COMPLETED IN THE CLAY UNIT.
 3. RECOVERY WELL NO.1 IS EXISTING WITH A METAL CAP AND ENCLOSURE TO BE REMOVED. RECOVERY WELL NO.2 IS TO BE CONSTRUCTED UNDER THIS WORK.
 4. ACOUSTICALLY TREATED LOUVER VENTS SHALL BE LOCATED ON OPPOSITE WALLS OF THE WELL PUMP ENCLOSURE. ONE SHALL BE SITUATED 6-IN. ABOVE THE BOTTOM OF THE MOTOR ENCLOSURE. LOUVER VENTS SHALL BE ORIENTED SUCH THAT ALL VENTS FACE AWAY FROM THE NEAREST OFF-SITE RESIDENCE.

5. 1/2\"/>

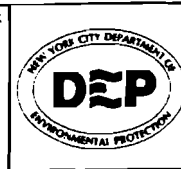
NO.	BY	DATE	REVISIONS

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DWN: MF
CHK: NRM



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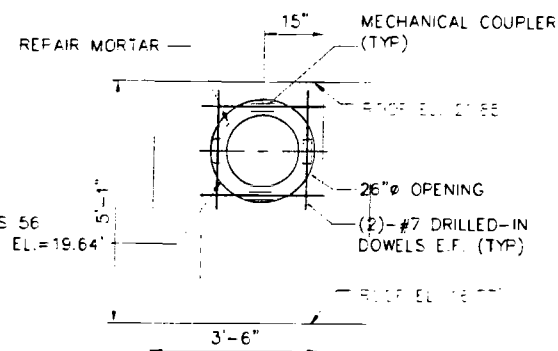
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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

STATION 24
MECHANICAL
SECTIONS, PUMP AND WELL
DETAILS
SCALE: AS NOTED

DATE: FEBRUARY 2007
DWG. NO.: M-06

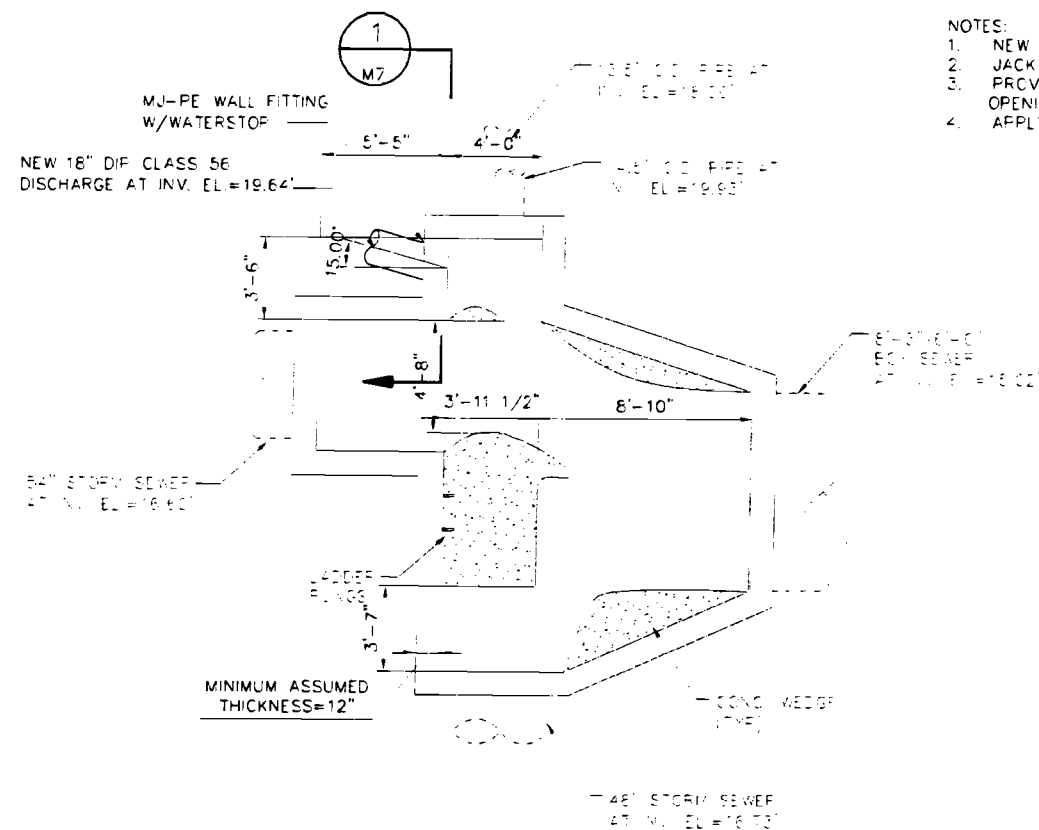
IN-LINE LEAK DETECTION STATION
NOT TO SCALE

- NOTES:
1. DIMENSIONS WILL VARY BY MANUFACTURER



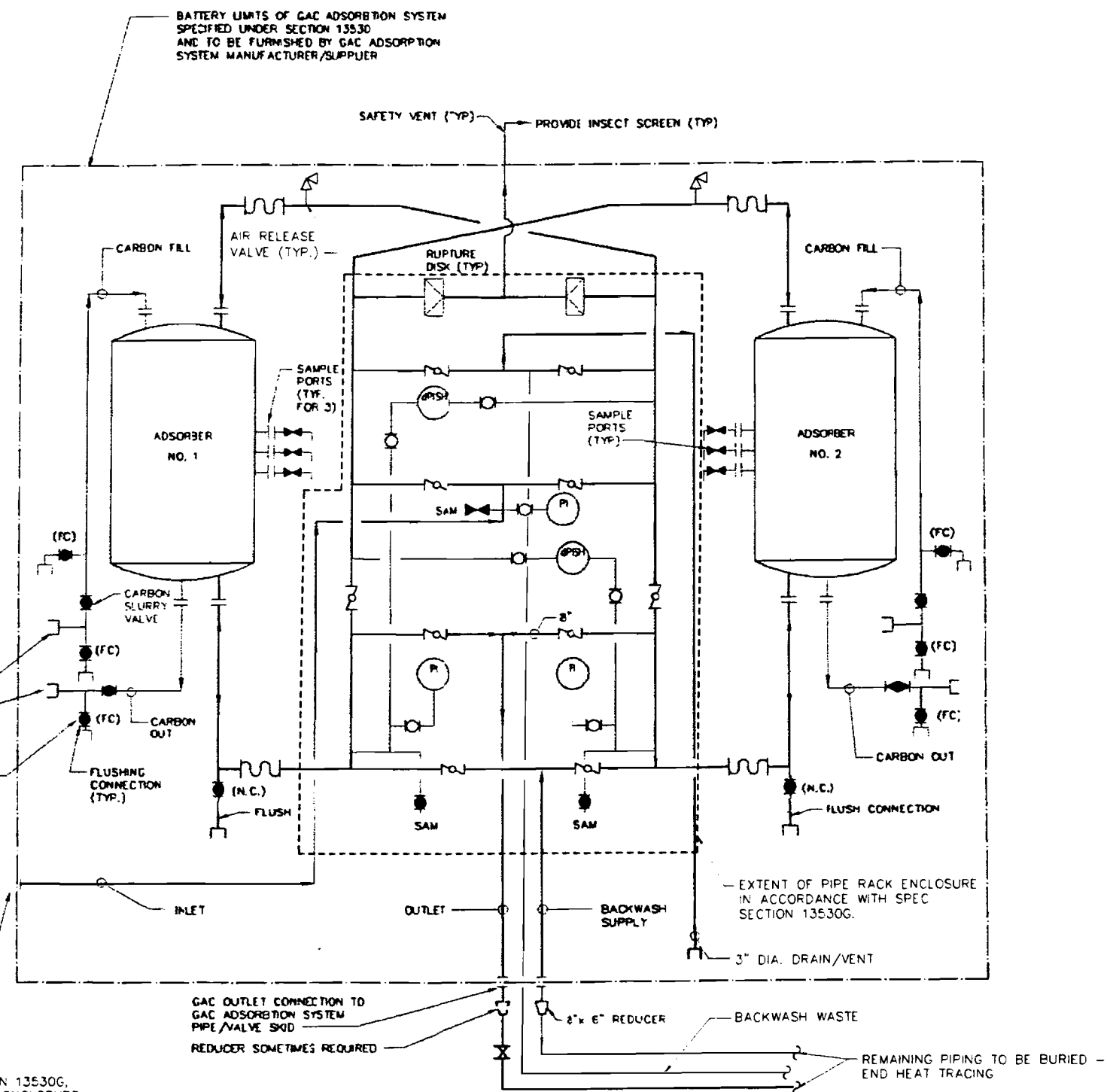
SECTION 1
M7

- NOTES:
1. NEW CONNECTION SHALL BE CORE-DRILLED.
 2. JACK HAMMERING SHALL NOT BE PERMITTED.
 3. PROVIDE HYDROPHILIC WATERSTOP ALL AROUND OPENING.
 4. APPLY BONDING AGENT TO CONC. SURFACES.



FLOOR PLAN OF JUNCTION CHAMBER
(AT EL.=16.77')

- NOTES:
1. ASSUMED JUNCTION CHAMBER WALL THICKNESS=12".
G.C. TO FIELD VERIFY.
 2. ASSUMED JUNCTION CHAMBER WALL REINF.= #5@12" E.F. E.W.
G.C. TO FIELD VERIFY.
 3. G.C. TO NOTIFY ENGINEER OF ANY DISCREPANCIES.



TYPICAL GAC SYSTEM PROCESS SCHEMATIC

[illegible]

DES	<u>SJS</u>
DMN	<u>GD</u>
OKD	<u>NRM</u>



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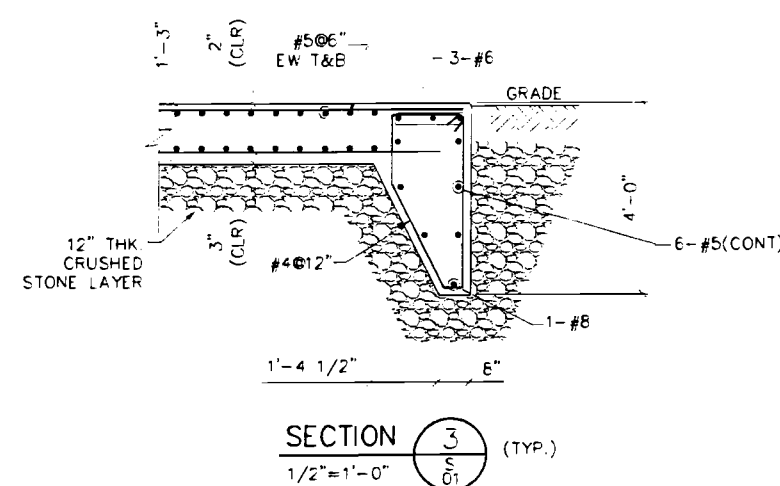
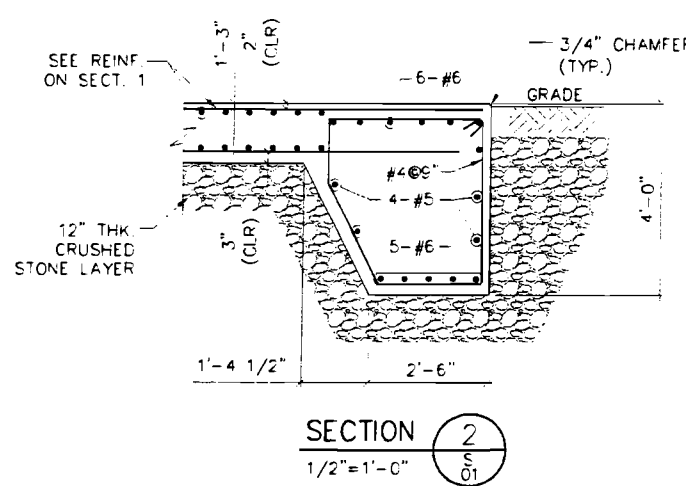
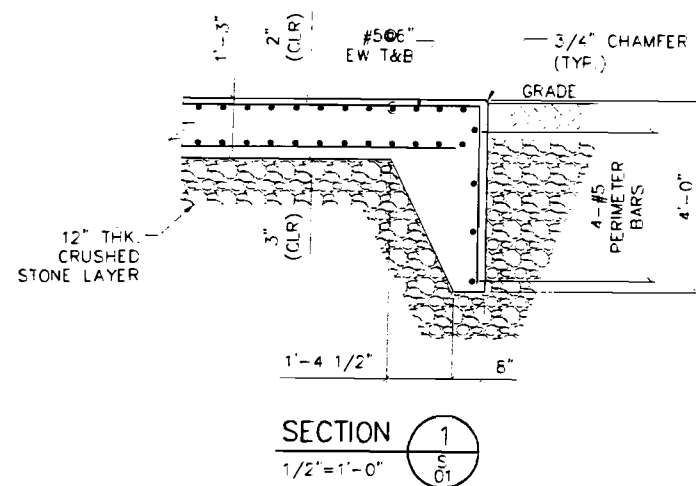
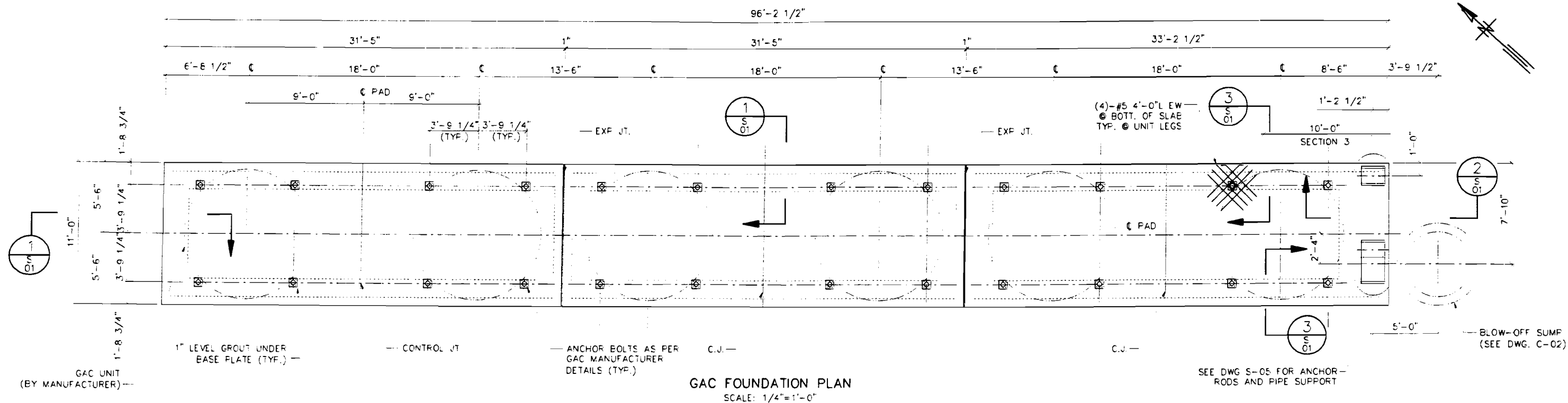

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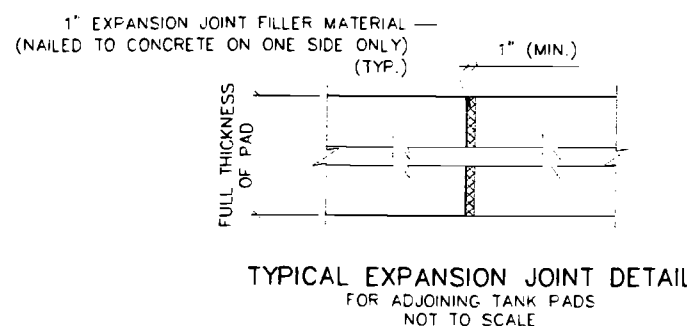
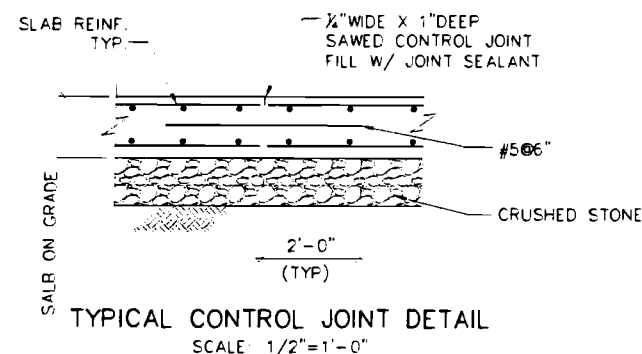
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STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

STATION 24
MECHANICAL
GAC SYSTEM AND
MISCELLANEOUS DETAILS
SCALE: NOT TO SCALE

DATE: FEBRUARY 2007
DWG. NO.: M-07



- NOTES:**
1. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES BEFORE EXCAVATION. UNRECORDED BURIED UTILITIES SHALL BE BROUGHT TO THE ATTENTION OF OWNER'S ENGINEER.
 2. TOP OF PAD SHALL BE 1" ABOVE EXISTING GRADE. SEE SHEET C-03 FOR TOP OF PAD GRADES AND PAD LOCATION.
 3. THE CONCRETE SURFACE SHALL RECEIVE BROOM FINISH.
 4. THE ALLOWABLE SOIL BEARING PRESSURE IS 2,500 PSF.
 5. GAC UNITS SHALL BE PROVIDED BY UNIT MANUFACTURER. CONTRACTOR SHALL PROVIDE AND LOCATE CAST IN PLACE ANCHORS AS SPECIFIED ON CERTIFIED DRAWINGS FROM GAC MANUFACTURER, PROVIDING ENOUGH PAD CLEARANCES AROUND THE VESSELS AS SHOWN ON DRAWINGS.
 6. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH GAC UNIT MANUFACTURER PRIOR TO CONSTRUCTION.



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Consulting Engineers

NO.	BY	DATE	REVISIONS

DES: LB
DWN: ZK
CKD: HMS



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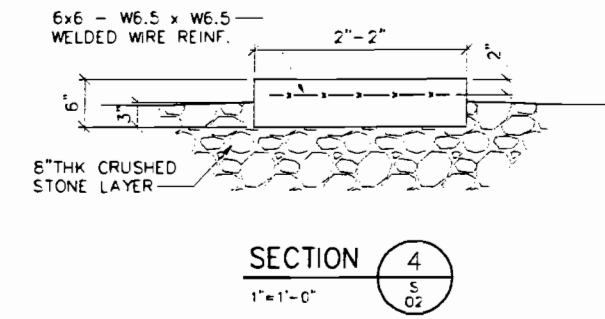
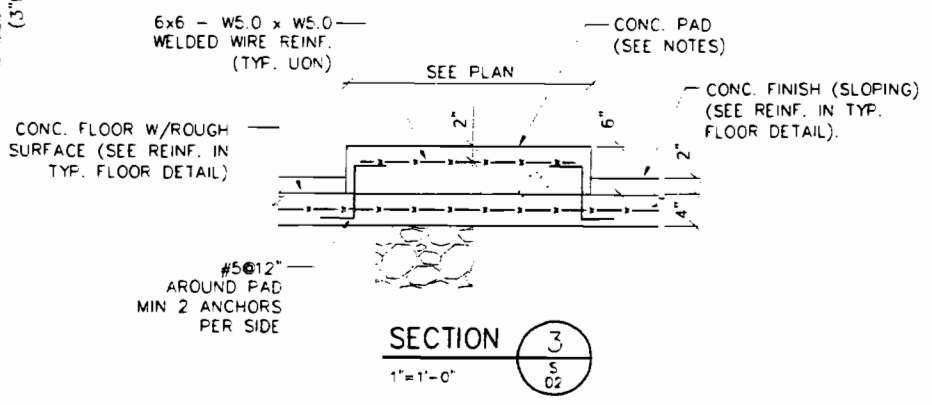
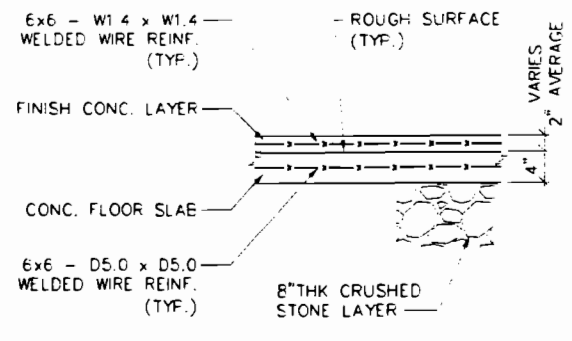
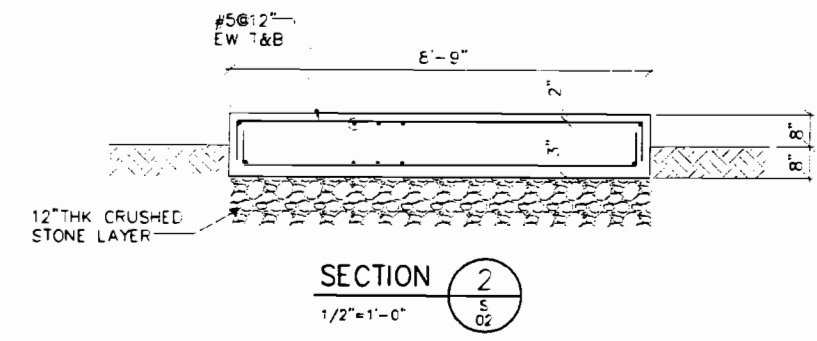
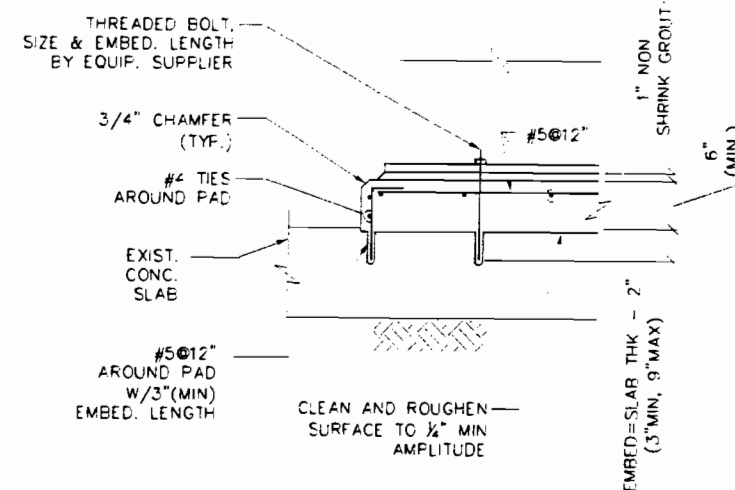
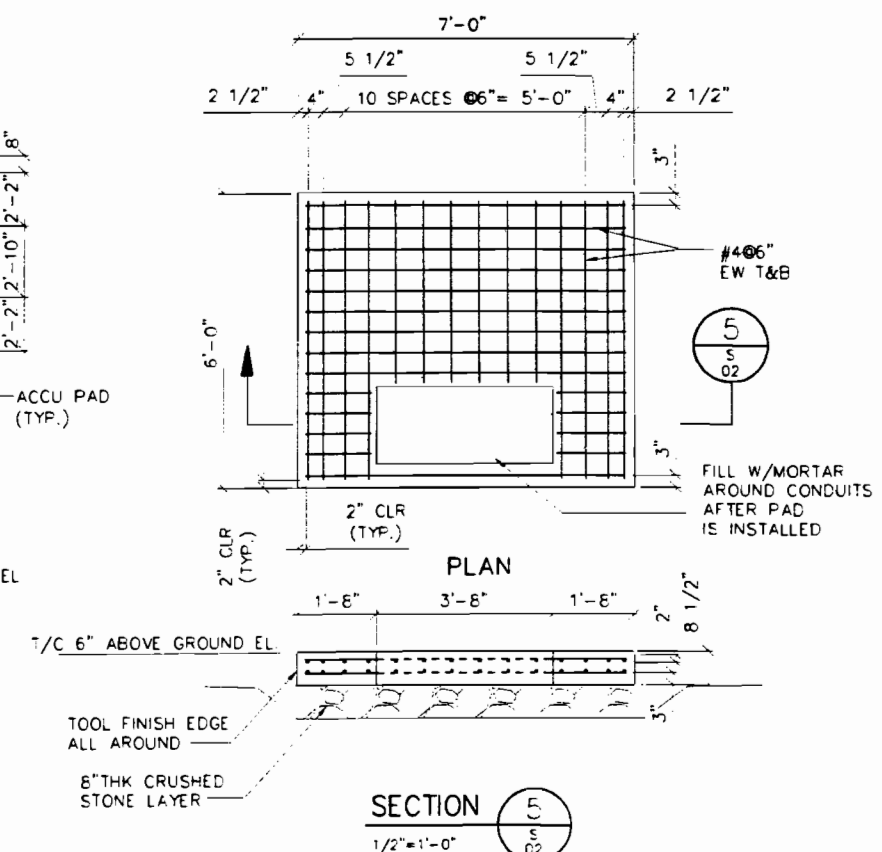
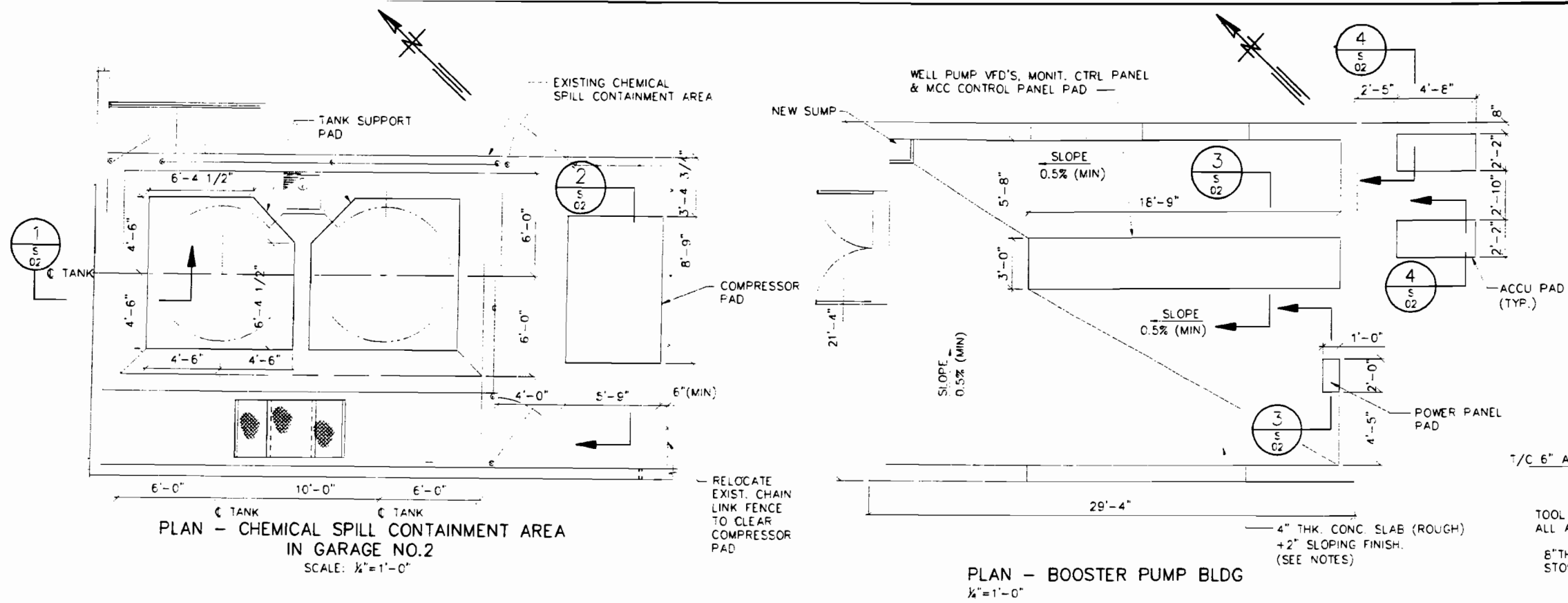
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STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

STATION 24
STRUCTURAL
**GAC UNIT FOUNDATION PAD
PLAN, SECTIONS AND DETAILS**
SCALE AS SHOWN

DATE: FEBRUARY 2007
DWG. NO.: S-01



CONCRETE PAD FOR 3 PHASE PAD MOUNTED TRANSFORMERS
(SEE NOTES)
1/2"=1'-0"

- NOTES:**
- FOR FINAL LOCATION AND SIZE OF PADS CONTRACTOR SHALL COORDINATE W/TANKS/ ELECTRICAL MANUFACTURER OR EQUIPMENT SUPPLIER.
 - CONTRACTOR SHALL PROVIDE AND LOCATE CAST IN PLACE OR DRILLED ANCHORS AS SPECIFIED ON CERTIFIED DWGS FROM TANK/EQUIPMENT MANUFACTURERS.
 - CONTRACTOR SHALL:
 - REMOVE THE ENTIRE FLOOR OF EXISTING BOOSTER PUMP BLDG. AND ALL DEBRIS RESULTING FROM ITS DEMOLITION.
 - PREPARE APPROPRIATE FLOOR SUBBASE BY REPLACING OR ADDING SELECTED MATERIAL AS PER TYP. DETAIL.
 - POUR NEW 4 IN. THICK CONCRETE FLOOR SLAB, REINFORCED WITH 6x6-W5.0xW5.0 WELDED WIRE MESH AT MID THICKNESS. TOP SURFACE OF FLOOR SLAB SHALL BE KEPT ROUGH FOR BETTER BONDING WITH FINISHED TOP LAYER.
 - SWEEP CLEAN TOP SURFACE OF FLOOR SLAB AND PREPARE WITH EPOXY BONDING AGENT.
 - POUR EQUIPMENT PADS AS SHOWN ON THIS DRAWING.
 - THE ENTIRE FLOOR AROUND PADS SHALL BE OVERLAID WITH A NEW CONCRETE LAYER OF VARIABLE THICKNESS SUCH THAT THERE WILL BE A 0.5% MIN. SLOPE AT THE FINISHED SURFACE TOWARDS THE NEW SUMP AS SHOWN ON THE PLAN ABOVE. THE FINISHED CONCRETE LAYER SHALL HAVE A 6x6-W1.4xW1.4 WELDED WIRE MESH REINFORCEMENT PLACED AT HALF DEPTH.
 - CONTRACTOR SHALL COORDINATE AND SATISFY ALL CONSTRUCTION REQUIREMENTS OF CON-EDISON DWG. EO-13775-B AND CON-ED SPECS. EO-12482-B, EO-5015, EO-6229 CONCERNING CONCRETE PADS FOR 3-PHASE MOUNTED TRANSFORMERS.
 - ALL DIMENSIONS TO BE FIELD VERIFIED.

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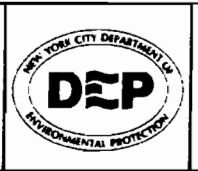
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NO.	DATE	BY	REMARKS

DES: LE
DWN: ZK
CKD: HMS



MALCOLM PIRNIE

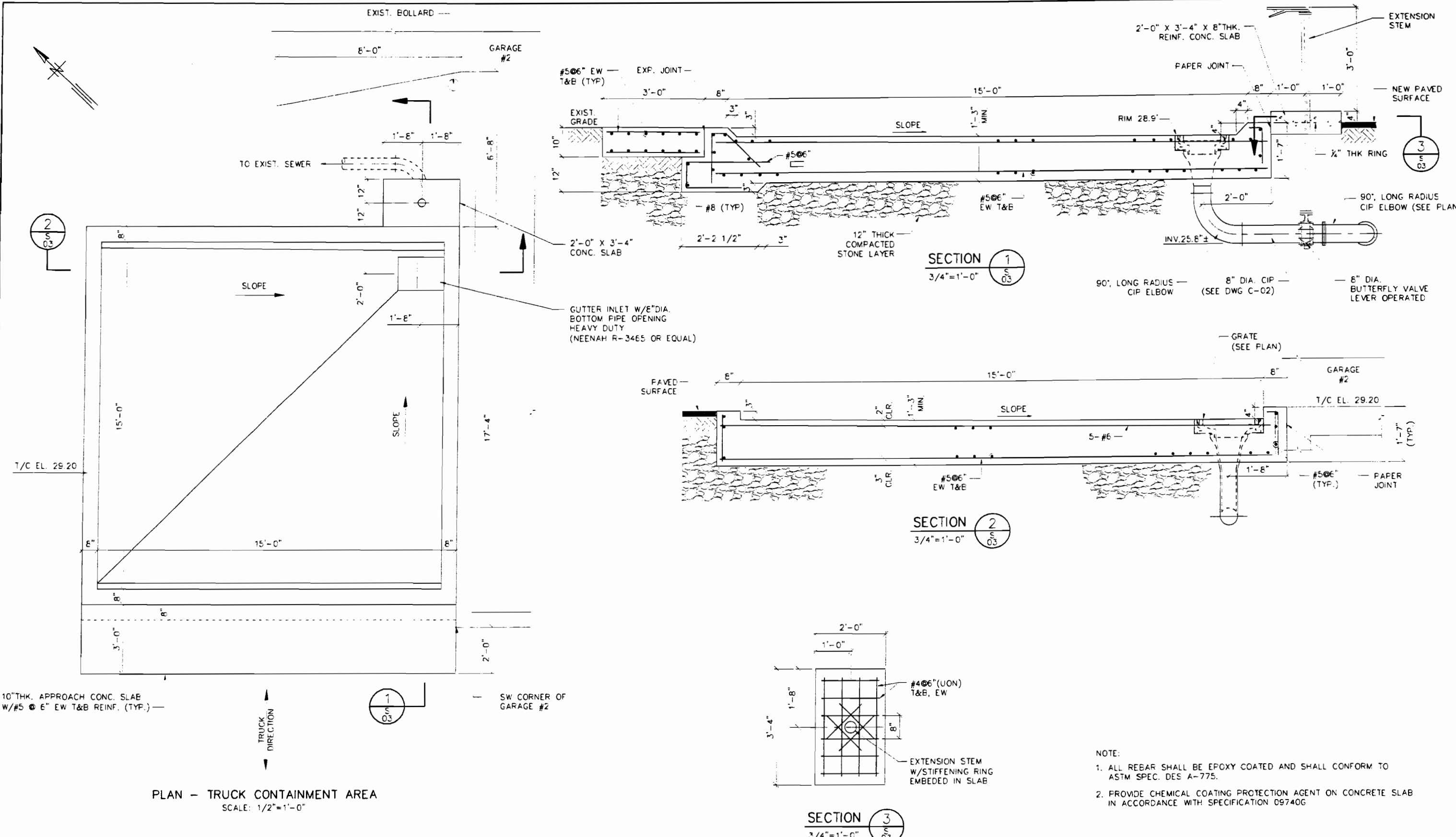
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BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

STATION 24
STRUCTURAL
MISC. EQUIPMENT
SUPPORT PADS
SCALE AS SHOWN

DATE: FEBRUARY 2007
DWG. NO.: S-02



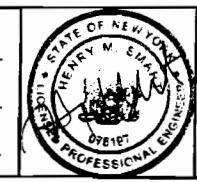
PLAN - TRUCK CONTAINMENT AREA
SCALE: 1/2"=1'-0"

- NOTE:
1. ALL REBAR SHALL BE EPOXY COATED AND SHALL CONFORM TO ASTM SPEC. DES A-775.
 2. PROVIDE CHEMICAL COATING PROTECTION AGENT ON CONCRETE SLAB IN ACCORDANCE WITH SPECIFICATION 09740G

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Consulting Engineers

NO.	BY	DATE	REVISIONS

DES: LB
DWG: ZK
CHK: HMS



MALCOLM PIRNIE

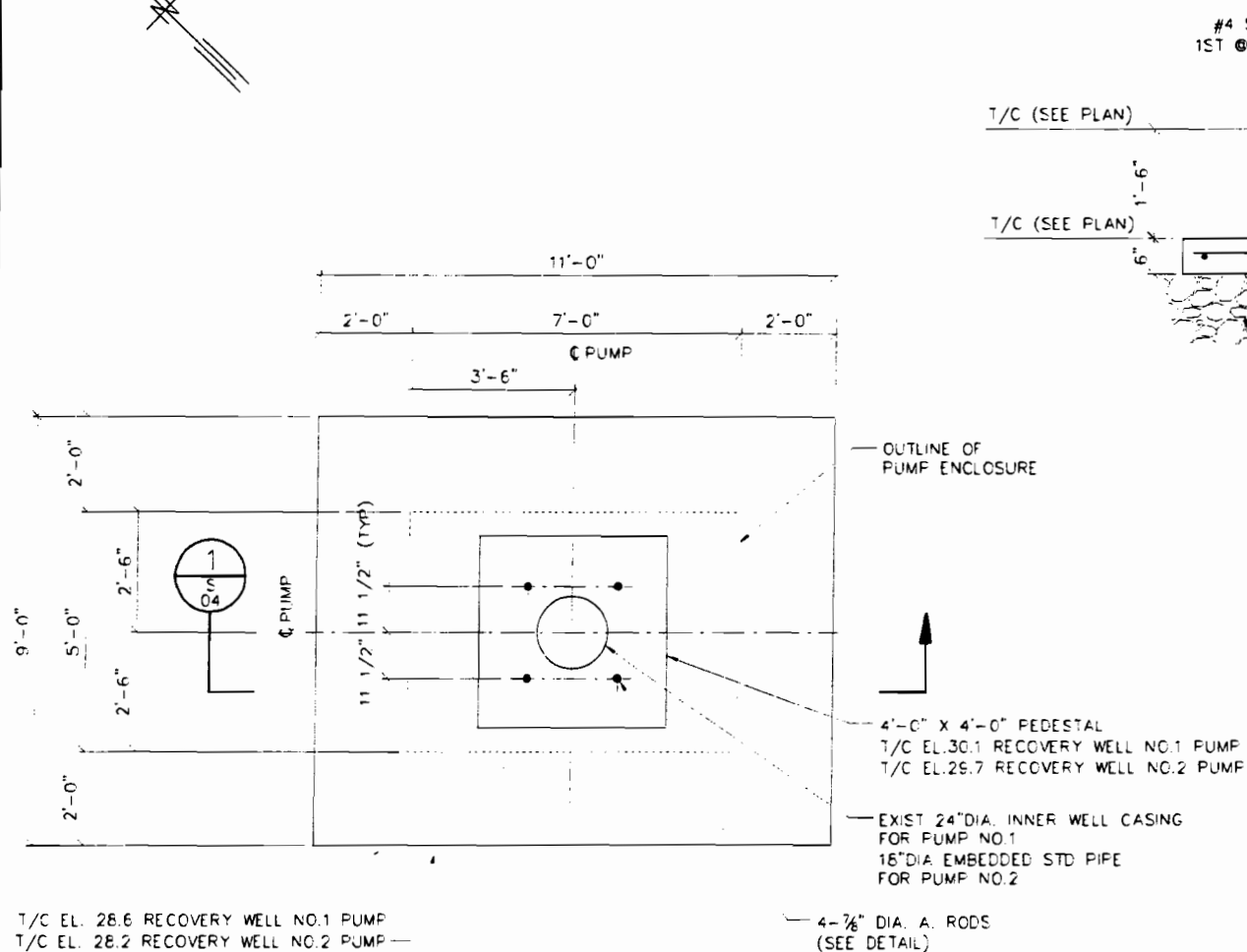
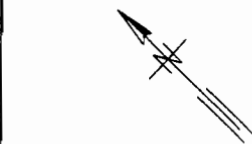
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STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

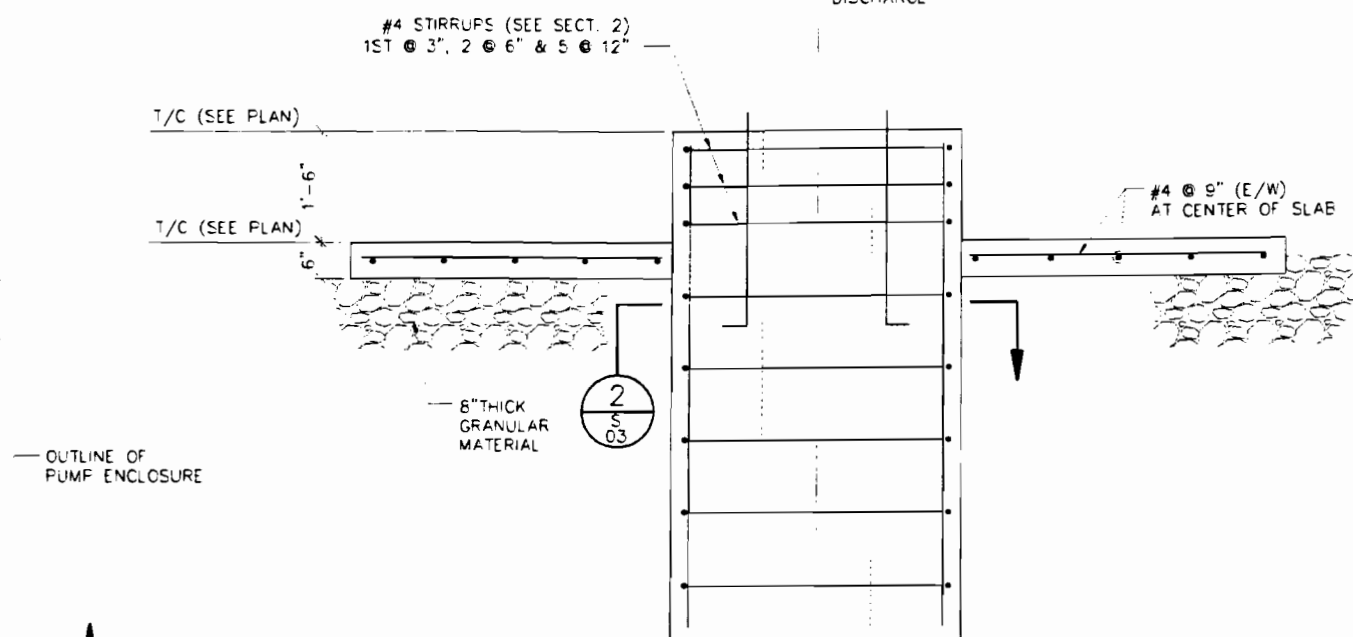
STATION 24
STRUCTURAL
TRUCK CONTAINMENT AREA
PLAN
SCALE AS SHOWN

DATE: FEBRUARY 2007
DWG. NO.: S-03

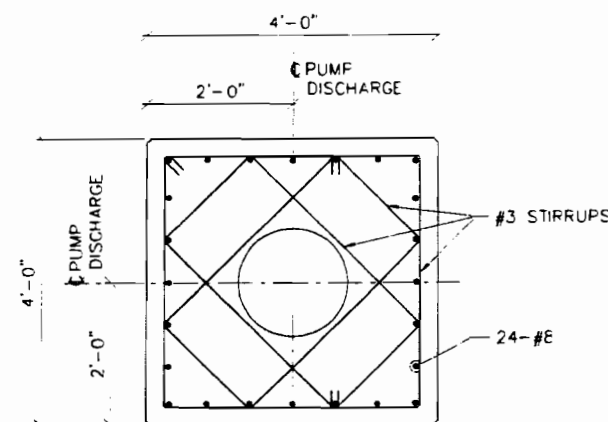


PLAN - PUMP BASE
RECOVERY WELL NO.2 & NO.1
SCALE: 1/2"=1'-0"

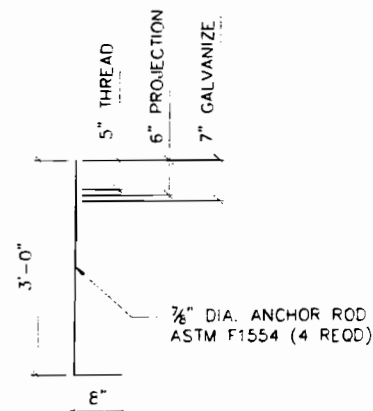
NOTE:
PUMP BASE AT
RECOVERY WELL
NO.1 IS EXISTING



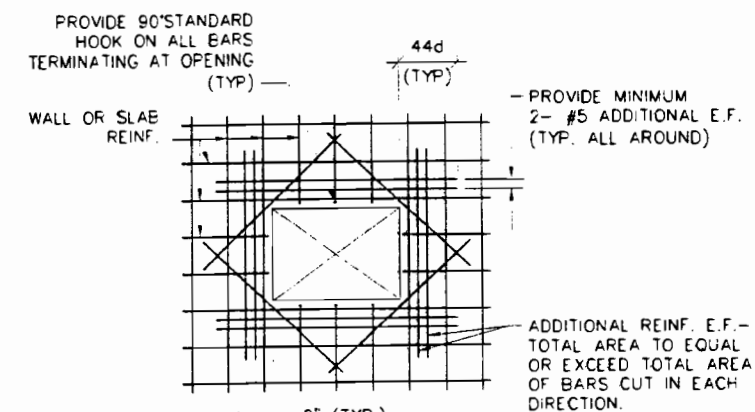
SECTION 1
3/4"=1'-0"



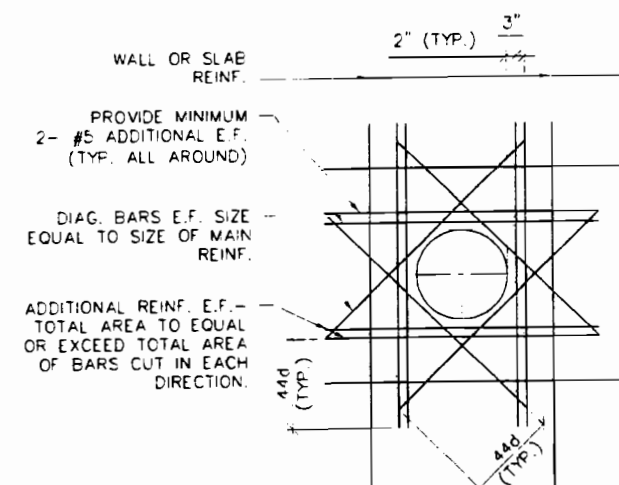
SECTION 2
3/4"=1'-0"



TYPICAL ANCHOR ROD DETAIL
SCALE: 3/4"=1'-0"



RECTANGULAR (8" SQ. OR LARGER)



CIRCULAR (8" Ø OR LARGER)

REINF. AT OPENINGS IN WALLS AND SLABS
SCALE: 1/2"=1'-0"

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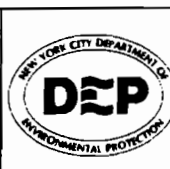
REVISIONS			
NO.	BY	DATE	REMARKS

DES LB
OWN ZK
CHK HMS



MALCOLM
PIRNIE

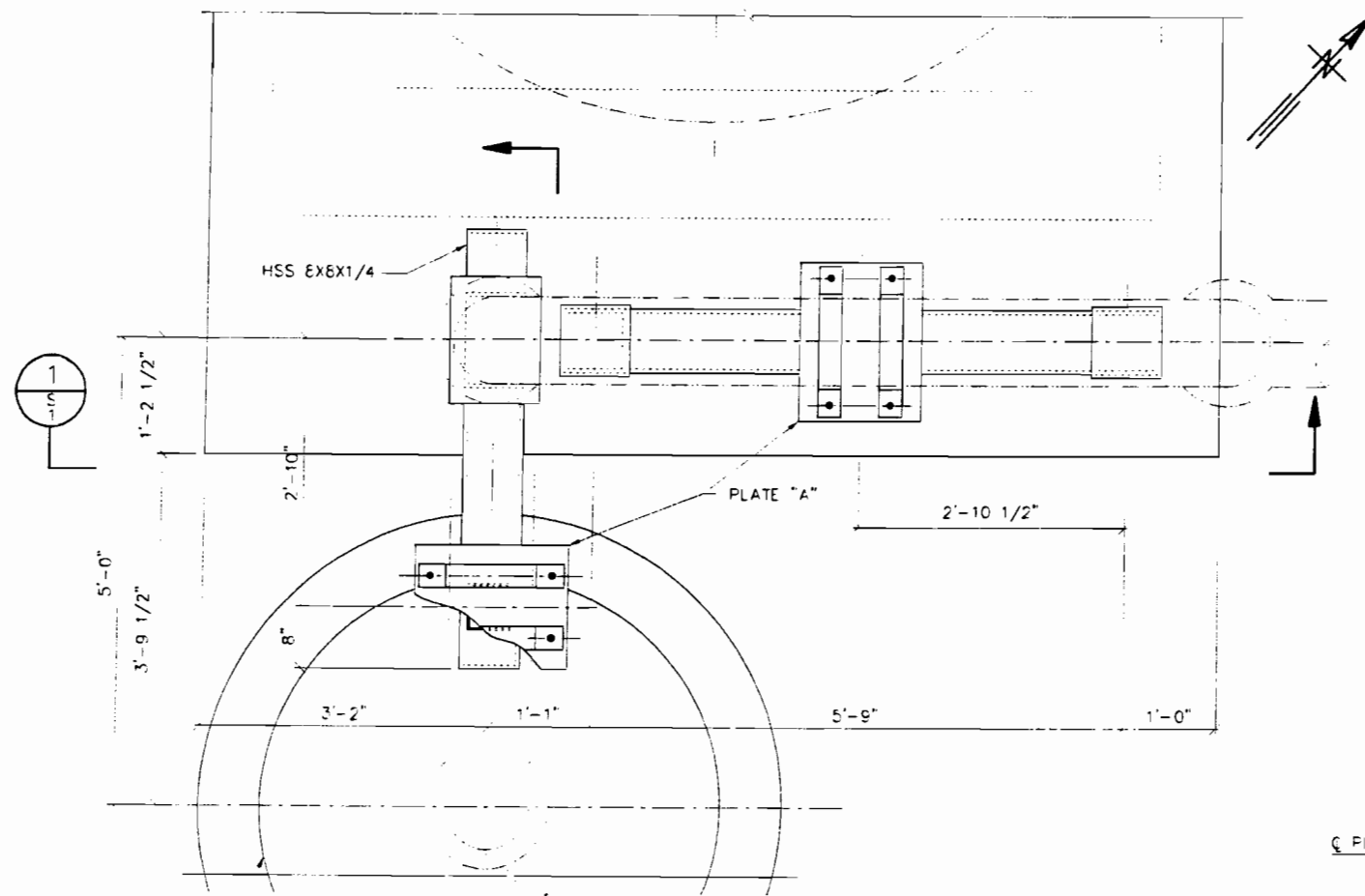
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STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

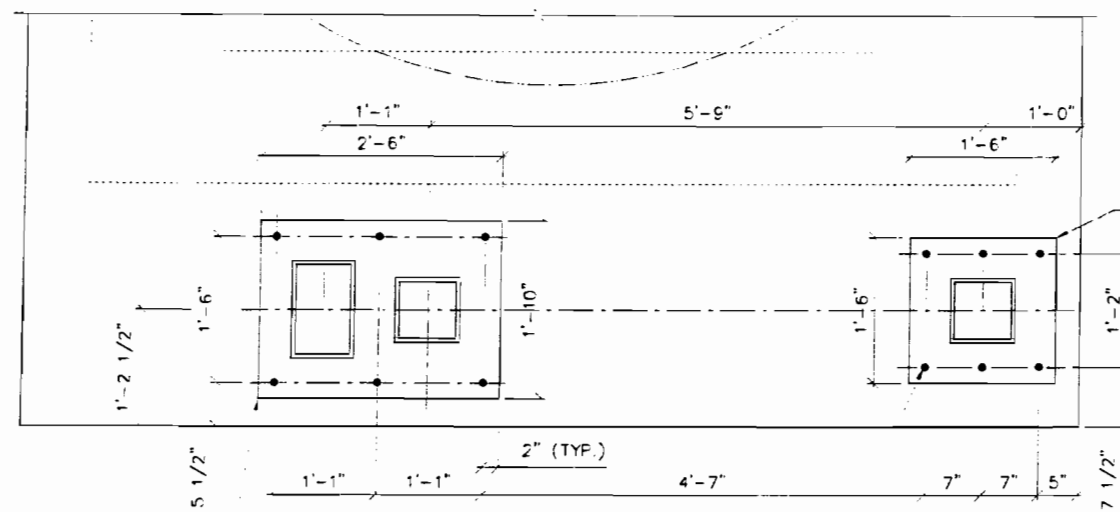
STATION 24
STRUCTURAL
PUMP BASE PLAN
SECTIONS & MISC. DETAILS
SCALE AS SHOWN

DATE: FEBRUARY 2007
DWG. NO.: S-04



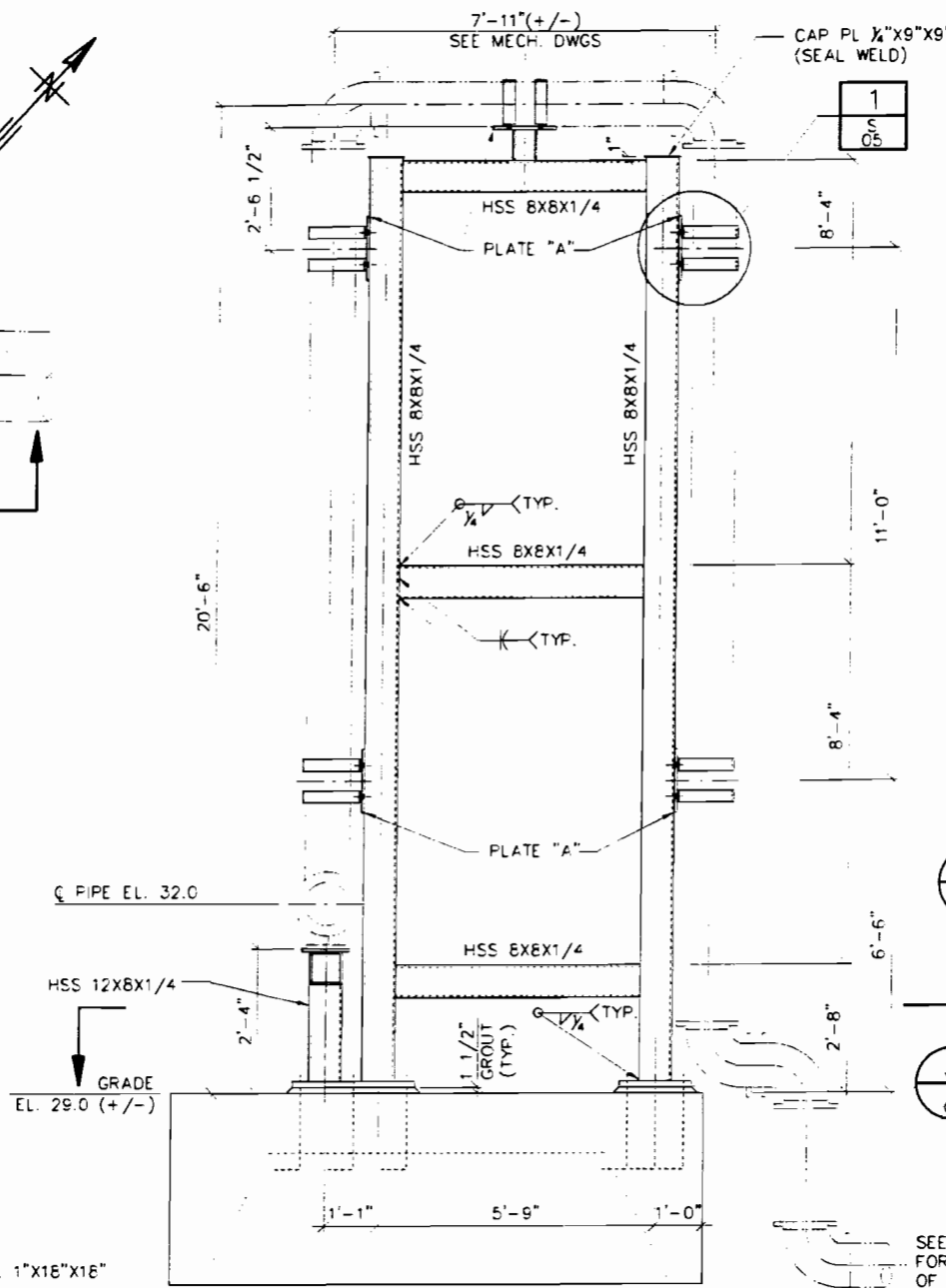
BLOW-OFF SUMP —
(SEE DWG. C-02)

2
S-05
PARTIAL TOP PLAN
SCALE: 1"=1'-0"

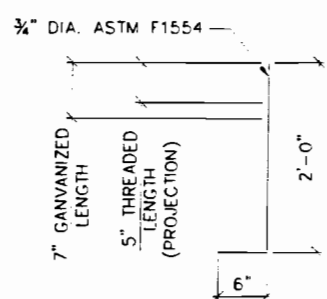


3
S-05
SECTION
1"=1'-0"

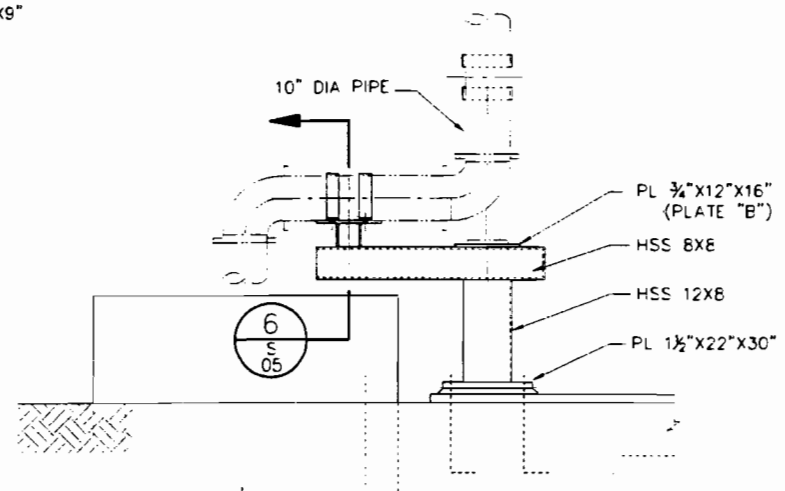
1" DIA HOLES ON PLATE
FOR 3/4" DIA ASTM F1554
ANCHOR RODS (TYP.)



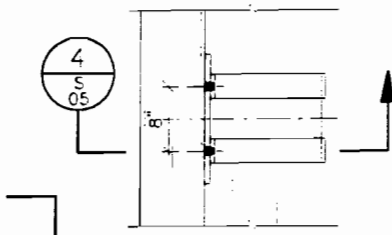
1
S-05
SECTION
1/2"=1'-0"



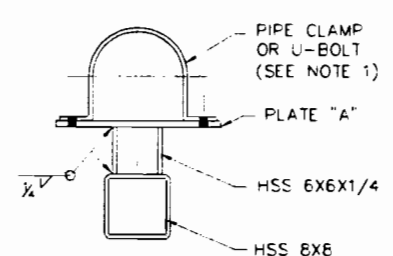
TYPICAL ANCHOR ROD (12 REQ'D)
SCALE: 1"=1'-0"



2
S-05
SECTION
1/2"=1'-0"

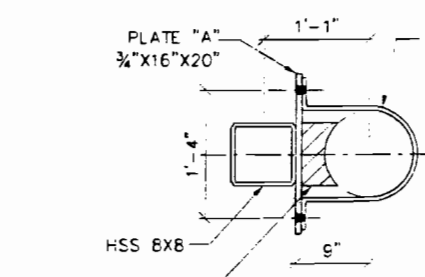


1
S-05
DETAIL
1"=1'-0"

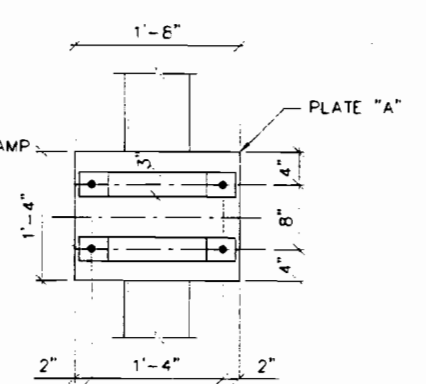


6
S-05
SECTION
1"=1'-0"

SEE SHEET M-02
FOR CONTINUATION
OF PIPING



4
S-05
SECTION
1"=1'-0"



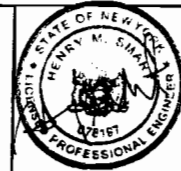
5
S-05
SECTION
1"=1'-0"

NOTE:
1. PIPE CLAMPS SHOWN ARE FOR REFERENCE ONLY
U-BOLTS CAN ALSO BE USED PROVIDED HOLE
DISTANCES AT PLATE 'A' ARE SET TO MATCH
U-BOLT SEPARATION.

Tucker, Young, Jackson, Tull Inc.
Consulting Engineers

REVISIONS			
NO.	BY	DATE	REMARKS

DES: LE
DWN: ZK
CHK: HMS



**MALCOLM
PIRNIE**

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EDWARD J. COLEMAN, P.E.
DIRECTOR OF DISTRIBUTION
OPERATIONS
BUREAU OF
WATER AND SEWER OPERATIONS



CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

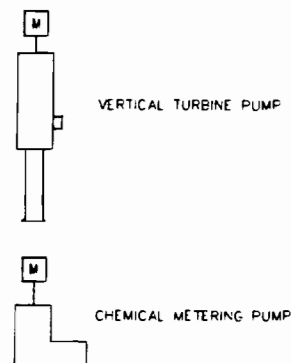
STATION 24
STRUCTURAL
TREATED WATER PIPE SUPPORT
PLAN, ELEVATION & SECTIONS
SCALE AS SHOWN

DATE: FEBRUARY 2007
DWG. NO.: S-05

INSTRUMENT IDENTIFICATION LEGEND

FIRST LETTER		SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A ANALYSIS		ALARM		
B BURNER FLAME		NOT USED	NOT USED	NOT USED
C CONDUCTIVITY (ELECTRICAL)			CONTROL	CLOSED
D DENSITY (MASS) OR DIFFERENTIAL SPECIFIC GRAVITY				
E VOLTAGE (EMF)		PRIMARY ELEMENT		
F FLOW RATE	RATIO (FRACTION)			
G GAUGING (DIMENSIONAL)		GLASS GAGE (UNCALIBRATED)		
H HAND (MANUALLY INITIATED)				HIGH
I CURRENT (ELECTRICAL)		INDICATE		
J POWER	SCAN			
K TIME OR TIME SCHEDULE			CONTROL STATION	
L LEVEL		LIGHT (PILOT)		LOW
M MOISTURE OR HUMIDITY				MIDDLE OR INTER-MEDIATE
N SEQUENCE		NOT USED	NOT USED	NOT USED
O NOT USED		ORIFICE (RESTRICTION)		OPEN
P PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q QUANTITY	INTEGRATE OR TOTALIZE			
R RADIOACTIVITY		RECORD OR PRINT		
S SPEED, FREQUENCY	SAFETY		SWITCH	
T TEMPERATURE			TRANSMIT	
U MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V VIBRATION			VALVE, DAMPER OR LOUVER	
W WEIGHT OR FORCE		WELL		
X UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y EVENT STATUS	Y AXIS		RELAY OR COMPUTE	
Z POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

EQUIPMENT SYMBOLS



ABBREVIATIONS

Kw	KILOWATTS
Kva	KILOVOLT AMPS
CBV	CABLE BY VENDOR
PLC	PROGRAMMABLE LOGIC CONTROLLER
OIT	OPERATOR INTERFACE TERMINALS
CPU	CENTRAL PROCESSOR UNIT
PMCS	PLANT MONITORING AND CONTROL SYSTEM

INSTRUMENT SYMBOLS

	POINT OF SHARED VIDEO DISPLAY (OIT) (FUNCTIONS IN PROGRAMABLE LOGIC CONTROLLER - PLC)
	AS ABOVE WITH LIMITED ACCESS
	PLC LOGIC DESCRIBED IN INTERLOCK NOTE #
	INSTRUMENT PANEL FACE MOUNTED
	INSTRUMENT RELAY MOUNTED IN REAR OF PANEL (BROKEN LINE) ACTIVATES AND DEACTIVATES CONTROL AND/OR ALARM SWITCHES AT PRESET SIGNAL VALUES. SEE BELOW FOR FUNCTIONS (X).
	DIFFERENCE
	HIGH SELECTOR
	LOW SELECTOR
	PNEUMATIC/CURRENT CONVERTER
	CURRENT/CURRENT CONVERTER (REPEATER)
	SUMMATION
	AVERAGE
	RATIO
	FLOW INDICATING TRANSMITTER
	FIELD MOUNTED POWER SUPPLY REQUIRED LOCALLY WHERE SHOWN.
	MAGNETIC FLOW TUBE
	FIELD INSTRUMENT
	120V AC POWER SUPPLY
	RELAY LOGIC

INSTRUMENT SYMBOLS

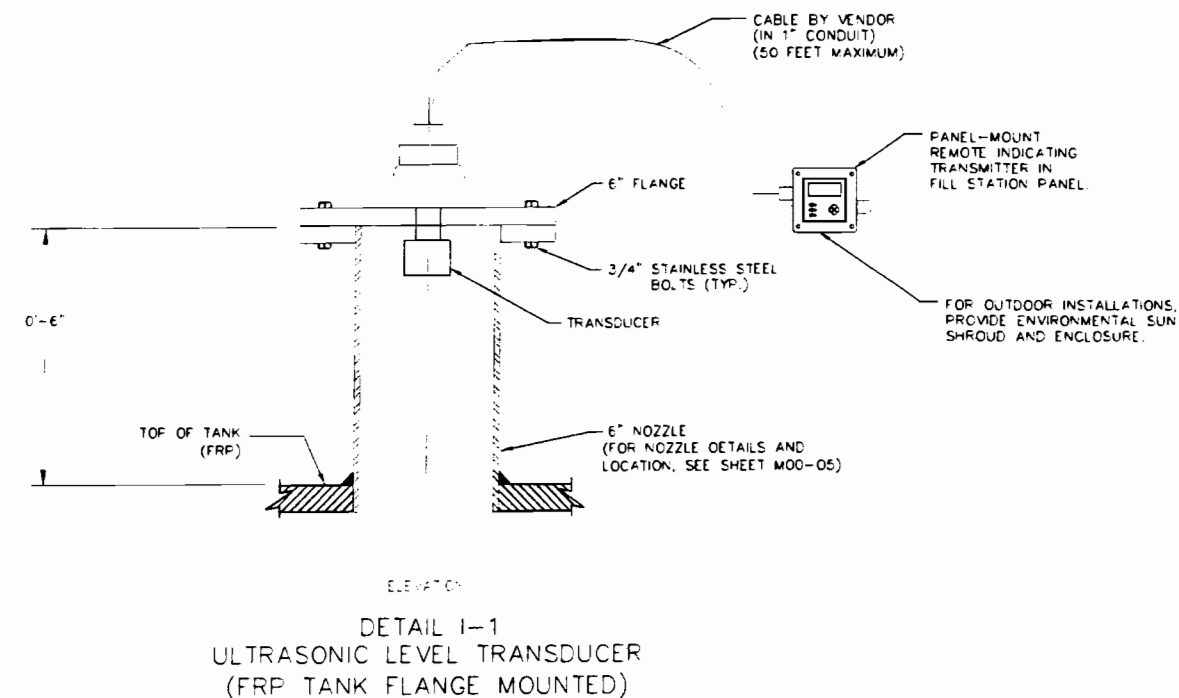
	GATE VALVE
	GLOBE VALVE
	PLUG VALVE
	DIAPHRAGM VALVE
	BUTTERFLY VALVE
	BALL VALVE
	PINCH VALVE
	NEEDLE VALVE
	CHECK VALVE
	3-WAY VALVE
	RELIEF VALVE
	PRESSURE SELF REGULATING VALVE
	BACK PRESSURE SELF REGULATING VALVE
	NORMALLY CLOSED VALVE (TYPICAL FOR ANY VALVE)
	DRAIN
	FLEXIBLE CONNECTION

PANEL INSTRUMENT SYMBOLS

	STROBE LIGHT/ROTATING BEACON A - AMBER W - WHITE R - RED C - CLEAR G - GREEN
	ALARM HORN
	INDICATING LIGHT UNIT R-RED (RUN, START, OPEN) G-GREEN (OFF, STOP, CLOSE) W-WHITE A-AMBER (ALARM CONDITION) F-FLASHING
	PUSHBUTTONS (IF ILLUMINATED, LETTER DENOTES COLOR)
	HAND (MANUAL) SELECTOR SWITCH FUNCTIONS FOR HAND SWITCH AND PUSHBUTTON CONTROLS
	A/O/T AUTO-OFF-TEST
	F/R FORWARD-REVERSE
	F/O/S FORWARD-OFF-STOP
	F/S/R FORWARD-STOP-REVERSE
	H/O/A HAND-OFF-AUTO
	H/O/SBY HAND-OFF-STANDBY
	L/O/R LOCAL-OFF-REMOTE
	L/R LOCAL-REMOTE
	M/C MANUAL-COMPUTER
	M/A MANUAL-AUTO
	O/C OPEN-CLOSE
	O/C/A OPEN-CLOSE-AUTO
	O/C/T ON-OFF-TEST
	O/S/C OPEN-STOP-CLOSE
	RESET
	SLOW/FAST/STOP
	SPEED CONTROL POTENTIOMETER
	START-STOP
	START-STOP WITH LOCKOUT
	STOP WITH LOCKOUT

MISCELLANEOUS SYMBOLS

	PULSATION DAMPENER
	SOLENOID ACTUATOR
	ELECTRIC MOTOR AND VARIABLE FREQUENCY DRIVE



REV	DATE	REVISIONS
1	02/01/2007	ISSUED FOR CONSTRUCTION

DES	DAD
DMN	DAD
END	JUC



**MALCOLM
PIRNIE**

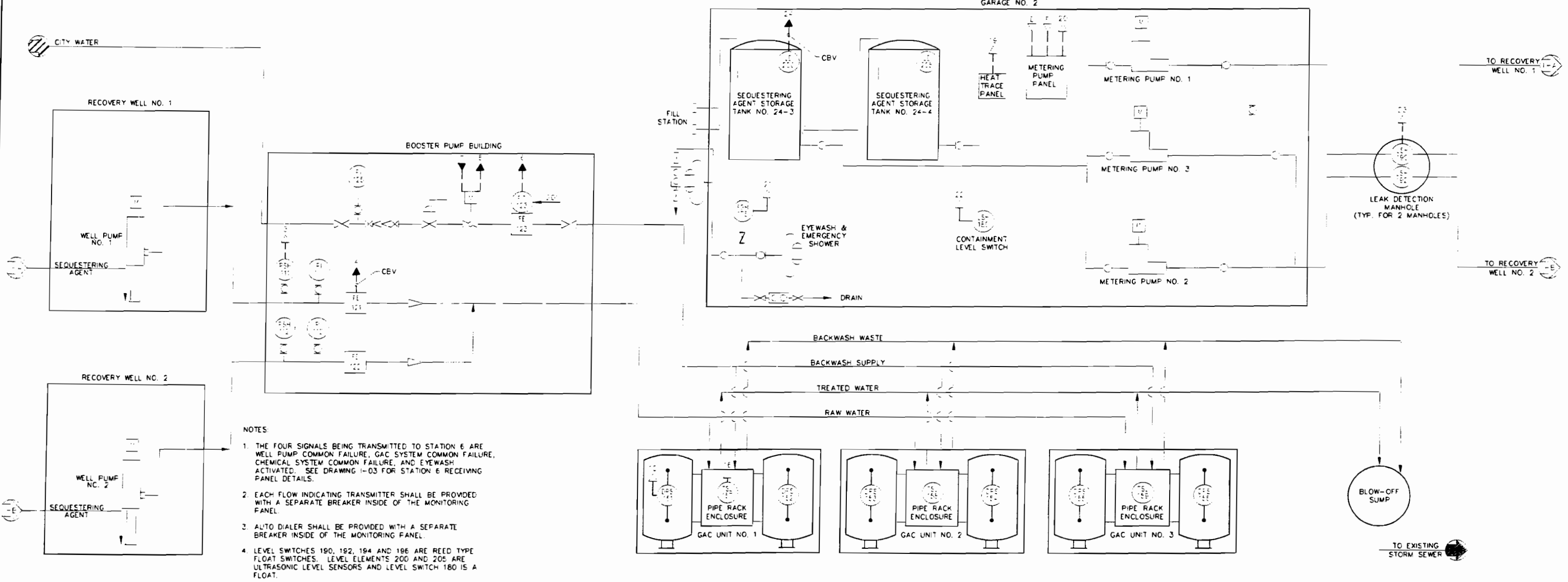
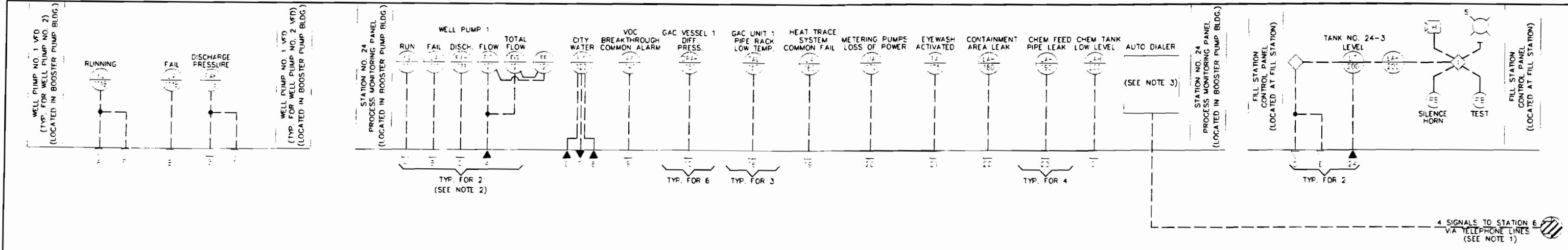
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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

STATION 24
INSTRUMENTATION
SYMBOLS, LEGEND AND
MOUNTING DETAILS
NOT TO SCALE

DATE: FEBRUARY 2007
DWG. NO.: I-01



- NOTES
1. THE FOUR SIGNALS BEING TRANSMITTED TO STATION 6 ARE WELL PUMP COMMON FAILURE, GAC SYSTEM COMMON FAILURE, CHEMICAL SYSTEM COMMON FAILURE, AND EYEWASH ACTIVATED. SEE DRAWING I-03 FOR STATION 6 RECEIVING PANEL DETAILS.
 2. EACH FLOW INDICATING TRANSMITTER SHALL BE PROVIDED WITH A SEPARATE BREAKER INSIDE OF THE MONITORING PANEL.
 3. AUTO DIALER SHALL BE PROVIDED WITH A SEPARATE BREAKER INSIDE OF THE MONITORING PANEL.
 4. LEVEL SWITCHES 190, 192, 194 AND 196 ARE REED TYPE FLOAT SWITCHES. LEVEL ELEMENTS 200 AND 205 ARE ULTRASONIC LEVEL SENSORS AND LEVEL SWITCH 180 IS A FLOAT.

IT IS A VIOLATION OF SECTION 2209.3 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY MANNER, SPECIFICATIONS, PLANS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL, AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REVISIONS			
NO.	BY	DATE	REMARKS

DES DAD
DWN DAD
APP JJC



**MALCOLM
PIRNIE**

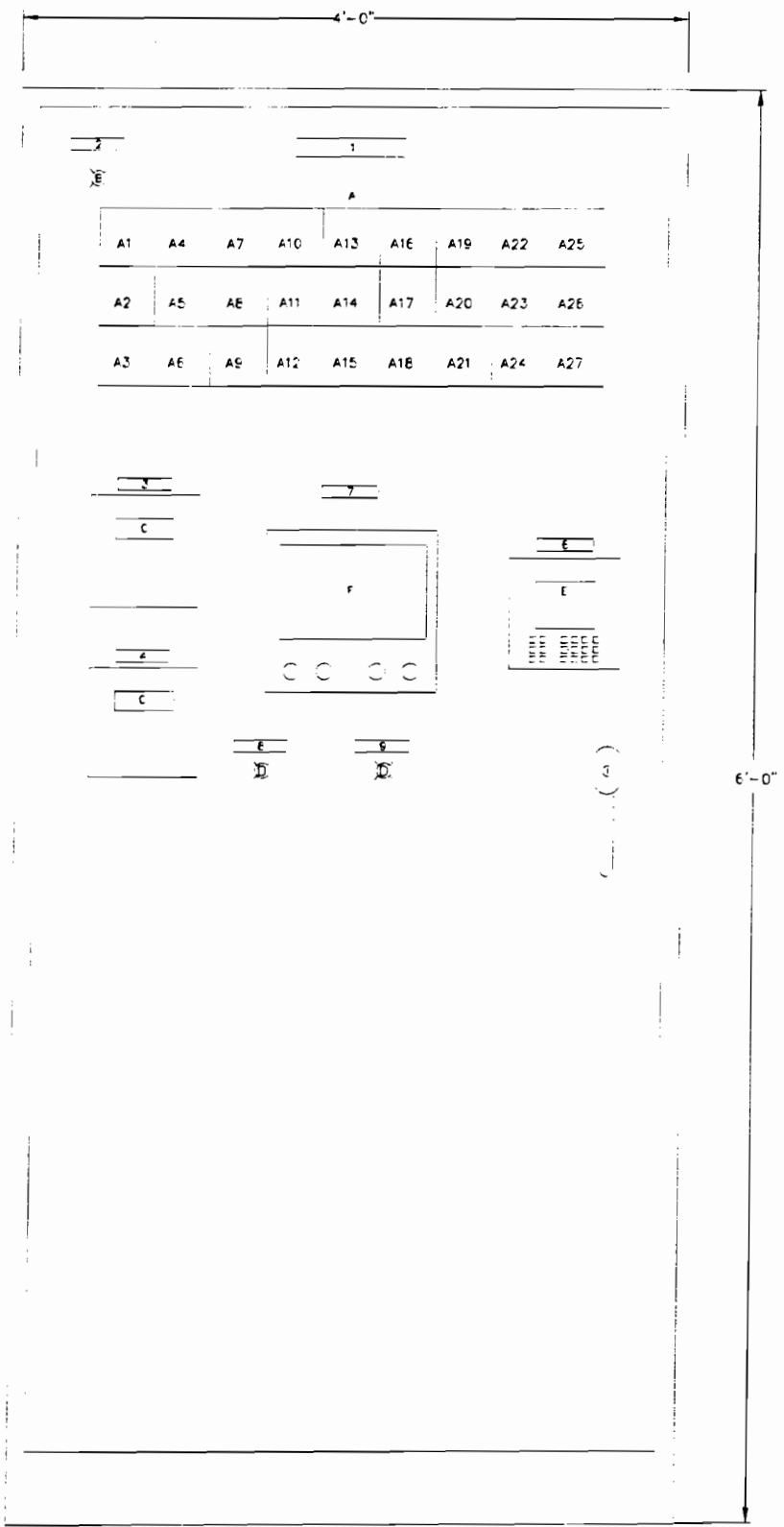
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BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13G

STATION 24
INSTRUMENTATION
CHEMICAL FEED AND
TELEMETRY SYSTEM P&ID
NOT TO SCALE

DATE: FEBRUARY 2007
DWG. NO.: I-02



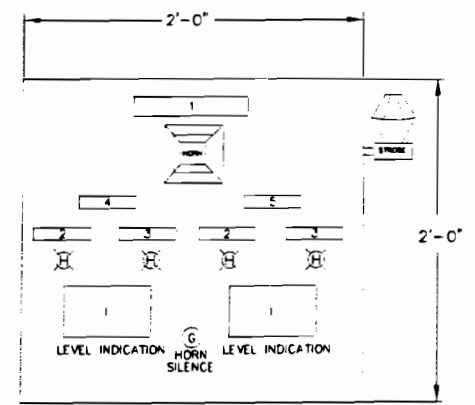
ELEVATION
STATION NO. 24
PROCESS MONITORING PANEL

INSTRUMENT/DEVICE SCHEDULE (FOR ALL PANELS)	
A	ANNUNCIATOR
B	INDICATING LIGHT - WHITE
C	FLOW INDICATING TRANSMITTER
D	INDICATING LIGHT - RED
E	FLOW INDICATING CONTROLLER
F	FLOW DATA LOGGER/TOTALIZER
G	PUSHBUTTON
H	INDICATING LIGHT - AMBER
I	LEVEL INDICATING TRANSMITTER

STATION 24 PROCESS MONITORING PANEL NAMEPLATE SCHEDULE	
NO.	ENGRAVING
1	STATION 24 PROCESS MONITORING PANEL
2	POWER
3	WELL NO. 1 - FLOW
4	WELL NO. 2 - FLOW
5	WELL FLOW RECORDER
6	CITY WATER FLOW
7	WELL NO. 1 & NO. 2 - TOTAL FLOW
8	WELL PUMP NO. 1 RUN
9	WELL PUMP NO. 2 RUN

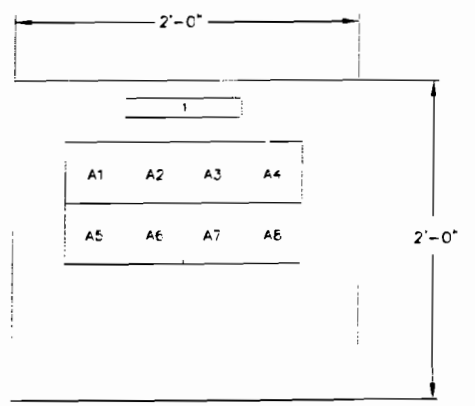
STATION 24 PROCESS MONITORING PANEL ANNUNCIATOR ALARM SCHEDULE	
NO.	ENGRAVING
A1	WELL PUMP NO. 1 - FAIL
A2	WELL PUMP NO. 1 - HIGH DISCHARGE PRESSURE
A3	SPARE
A4	WELL PUMP NO. 2 - FAIL
A5	WELL PUMP NO. 2 - HIGH DISCHARGE PRESSURE
A6	SPARE
A7	GAC VESSEL NO. 1 HIGH DIFF. PRESSURE
A8	GAC VESSEL NO. 2 HIGH DIFF. PRESSURE
A9	GAC VESSEL NO. 3 HIGH DIFF. PRESSURE
A10	GAC VESSEL NO. 4 HIGH DIFF. PRESSURE
A11	GAC VESSEL NO. 5 HIGH DIFF. PRESSURE
A12	GAC VESSEL NO. 6 HIGH DIFF. PRESSURE
A13	GAC UNIT NO. 1 - LOW TEMP. ALARM
A14	GAC UNIT NO. 2 - LOW TEMP. ALARM
A15	GAC UNIT NO. 3 - LOW TEMP. ALARM
A16	CHEMICAL TANK NO. 24-3 LOW LEVEL
A17	CHEMICAL TANK NO. 24-4 LOW LEVEL
A18	METERING PUMPS LOSS OF POWER
A19	CONTAINMENT AREA LEAK
A20	EYEWASH ACTIVATED
A21	HEAT TRACE SYSTEM COMMON FAIL
A22	CHEMICAL LEAK WELL 1 SUMP 1
A23	CHEMICAL LEAK WELL 1 SUMP 2
A24	SPARE
A25	CHEMICAL LEAK WELL 2 SUMP 1
A26	CHEMICAL LEAK WELL 2 SUMP 2
A27	TEST, RESET, AND ACKNOWLEDGE PUSH BUTTONS

NOTES:
 1. STATION 24 MONITORING PANEL SHALL BE 1'-6" DEEP.
 2. FILL STATION CONTROL PANEL SHALL BE 12" DEEP.
 3. STATION 6 ALARM PANEL SHALL BE 1'-6" DEEP.
 4. MOUNT PANELS IN LOCATIONS SHOWN ON ELECTRICAL DRAWING.
 5. G CONTRACTOR SHALL PROVIDE POWER AND TELEPHONE SERVICE TO PANEL LOCATED AT STATION 6 AND COORDINATE INSTALLATION LOCATION WITH ENGINEER.



ELEVATION
FILL STATION CONTROL PANEL

FILL STATION CONTROL PANEL NAMEPLATE SCHEDULE	
NO.	ENGRAVING
1	FILL STATION CONTROL PANEL
2	TANK HIGH LEVEL
3	TANK HIGH-HIGH LEVEL
4	TANK NO. 24-3
5	TANK NO. 24-4



ELEVATION
STATION 24 ALARM PANEL
(LOCATED AT STATION 6)

STATION 24 ALARM PANEL NAMEPLATE SCHEDULE	
NO.	ENGRAVING
1	STATION 24 ALARM PANEL

STATION 24 ANNUNCIATOR ALARM SCHEDULE	
NO.	ENGRAVING
A1	WELL PUMP COMMON FAILURE
A2	GAC SYSTEM COMMON FAILURE
A3	CHEMICAL SYSTEM COMMON FAILURE
A4	SPARE
A5	EYEWASH ACTIVATED
A6	SPARE
A7	SPARE
A8	TEST, RESET, AND ACKNOWLEDGE PUSH BUTTONS

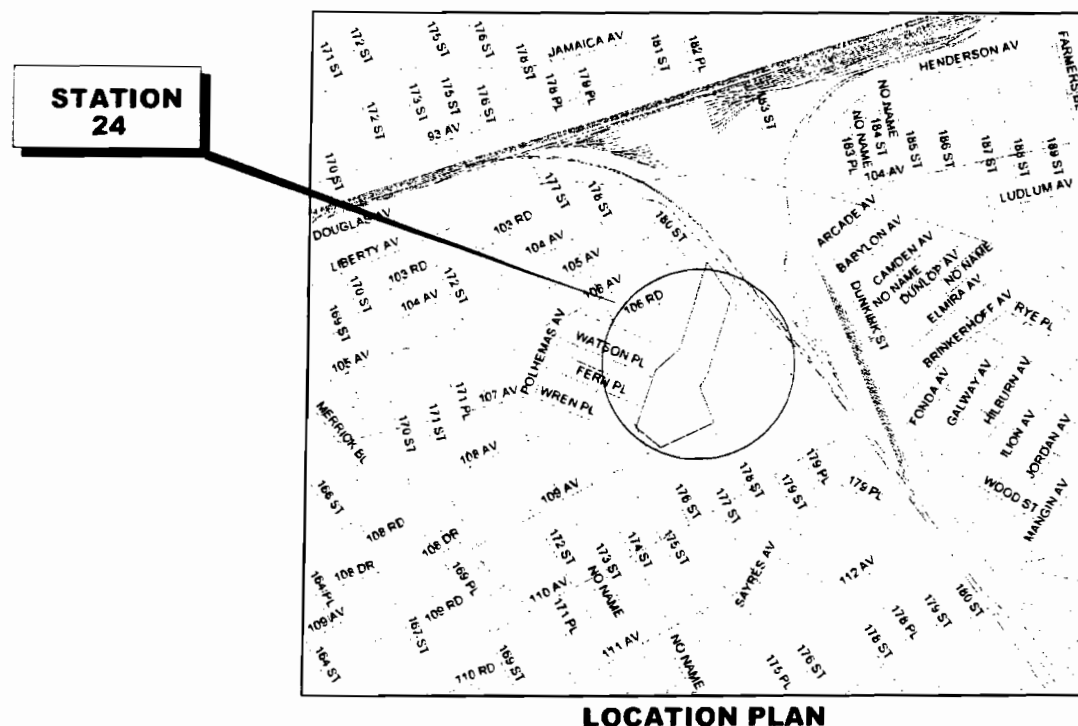
CITY OF NEW YORK DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER AND SEWER OPERATIONS

IN THE BOROUGH OF QUEENS, NEW YORK

SYSOPS - 13E - ELECTRICAL

STATION 24 GROUNDWATER REMEDIATION PROJECT

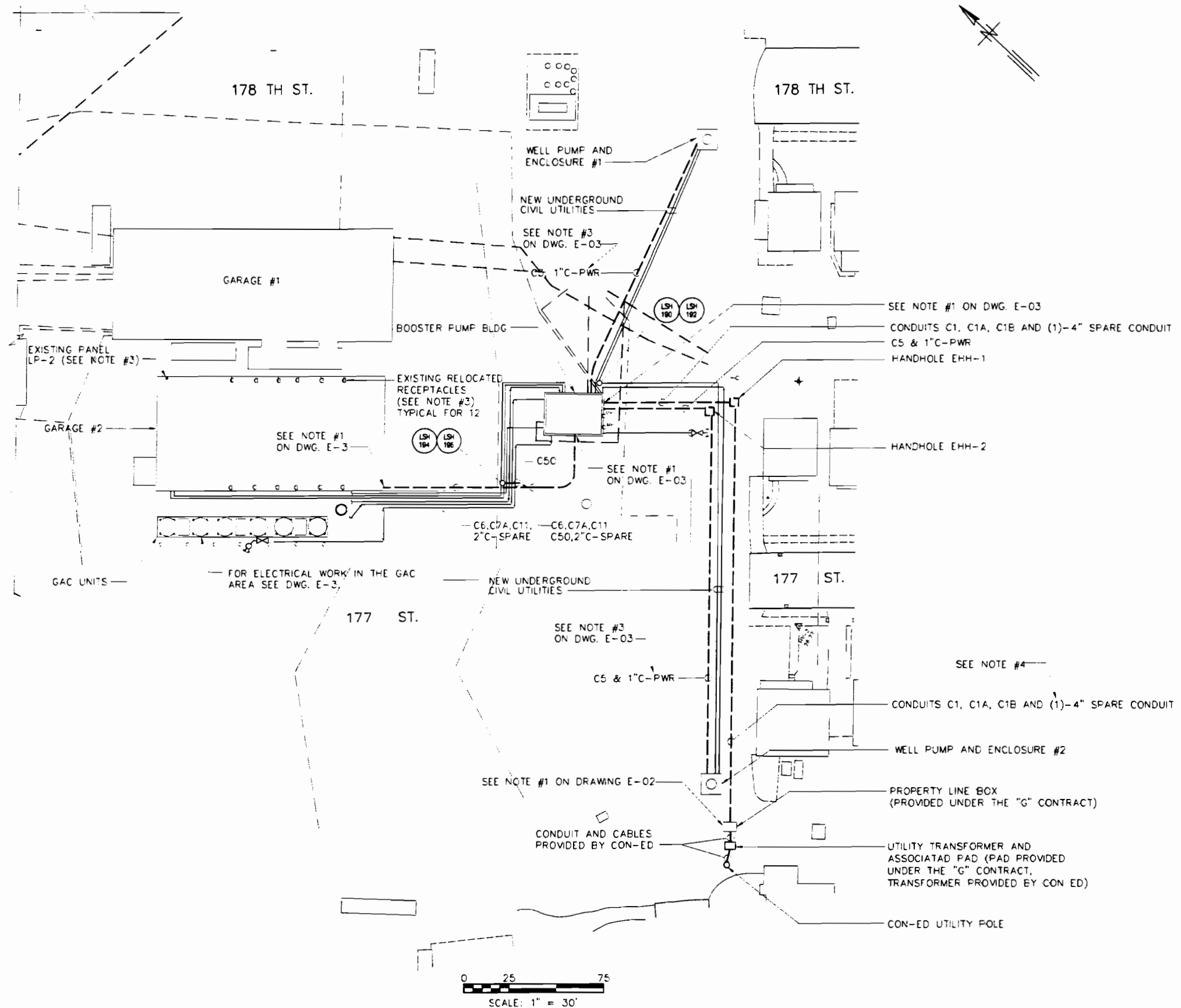
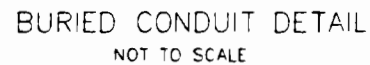
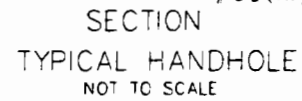
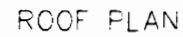
FEBRUARY 2007



INDEX OF DRAWINGS	
SHEET NO.	DRAWING TITLE
	ELECTRICAL
E-01	SITE PLAN
E-02	ONE LINE DIAGRAM AND FRONT VIEW
E-03	PARTIAL PLANS
E-04	BLOCK DIAGRAMS AND MISCELLANEOUS DETAILS

**MALCOLM PIRNIE, INC.
CONSULTING ENGINEERS
WHITE PLAINS, N.Y.**

1. ALL UNDERGROUND CONDUITS SHALL BE DIRECT BURIED RGS.
2. COORDINATE THE LOCATION OF UNDERGROUND CONDUITS WITH NEW AND EXISTING UTILITIES. REFER TO DRAWING C-02, "UTILITIES PLAN" FOR LOCATION OF NEW AND KNOWN EXISTING UTILITIES.
3. TWELVE EXISTING RECEPTACLES SHALL BE RELOCATED FROM OUTSIDE (SEE DWG E-03) TO INSIDE THE GARAGE. RECEPTACLES ARE POWERED FROM EXISTING LIGHTING PANEL LP-2. DEMOLISH EXISTING CONDUIT AND WIRING FROM PANEL TO RECEPTACLE. APPROXIMATE LOCATION OF RELOCATED RECEPTACLES ARE SHOWN. FINAL LOCATION SHALL BE PER THE OWNERS DIRECTION. RE-POWER THE RECEPTACLES FROM PANEL LP-2. PRESENTLY SIX 20 AMP BREAKERS ARE DEDICATED FOR THE RECEPTACLES. CONTRACTOR SHALL DEVELOP A CONDUIT SYSTEM AND SUBMIT TO ENGINEER FOR APPROVAL TO CONNECT THE RECEPTACLES. TWO RECEPTACLES PER CIRCUIT SHALL BE CONNECTED. MINIMUM SIZE CONDUIT SHALL BE 3/4" AND MINIMUM SIZE CONDUCTOR SHALL BE #10 AWG.
4. TRENCHING AND BACK FILL FOR UNDERGROUND CONDUITS SHALL BE PROVIDED UNDER CONTRACT SYSOPS-13G.
5. THE SYSOPS-13E CONTRACTOR SHALL BE RESPONSIBLE FOR ALL HEAT TRACING, CONTROLS AND RELATED ELECTRICAL WORK AS REQUIRED UNDER SPECIFICATION 15771G FOR HEAT TRACING SYSTEMS TO BE INSTALLED AT STATIONS 22 AND 52. THE SYSOPS-13G CONTRACTOR SHALL INSTALL ALL INSULATION AND ALUMINUM JACKETING AND PROVIDE ALL REQUIRED EXCAVATION. THE RESPECTIVE CONTRACTORS SHALL COORDINATE THIS WORK.

[illegible]

DES	GJM
DMM	GJM
CKD	PLD



**MALCOLM
PIRNIE**

APPROVED FOR THE CITY OF NEW YORK

Edward J. Coleman

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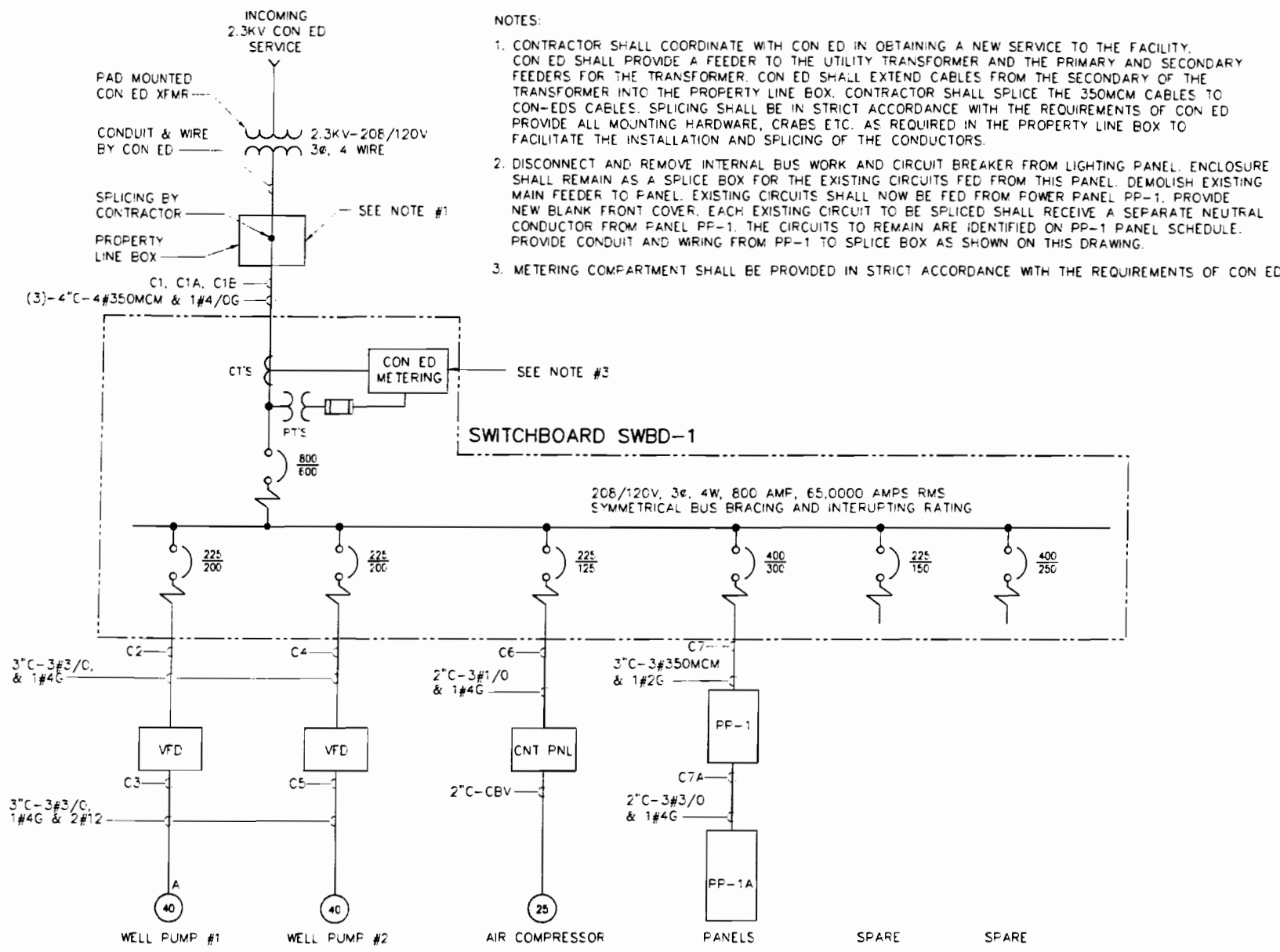


CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13E

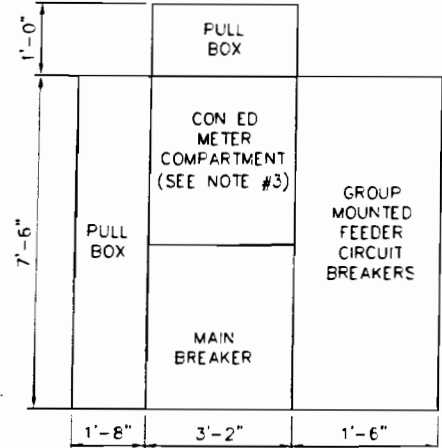
STATION 24
ELECTRICAL
SITE PLAN

SCALE: 1"=30'

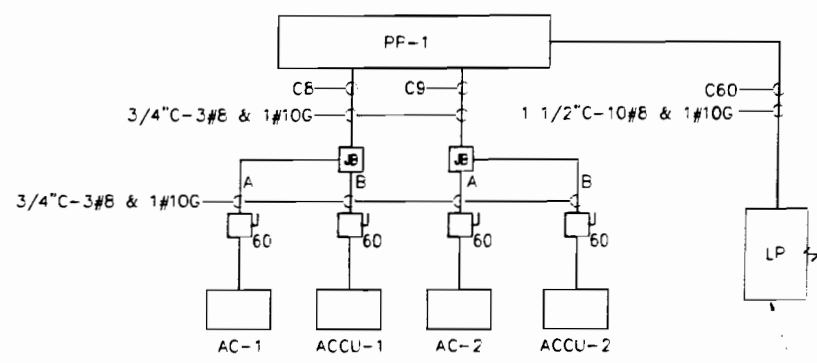
DATE: FEBRUARY 2007
DWG. NO.: E-01



SWITCHBOARD SWBD-1 ONE LINE DIAGRAM



SWITCHBOARD SWBD-1 FRONT VIEW



MISCELLANEOUS BLOCK DIAGRAM

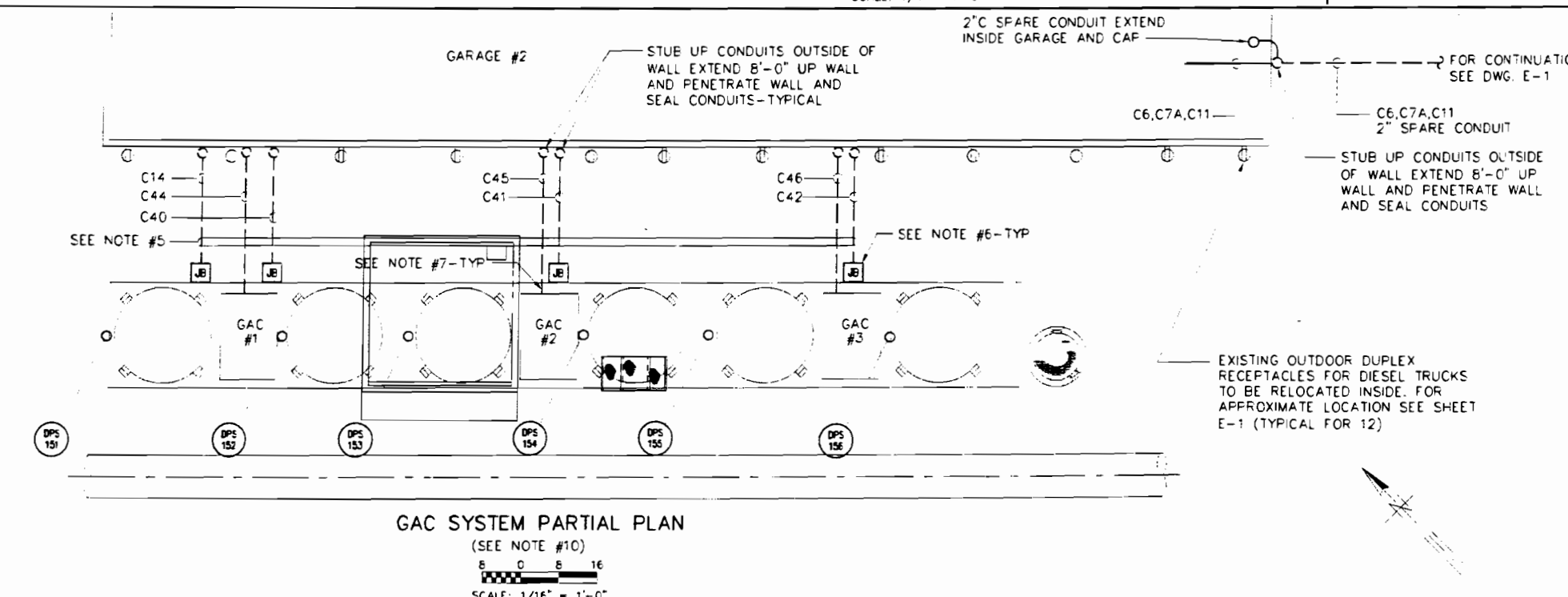
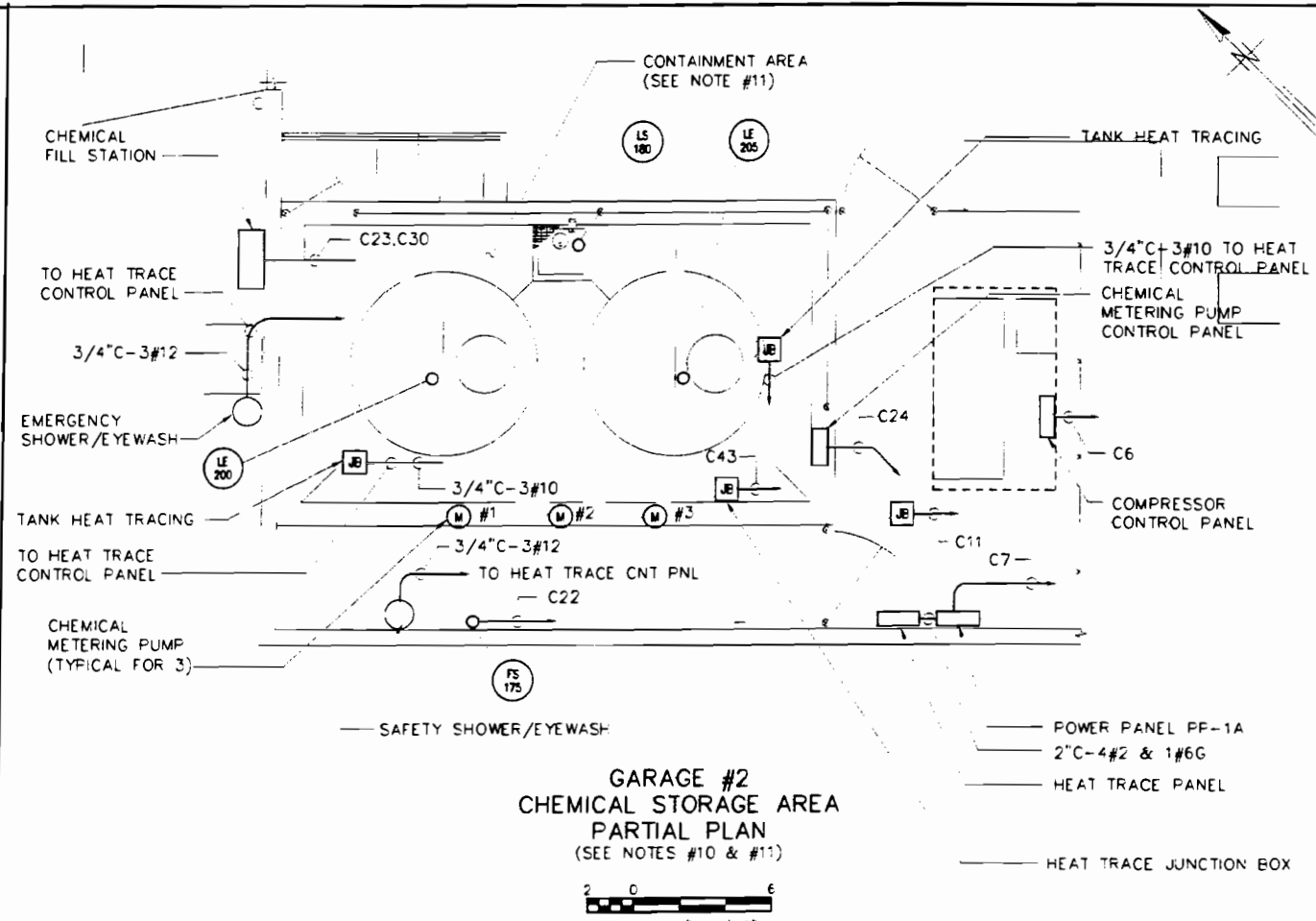
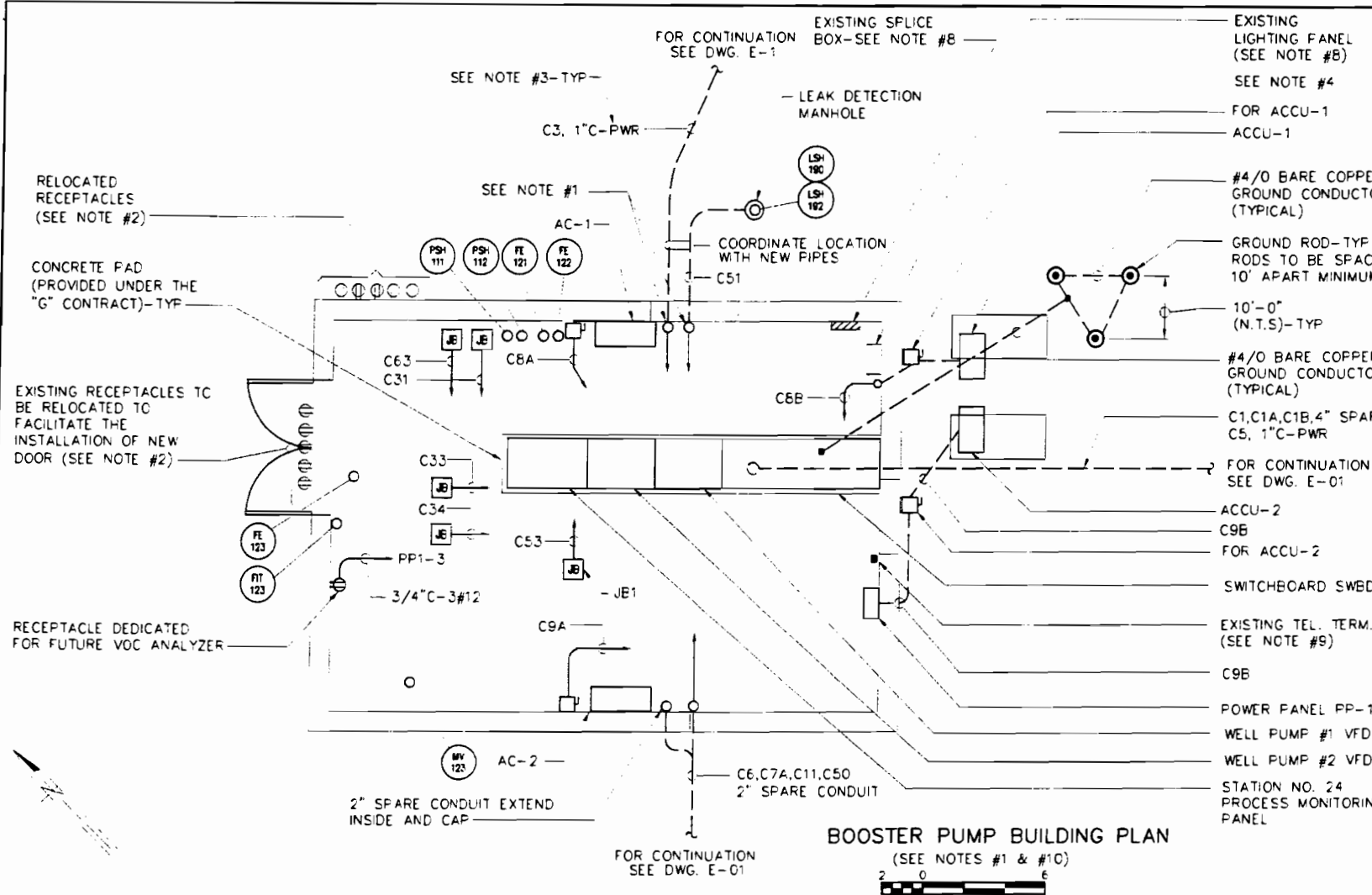
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	KVA PER PHASE			LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
				A	B	C				
1	30	STATION 24 PROCESS MONITORING PANEL	1.0	1.0			-	SPARE	20	2
3	20	RECEPTACLE FOR FUTURE VOC ANALYZER	1.0		1.0		-	SPARE	20	4
5	20	FIT-123	0.5			0.5	-	SPARE	20	6
7	2F	WELL #1 HEATING AND VENTILATING	1.5	1.5			-	SPARE	20	8
9	20	WELL #2 HEATING AND VENTILATING	1.5		1.5		-	SPARE	20	10
11	2F	WELL #2 HEATING AND VENTILATING	1.5			4.5	3.0	ACCU-1 & AC-1	2F	12
13	20	WELL #2 HEATING AND VENTILATING	1.5	4.5			3.0			
15	2F	SPARE	-			3.0	3.0	ACCU-2 & AC-2	2F	16
15	30	SPARE	-			3.0	3.0			
15	3F	PP-1A	14.0	14.5			0.5	BACKWASH SUPPLY MOTORIZED VALVE	3F	20
15	150	PP-1A	14.0	14.5			0.5			
15	150	PP-1A	14.0			14.5	0.5			
25	20	SPARE	1.0	1.0			1.0	EXISTING LIGHTS	20	26
27	20	SPARE	-		1.0		1.0	EXISTING OUTLETS	20	28
29	20	SPARE	-			1.0	1.0	EXISTING YARD LIGHTS	20	30
31	20	SPARE	-	1.0			1.0	EXISTING SAMPLE WELL	20	32
33	20	SPARE	-		1.0		1.0	EXISTING OUTDOOR LIGHTING	20	34
35	20	SPARE	-			1.0	-	SPARE	20	36
POWER PANEL: PP-1 LOCATION: BOOSTER PUMP BUILDING			TOTAL KVA	23.5	22.5	24.5	SERVICE CHARACTERISTICS: 120/208 VOLT - 3 PHASE - 4 WIRE - 60 HZ PROVIDE 400A/300A MAIN BREAKER & SOLID NEUTRAL & GROUND BUS			
			GRAND CONNECTED TOTAL KVA	70.5						

POWER PANEL PANEL PP-1 SCHEDULE

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	KVA PER PHASE			LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
				A	B	C				
1	20	FILL STATION	0.5	1.5			1.0	CHEMICAL METERING PUMPS PANEL	2F	2
3	20	LS-180	1.0		2.0		1.0			
5	3F	HEAT TRACE CONTROL PANEL	5.5			7.0	1.50	GAC PIPE RACK ENCLOSURE #2 HEATER #1	20	6
7	70	HEAT TRACE CONTROL PANEL	5.5	7.0			1.50	GAC PIPE RACK ENCLOSURE #2 HEATER #2	20	8
7	70	HEAT TRACE CONTROL PANEL	5.5		7.0		1.50	GAC PIPE RACK ENCLOSURE #2 HEATER #3	20	10
11	20	GAC PIPE RACK ENCLOSURE #1 HEATER #1	1.50			3.0	1.50	GAC PIPE RACK ENCLOSURE #2 HEATER #4	20	12
13	20	GAC PIPE RACK ENCLOSURE #1 HEATER #2	1.50	3.0			1.50	GAC PIPE RACK ENCLOSURE #3 HEATER #1	20	14
15	20	GAC PIPE RACK ENCLOSURE #1 HEATER #3	1.50		3.0		1.50	GAC PIPE RACK ENCLOSURE #3 HEATER #2	20	16
17	20	GAC PIPE RACK ENCLOSURE #1 HEATER #4	1.50			3.0	1.50	GAC PIPE RACK ENCLOSURE #3 HEATER #3	20	18
19	20	SPARE	-	-			1.50	GAC PIPE RACK ENCLOSURE #3 HEATER #4	20	20
21	20	SPARE	-	-			-	SPARE	20	22
23	20	SPARE	-	-			-	SPARE	20	24
POWER PANEL: PP-1A LOCATION: GARAGE #2			TOTAL KVA	11.5	12.0	13.0	SERVICE CHARACTERISTICS: 120/208 VOLT - 3 PHASE - 4 WIRE - 60 HZ PROVIDE 225A/150A MAIN BREAKER & SOLID NEUTRAL & GROUND BUS			
			GRAND CONNECTED TOTAL KVA	36.5						

POWER PANEL PP-1A SCHEDULE

EXISTING SPICE BOX TO BE DEMOLISHED
EXISTING FINISHED FLOOR OF BOOSTER PUMP BLDG
EXISTING CONDUIT AND WIRING TO BE ABANDONED
EXISTING SERVICE FROM STATION 24 SERVICE TO BE DISCONNECTED
EXISTING CONDUIT AND WIRE TO BE DEMOLISHED
EXISTING BOOSTER PUMP BUILDING LIGHTING PANEL TO BE CONVERTED TO SPICE BOX (SEE NOTE #2)



- NOTES:
1. ALL CONDUITS ENTERING FROM THE OUTSIDE OF THE BOOSTER PUMP BUILDING SHALL BE ROUTED UNDERNEATH THE FLOOR SLAB. THE GENERAL CONTRACTOR SHALL EXCAVATE THE FLOOR AREA AND RESTORE THE FLOOR AND THIS CONTRACT SHALL CORE DRILL THROUGH THE FOUNDATION WALL AND INSTALL THE CONDUITS. SEAL CONDUITS AS REQUIRED. CONDUITS C1, C1A AND 4" SPARE CONDUIT SHALL BE ROUTED DIRECTLY TO SWITCHBOARD SWBD-1 AND STUB UP INTO FULL BOX. ALL OTHER CONDUITS ROUTED FROM OUTSIDE SHALL STUB UP JUST INSIDE EXTERIOR WALL AND ROUTE EXPOSED TO ASSOCIATED EQUIPMENT. PROVIDED FULL BOXES (NOT SHOWN) AS REQUIRED BY THE N.E.C. COORDINATE THE INSTALLATION OF CONDUIT WITH NEW PIPING BEING INSTALLED IN THE ROOM.
 2. EXISTING RECEPTACLES (FIVE) ARE TO BE RELOCATED FROM NORTH WESTERN WALL TO THE NORTH EASTERN WALL TO FACILITATE THE INSTALLATION OF THE NEW DOORS. INTERRUPT EXISTING EXTERIOR MOUNTED CONDUITS NEAR THE ROOF LINE ON THE NORTH WESTERN WALL. PROVIDE SPLICE BOX AND EXTEND NEW 3/4" CONDUIT AND #12 WIRING FROM SPLICE BOX TO RECEPTACLES NEW LOCATION.
 3. CONDUIT TAGGED "1"C-PWR" IS POWER FROM PP-1 TO WELL ENCLOSURES #1 & #2 HVAC ELECTRICAL CONNECTIONS RESPECTIVELY. EACH CONDUIT IS 1"C-3#8 & 1#10G.
 4. PROVIDE 1" PVC CONDUIT WITH 1#4/0 MCM BARE COPPER GROUND CONDUCTOR FROM GROUND GRID TO SWITCHBOARD GROUND BUS.
 5. COORDINATE THE INSTALLATION OF THE DIRECT BURIED CONDUITS WITH THE NEW AND EXISTING UNDERGROUND UTILITIES. REFER TO "G" CONTRACT DRAWINGS C-02 AND M-02 FOR LOCATION OF UTILITIES.
 6. FOR CONDUIT ROUTING AND REQUIREMENTS FROM JUNCTION BOX TO THE GAC SYSTEM DEVICES AND JUNCTION BOXES SEE BLOCK DIAGRAM ON DWG. E-4. WHEN ROUTING CONDUITS BETWEEN DEVICES JUNCTION BOXES ETC. FOR THE GAC SYSTEM PROVIDE EXPANSION/DEFLECTION FITTINGS WHEN CROSSING STRUCTURAL EXPANSION JOINTS. REFER TO STRUCTURAL DRAWINGS FOR LOCATIONS OF STRUCTURAL EXPANSION JOINTS.
 7. EACH GAC SYSTEM HOT BOX CONTAINS 4 HEATERS, EACH HEATER HAS A PLUG IN CONNECTION. PROVIDE FOUR GFCI RECEPTACLE (ONE FOR EACH HEATER) INSIDE HOT BOX. EACH RECEPTACLE SHALL BE POWERED FROM A SEPARATE 20 AMP CIRCUIT. SEE PANEL SCHEDULE ON DWG. E-2 AND BLOCK DIAGRAM ON DWG. E-4 FOR DETAILS.
 8. FOR MODIFICATIONS AND WORK ASSOCIATED WITH EXISTING LIGHTING PANEL AND SPLICE BOX SEE DWG. E-02.
 9. FOR MODIFICATIONS TO THE EXISTING TELEPHONE SYSTEM SEE DWG. E-04.
 10. FOR CLARITY OF DRAWING ALL CONDUIT HOME RUNS AND INTERCONNECTIONS HAVE NOT BEEN SHOWN. REFER TO DWG. E-02 AND E-04 FOR COMPLETE CONDUIT AND CABLE REQUIREMENTS.
 11. TO THE EXTENT AS POSSIBLE CONDUITS SHALL NOT BE ROUTED WITHIN THE CONTAINMENT AREA. WHEN CONDUITS ARE REQUIRED TO BE ROUTED WITHIN THE CONTAINMENT AREA THEY SHALL BE PVC CONDUIT.
- WARNING:
IT IS A VIOLATION OF SECTION 2206.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REVISIONS			
NO.	BY	DATE	REMARKS

DES: GJM
DWN: GJM
CH: P

MALCOLM PIRNIE

APPROVED FOR THE CITY OF NEW YORK

Edward J. Coleman

EDWARD J. COLEMAN, P.E.
DIRECTOR OF DISTRIBUTION OPERATIONS

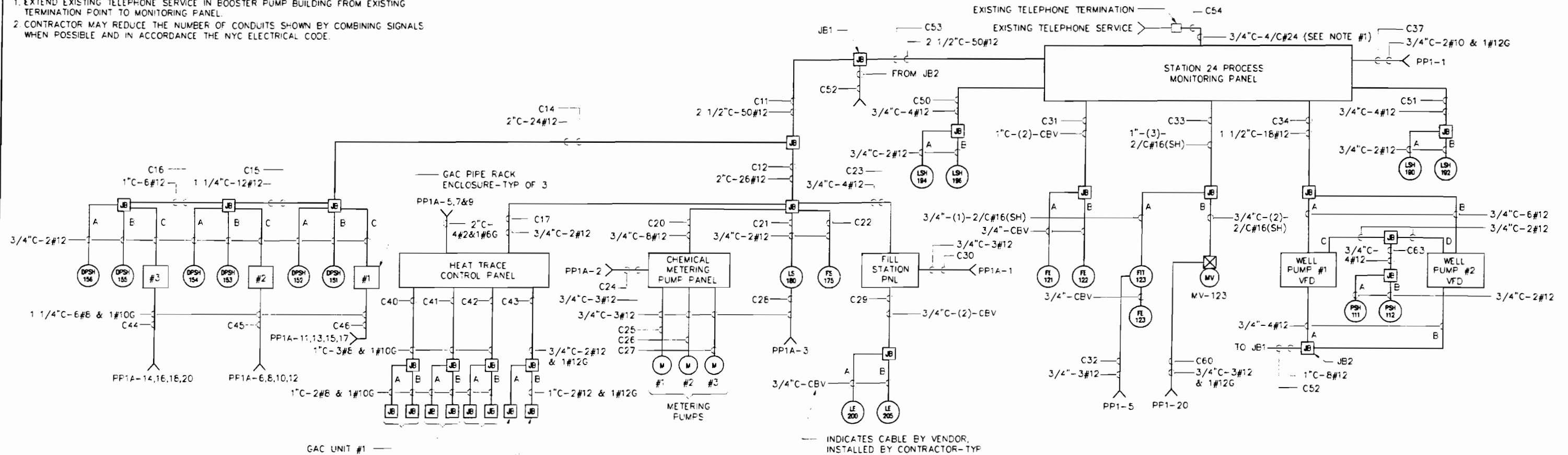
CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13E

STATION 24
ELECTRICAL
PARTIAL PLANS

DATE: FEBRUARY 2007
DWG. NO.: E-03

NOTES:

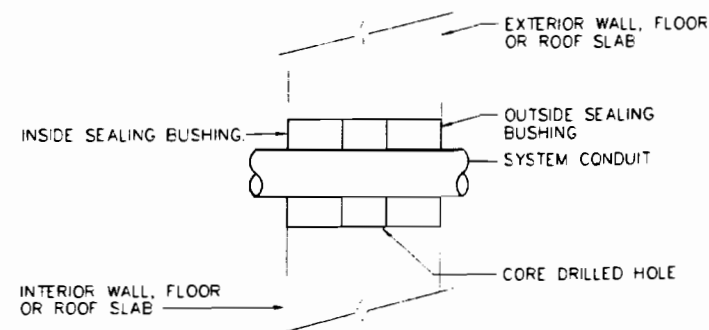
1. EXTEND EXISTING TELEPHONE SERVICE IN BOOSTER PUMP BUILDING FROM EXISTING TERMINATION POINT TO MONITORING PANEL.
2. CONTRACTOR MAY REDUCE THE NUMBER OF CONDUITS SHOWN BY COMBINING SIGNALS WHEN POSSIBLE AND IN ACCORDANCE WITH THE NYC ELECTRICAL CODE.



BLOCK DIAGRAM

TYPE OF CONNECTION	BOLTED OR COMPRESSION		WELDED
	BURNDY CAT#	T&E CAT#	CADWELL CAT#
CABLE TO LUG	YA	54000 SERIES	LA
CABLE TO ROD	-	53000 SERIES	GT
ROD TO CABLE	GAR	-	GR
ROD TO ROD	GX	53000 SERIES	TA
CABLE TO CABLE	-	-	-

GROUNDING CONNECTIONS



TYPICAL CONDUIT THRU WALL, FLOOR OR ROOF SLABS EXISTING CONSTRUCTION

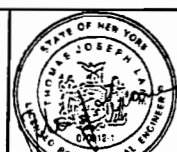
ELECTRICAL SYMBOLS:

	INDICATES HOMERUN AND CONDUIT TAG TO ONE LINE AND BLOCK DIAGRAMS		ELECTRIC MOTOR (NUMBER INDICATES HORSEPOWER).
	LINE SWITCH DISCONNECT - UNFUSED OR FUSED F DENOTES FUSING, ONLY WHERE INDICATED. FIRST NUMBER DENOTES SWITCH AMP RATING, SECOND NUMBER DENOTES FUSE SIZE WHEN PROVIDED.		CURRENT TRANSFORMER
	VARIABLE FREQUENCY DRIVE		POTENTIAL TRANSFORMER
	JUNCTION BOX; SIZE AS REQUIRED BY N.E.C.		MOTORIZED VALVE WITH CONTROLLER
	INSTRUMENT DEVICE: LETTERS IDENTIFY DEVICE FUNCTION, NUMBERS WHERE INDICATED DENOTE LOOP NUMBER		100 (FRAME SIZE) 30 (TRIP SIZE) THERMAL-MAGNETIC BREAKER

N.E.C OR NEC NATIONAL ELECTRIC CODE

REVISIONS			
NO.	BY	DATE	REVISIONS

DES: GJM
DWN: GJM
CKD: PLD



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CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER AND SEWER OPERATIONS
STATION 24 GROUNDWATER REMEDIATION PROJECT
SYSOPS-13E

STATION 24
ELECTRICAL
BLOCK DIAGRAMS AND
MISCELLANEOUS DETAILS
SCALE: NONE

DATE: FEBRUARY 2007
DWG. NO.: E-04