Ohio Department of Commerce
Division of Industrial Compliance

Certificate of Plan Approval

Bob Taft
Governor
Gary C. Suhadolnik
Director
Geoffrey D. Eaton
Asst. Chief Building

Plan Number: 200290188

Project Description: WWTP BLOWER STRUCTURE

- [x] Final Plan Approval
- [ ] Partial Plan Approval
  - [ ] Footing / Foundation
  - [ ] Slab
  - [ ] Shell
  - [ ] Interior Finish
  - [ ] Fire Sprinkler
  - [ ] Fire Alarm
- [ ] Conditional Approval
- [ ] No Serious Hazard Approval

Property Address: WWTP BLOWER STRUCTURE
WAYNE STREET
GROVER HILL, OH 45849

County: 63 - PAULDING

Owner:
VILLAGE OF GROVER HILL
RAY ROTH
301 W WALNUT STREET
GROVER HILL, OH 45849

Submitter:
POGGEMEYER DESIGN GROUP
1168 N MAIN STREET
BOWLING GREEN, OH 43402

Design Professional:
MIKE ATHERINE
1168 N MAIN STREET
BOWLING GREEN, OH 43402

Ohio Basic Building Code Information:
1998 OH OBBC

Use Group(s):
F-2

Construction Type(s):
5B

Building Area: 150

No. of Stories: 1

Scope of Project:
Electrical
Structural/Mechanical

Nature of Job

- [ ] New Construction
- [x] Addition
- [ ] Alteration
- [ ] Change of Occupancy

Date of Approval: 03/21/2002

No.: 1

Pouring of footings, installation of interior finish and other inspections shall be called for prior to doing the work. In order to schedule an inspection, contact Dispatch at 1-800-822-3208 between 7:30a.m. - 2:00 p.m. This certificate shall remain posted in a conspicuous and safe place on the job site until the work is completed (OBBC 4101:2-1-24). Failure to meet these requirements may result in the refusal of service and/or the issuance of an adjudication order. The building/structure shall pass final inspection and a State of Ohio Certificate of Occupancy shall be issued before the building/structure can legally be occupied (OBBC 4101:2-1-27). The Owner is responsible for obtaining all local zoning and sewage permits.

Structural / Electrical	State Plumbing	All Other Inquiries	State Fire Marshal
1-800-822-3208	1-800-822-3208	1-800-822-3581	614-752-7131
7:30 am - 2:00 pm	7:30 am - 2:00 pm	7:30 am - 2:00 pm	

State Inspector's Signature for Occupancy

- [ ] Final Structural Approval: _____ Date
- [ ] Final Electrical Approval: _____ Date
- [ ] Final Plumbing Approval: _____ Date
- [ ] Final Fire Approval: _____ Date

Building Official Signature:

Ohio Department of Commerce
Division of Industrial Compliance
6606 Tussing Road - P.O. Box 4009
Reynoldsburg, OH 43068-9009
(614) 644-2622 FAX (614) 644-3145

Ohio Department of Commerce
Division of Industrial Compliance

Certificate of Plan Approval

Bob Taft
Governor
Gary C. Suhadolnik
Director
Geoffrey D. Eaton
Asst. Chief Building

Plan Number: 200290189

Project Description: WWTP SLUDGE DEWATERING BUILDING

- [ ] Final Plan Approval
- [x] Partial Plan Approval
  - [x] Footing / Foundation
  - [x] Slab
  - [x] Shell
  - [x] Interior Finish
  - [ ] Fire Sprinkler
  - [ ] Fire Alarm
- [ ] Conditional Approval
- [ ] No Serious Hazard Approval

Property Address: WWTP SLUDGE DEWATERING BUILDING
WAYNE STREET
GROVER HILL, OH 45849

County: 63 - PAULDING

Owner:
VILLAGE OF GROVER HILL
RAY ROTH
301 W WALNUT STREET
GROVER HILL, OH 45849

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1168 N MAIN STREET
BOWLING GREEN, OH 43402

Design Professional:
MIKE ATHERINE
1168 N MAIN STREET
BOWLING GREEN, OH 43402

Ohio Basic Building Code Information:
1998 OH OBBC

Use Group(s):
F-2

Construction Type(s):
5B

Building Area: 522

No. of Stories: 1

Scope of Project:
Electrical
Plumbing
Structural/Mechanical

Nature of Job

- [x] New Construction
- [ ] Addition
- [ ] Alteration
- [ ] Change of Occupancy

Date of Approval: 03/21/2002

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- [ ] Final Structural Approval: _____ Date
- [ ] Final Electrical Approval: _____ Date
- [ ] Final Plumbing Approval: _____ Date
- [ ] Final Fire Approval: _____ Date

Building Official Signature:

Ohio Department of Commerce
Division of Industrial Compliance
6606 Tussing Road - P.O. Box 4009
Reynoldsburg, OH 43068-9009
(614) 644-2622 FAX (614) 644-3145

those inspections before any work is covered up by other construction, including, but not limited to all reinforcing , framing, plumbing, mechanical and electrical work; Section 4101:2-1-31(A) OBBC.

IMPORTANT NOTICE: THE BUREAU OF PLANS AND SPECIFICATIONS AND CONSTRUCTION COMPLIANCE ARE NOW REQUIRING ALL CUSTOMERS TO USE THE 2001 UPDATED APPLICATIONS FOR PLAN APPROVALS, SPECIAL INSPECTION NOT REQUIRING PLANS AND TEMPORARY OCCUPANCIES. ALL APPLICATIONS ARE AVAILABLE ON OUR WEBSITE: WWW.COM.STATE.OH.US/ODOC/FORMS.HTM AND THEN CLICK ON CONSTRUCTION PLANS EXAMINATION FORMS. THE USE OF CURRENT APPLICATIONS WILL PREVENT DELAYS IN PROCESSING PERMIT REQUESTS.

The holder of a PARTIAL PLAN APPROVAL may proceed only to the point for which approval has been given, at his own risk and without assurance that approval for the entire building will be granted.

Further, the holder agrees to make any and all changes, alterations, additions or deletions required by the Division of Industrial Compliance to be in compliance with the final approved plans and the Ohio Basic Building Code.

This addendum is sent in duplicate. This agreement shall be signed and returned to the Ohio Department of Commerce, Division of Industrial Compliance, Plans and Specification, 6606 Tussing Rd., Reynoldsburg, Ohio 43068-9009 (614) 644-2622, before beginning work. This addendum is NOT an appealable order. The signing of this addendum is an agreement that you will comply with all items listed herein. Further, commencement of work on this project constitutes acceptance of this agreement and all items listed herein.
Your plan examiner is: Chuck McLaughlin.

Owner Title

Signature Date

CJM/cjm

Ohio Department of Commerce

Toledo Office
Division of Industrial Compliance
One Government Center - Suite 1540
Toledo, OH 43604-2234
(419) 245-2788 FAX (419) 245-2504
www.com.state.oh.us

Bob Taft
Governor

Gary C. Suhadolnik
Director

January 01, 1900

POGGEMEYER DESIGN GROUP
1168 N MAIN STREET
BOWLING GREEN, OH 43402

CORRECTION LETTER NO. 1

Adjudication Order:	200290189
Date Mailed:	March 21, 2002
Compliance Date:	April 20, 2002

The plans for the project referenced below have been reviewed and were found to be incomplete and/or to contain violations of the Ohio Basic Building Code (OBBC). As a result, your plans cannot be approved at this time.

Part I of this notice serves as a Correction Letter to inform you of what information is needed to get your plans approved. Part II of this notice provides information on how this notice can be used as an Adjudication Order to appeal specific items in the Correction Letter. This notice is issued in accordance with Chapters 119, 3781, and 3791 of the Ohio Revised Code (ORC).

PART I:
The plans affected by this notice are known or described as:

WWTP SLUDGE DEWATERING BUILDING
WAYNE STREET
GROVER HILL, OH 45849

Your plans cannot be approved until all of the information specified below is submitted and reviewed:

1. Compliance of prefabricated wood trusses with the provisions of Sections 4101:2-1-19(E)6 and 2313.3 OBBC shall be documented with the submission of the fabricator's truss diagram and loading summary data, sealed by the Ohio professional engineer responsible for its preparation, shall be submitted for review and approval in accordance with Sections 4101:2-1-18, 4101:20-1-22(C) and 4101:2-1-23(D) OBBC.

2. Metal-plate-connected roof trusses shall be braced to prevent rotation and provide lateral stability; Sections 2313.3.1 and 2313.3.2 OBBC. Construction documents shall detail the required bracing; Sections 4101:2-1-19(A) and (E) OBBC.

IMPORTANT NOTICE: THE BUREAU OF PLANS AND SPECIFICATIONS AND CONSTRUCTION COMPLIANCE ARE NOW REQUIRING ALL CUSTOMERS TO USE THE 2001 UPDATED APPLICATIONS FOR PLAN APPROVALS, SPECIAL INSPECTION NOT REQUIRING PLANS AND TEMPORARY OCCUPANCIES. ALL APPLICATIONS ARE AVAILABLE ON OUR WEBSITE: WWW.COM.STATE.OH.US/ODOC/FORMS.HTM AND THEN CLICK ON CONSTRUCTION PLANS EXAMINATION FORMS. THE USE OF CURRENT APPLICATIONS WILL PREVENT DELAYS IN PROCESSING PERMIT REQUESTS.

In order to minimize the time it takes to review revised plans, circle the area of areas on the revised drawings with a red pencil. Mark the item number referenced above adjacent to the circled area. This needs only to be done on one set of the revised plans. Three identical sets of revised plans (five sets when drawings include plumbing) must be submitted. Submit revised plans to the address specified above.

If there are any questions, you may call your Plan Examiner after 2:00 p.m. or make an appointment by telephone to meet with your Plan Examiner.

PART II:
In accordance with Chapter 119 of the ORC, you have 30 days from the mailing date to appeal the adjudication order. To request an appeal hearing, send a written request along with a check or money order for $100.00 made payable to Treasurer, State of Ohio, to the address specified below. DO NOT send your request to the Division of Industrial Compliance.

Ohio Department of Commerce
Board of Building Appeals
6606 Tussing Road
Reynoldsburg, Ohio 43068-4009
Phone: 614.644.2616

Your written request shall include the items from the Correction Letter being appealed, the reasons for the appeal and the relief sought. A copy of this notice shall be attached to your request.

At an appeal hearing you have the right to be represented by counsel. You may present arguments orally or in writing. You may also present evidence and examine witnesses appearing for or against you.

Sincerely,

Geoffrey D. Eaton
Asst. Chief Building Official

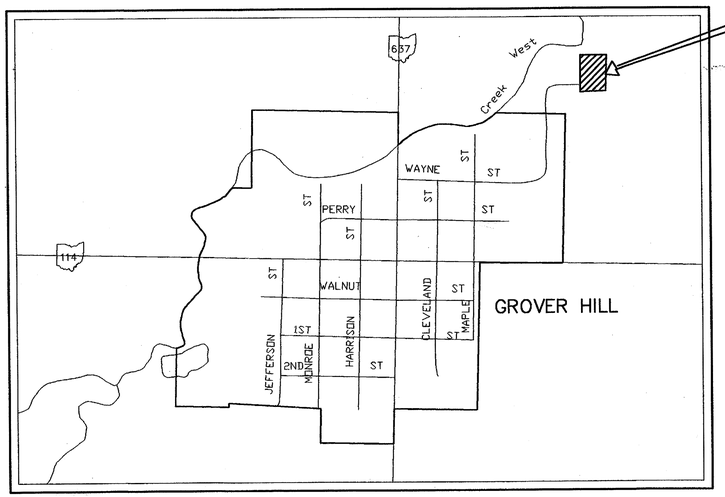
CJM/cjm

Owner's Name:
VILLAGE OF GROVER HILL
301 W WALNUT STREET
GROVER HILL, OH 45849-45849

cc: Plan Examiner: Chuck McLaughlin

File

WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL
PAULDING COUNTY, OHIO
2002



SITE MAP
NOT TO SCALE

DESIGN ENGINEERS

STATE OF OHIO
MICHAEL ATHERINE, JR. 43597
REGISTERED PROFESSIONAL ENGINEER

Michael Atherine DATE 12/12/01
MICHAEL ATHERINE, JR. P.E. – 43597

STATE OF OHIO
STEVEN ROBERT WONDERLY 45621
REGISTERED PROFESSIONAL ENGINEER

Steven R Wonderly DATE 12/12/01
STEVEN R. WONDERLY, P.E. – 45621

APPROVALS

APPROVED: Ray A. Rathe DATE 12/12/01
MAYOR – VILLAGE OF GROVER HILL, OHIO

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
Call 1-800-362-2764 (Toll Free)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

POGGEMEYER DESIGN GROUP, INC.
ARCHITECTS • ENGINEERS • PLANNERS
1168 NORTH MAIN STREET (419) 352-7537 BOWLING GREEN, OHIO 43402

SET NO.

ISSUANCE

DATE	DESCRIPTION

REVISION

DATE	DESCRIPTION

WWTP IMPROVEMENTS VILLAGE OF GROVER HILL PAULDING COUNTY, OHIO

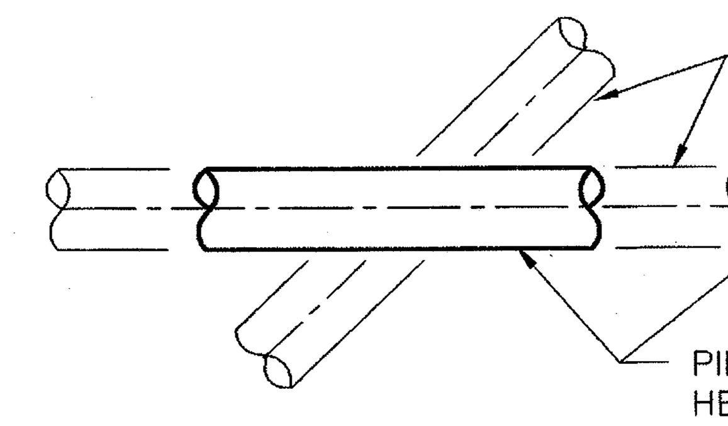
PDG NO. 1457-003

14570301.dwg 121201 12936

BUILDING LEGEND

- EXISTING STRUCTURE
- EXISTING STRUCTURE OR EQUIPMENT TO BE REMOVED
- NEW STRUCTURE CONCRETE
- EXISTING STRUCTURE OR EQUIPMENT TO BE ABANDONED

PIPING LEGEND



- ABOVE GRADE PIPING (SOLID)
- BELOW GRADE (HIDDEN)

NEW PIPING AND EQUIPMENT UNDER CONTRACT IS LABEL "NEW" UNLESS OTHERWISE NOTED.

TOPOGRAPHY LEGEND

County Line
Township Line
Section Line
Corporation Line
Fence Line(existing) (proposed)
Center Line
Trees, Stumps (to be removed)
Limited Access (only) LA
Right of Way (only) RW
Limited Access & Right of Way LA&RW
Existing Right of Way
Property Line (in existing fence)
Railroad or
Guardrail (existing) (proposed)
Existing Storm Sewer 10" Storm
Existing Sanitary Sewer 8" Sanitary
Existing Water Line 6" W 6"
Existing Gas Line 4" G 4"
Existing Manhole M.H.
Existing Catch Basin C.B.
Existing Inlet C.B.
Mailbox M.B.
Fire Hydrant
Water or Gas Valve W G
Water or Gas Meter W.M. G.M.
Power Pole w/ Guy Wire
Telephone Pole
Light Pole
Sign
Railroad Crossing Sign
Brace Pole

PROJECT GENERAL NOTE:

1.) CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, TYPE OF CONNECTIONS, MATERIALS, MECHANICAL AND ELECTRICAL INTERFACING PRIOR TO CONSTRUCTION.

2.) ALL PIPING SHALL BE SUPPORTED PER SPECIFICATIONS. GENERAL CONTRACTOR SHALL DETAIL, FABRICATE AND INSTALL PIPE SUPPORTS .

3.) DUCTILE IRON PIPE (PRESSURE LINE) BELOW SLABS SHALL HAVE RETAINER GLANDS UNLESS OTHERWISE NOTED.

4.) CONTRACTOR TO COORDINATE AND APPLY STANDARD MISCELLANEOUS DETAILS AS REQUIRED.

5.) ALL PIPE INSTALLATIONS THRU EXISTING & PRE-CAST STRUCTURES SHALL BE DONE BY USING A LINK-SEAL ASSEMBLY OR EQUAL. IN SURFACES EXPOSED TO WATER CONTRACTOR TO GROUT SMOOTH W/ NONE-SHRINK GROUT CAVITY AT L-SEAL.

6.) ALL LABELING OF WORK UNDER THIS CONTRACT IS LABELED "NEW" UNLESS NOTED OTHERWISE WHERE THERE IS A COMBINATION OF NEW AND EXISTING.

7.) ALL MATERIALS IN CONTACT WITH POTABLE WATER SHALL MEET THE REQUIREMENTS OF NSF STANDARD 60 AND 61.

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VALVE SYMBOL LEGEND

- GATE VALVE (G-)
- BALL VALVE (B-)
- CHECK VALVE (C-)
- PLUG VALVE (P-)
- BUTTERFLY VALVE (WAFER TYPE) (BF-)
- BUTTERFLY VALVE (FLANGE TYPE) (BF-)
- DIAPHRAGM VALVE (D-)
- GLOBE VALVE (GL-)
- CONTROL VALVE (PRV-)
- MJ CONNECTION
- FLANGE CONNECTION
- BELL & SPIGOT CONNECTION
- PINCH VALVE (Pc-)

NOTE 1.) VALVE DESIGNATION AND TYPE APPLIES TO SCALE DRAWINGS ONLY. SCHEMATIC DIAGRAMS DO NOT REPRESENT ALL TYPES.

2.) PROVIDE GEARED AND HANDWHEEL ACTUATOR FOR VALVES 6" AND LARGER UNLESS OTHERWISE NOTED. PROVIDE CHAIN WHEEL ON VALVES HIGHER THAN SIX (6) FEET.

PIPING ABBREVIATIONS

MATERIAL		SERVICE	
BSP	BLACK STEEL PIPE	NG	NATURAL GAS
CMP	CORRUGATED METAL PIPE	CW	CITY WATER
CPP	CONCRETE PRESSURE PIPE (PRESTRESSED)	HW	HOT CITY WATER
CPVC	CHLORINATED POLYVINYL CHLORIDE PIPE	NPW	PLANT WATER (NON-DRINKABLE)
Cu	COPPER TUBING OR PIPING	PW	POTABLE WATER
DI	DUCTILE IRON PIPE	CA	COMPRESSED AIR
GS	GALVANIZED STEEL PIPE	SS	SANITARY SEWER
CP	CONCRETE PIPE (PLAIN)	RW	RAW WATER
PVC	POLYVINYL CHLORIDE PIPE	DW	DIGESTED WATER
ST	STEEL PIPE	SL	SLUDGE
S.ST	STAINLESS STEEL PIPE	PE	PLANT EFFLUENT
PE	POLYETHYLENE		
FRP	FIBERGLASS REINFORCED POLYESTER		

VALVE SCHEDULE OPERATOR DESIGNATION

OL	LEVER AND WEIGHT OR SPRING	C	CHAIN
FB	FLOOR BOX	L	LEVER
TW	TEE WRENCH	VB	VALVE BOX
G	GEAR	BG	BEVEL GEAR
HW	HANDWHEEL	EB	EXTENDED BONNET
MO	MOTOR OPERATED	PN	PNEUMATIC OPERATED

VALVES INSIDE BUILDINGS SHALL BE OF FLANGE TYPE
VALVES UNDERGROUND INSTALLATION SHALL BE MECHANICAL JOINT UNLESS NOTED OTHERWISE

FOR VALVES LOCATIONS SEE SCHEMATIC DIAGRAM SHEET 14

VALVE SCHEDULE

MARK No.	SIZE (IN)	OPERATOR	TYPE	REMARKS
P-1	4"	EB-G-HW	MJ	
P-2	6"	EB-G-HW	MJ	
P-3	6"	EB-G-HW	MJ	

NOTE: THIS SCHEDULE IS NOT GUARANTEED TO BE COMPLETE. ALL NEW VALVES SHOWN ON THE DRAWINGS SHALL BE FURNISHED AND INSTALL. ONLY NEW VALVES 4" AND LARGER ARE TO BE SCHEDULE. SEE PLANT SCHEMATIC DIAGRAM FOR VALVE LOCATIONS VALVES TO BE PROVIDED & INSTALLED BY GENERAL CONTRACTOR UNLESS NOTED OTHERWISE

INDEX OF DRAWINGS

DESIGN BASED ON 1998 OBBC AND 1999 NEC

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
Call 800-362-2764 (Toll Free)
OHIO UTILITIES PROTECTION SERVICE
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STATE OF OHIO
MICHAEL ATHERINE, JR.
43597
REGISTERED
PROFESSIONAL ENGINEER

POGGEMEYER DESIGN GROUP, INC.
ARCHITECTS • ENGINEERS • PLANNERS
1168 NORTH MAIN STREET (419) 352-7537 BOWLING GREEN, OHIO 43402

WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

LEGENDS AND INDEX

DRAWN BY: W.M.V. CHECKED BY: S.R.W.
REVISION

JOB NUMBER 1457-003

PLANT WELL WATER SUPPLY
EXISTING FENCE
EXISTING SLIDING GATE
EXISTING FENCE
PLANT 4"DIP FORCE MAIN INFLUENT LINE
INV. EL.713.00 AT CREEK
6" PVC PLANT EFFLUENT LINE TO RIVER
INV. EL.717.25
INV. EL.716.25
MH 2
METER MANHOLE T/EL.724.00 INV. EL.712.50
INV. EL.716.35
NEW 6" PVC EFFLUENT LINE
NEW MH 6 CHLORINATION T/ EL.727.50 INV. EL.723.67
NEW 2" SCH. 80 PVC NPW LINE
NEW 3/4" POST HYDRANT
CONNECT NEW 6" PVC TO EXIST. INV. EL.721.00
SEE SHEET 8 FOR DETAILS
ADMINISTRATION BUILDING
INSTALL NEW 2" BASKET STRAINER IN SUCTION OF N.P.W. PUMP AT THIS LOCATION, MODIFY PIPING AS REQUIRED. STRAINER HAYWARD PVC SIMPLEX BASKET OR EQUAL.
NEW SEPTAGE RECEIVING STATION & HOLDING TANK
NEW 3/4" POST HYDRANT
PLANT LIFT PUMP STATION T/ EL.723.50 INV. EL.713.50
NEW CLARIFIER
POLISHIN BASIN
INV. EL.722.75
CHLORINATION CHAMBER T/ EL.727.50 INV. EL.714.25
INV. EL.722.75
EFFLUENT TROUGH EL.723.75
4" DIP INFLUENT LINE
INV. EL.717.70
DECHLORINATION MANHOLE T/ EL.724.00 INV. EL.717.70
INV. EL.718.50
SAMPLER
MH 1 T/ EL.726.50 INV. EL.719.00
INV. EL.721.35
NEW 2" PVC SCH. 80 NPW CONNECT TO EXISTING
(2)NEW 2" BALL VALVES W/FLOOR BOX & EXTENDED NUT
INV. EL.716.75
REUSE AS GRINDER PUMP DISCHARGE
NEW 10" PVC MIX LIQUOR LINES
NEW 2" PE AIR LINE
SEE SHEET 9 FOR DETAILS
SEE SHEET 10 FOR DETAILS
6" PVC EFFLUENT
4" DIP INFLUENT LINE
2" PVC NPW SUCTION LINE
REMOVE SECTION OF 4" PIPE
NEW 2" GALV. ST. GRINDER PUMP DISCHARGE
REMOVE VALVE AND INSTALL NEW VALVE AND TEE CONNECTION INV. EL.722.00
6" PVC DECANT LINE
4" LIFT PUMP STATION FORCE MAIN
MH 5 T/ EL.727.50 INV. EL.721.75
NEW BLOWER BLDG.
4" INFLUENT LINE
4"DIP
BLOWER BUILDING
4" LEAK DETENTION
SEE SHEET 6 FOR DETAILS
NEW 4" DIP PUMP DISCHARGE
NEW 6" PVC DECANT LINE
4" PVC PUMP DISCHARGE
4" LEAK DET.
MH 4 T/ EL.727.50 INV. EL.710.50
NEW GUARD POST
NEW 6" PVC BELT PRESS DRAIN LINE
MH 3 T/EL.726.50 INV. EL.715.67
BENCH MARK TOP OF CONC. EL. 727.00
NEW OVERFLOW PIPE T/ EL.725.00
8" PVC EFFLUENT
SLUDGE BASIN
ALL EQUIPMENT INSIDE LAGOON SHALL BE REMOVED
AIR LINE TO BE ABANDONED
AERATION BASIN
REMOVE C.O. & INSTALL NEW VALVE & PIPE INV. EL.717.00
NEW SLUDGE DEWATERING BUILDING
1"ST.
NEW 6" DIP BELT PRESS FEED LINE
PLUG EXIST. PIPE THRU LINING FIELD VERIFY
4"PVC SLUDGE RETURN
6"PVC SLUDGE RETURN
C.O.
C.O.
2" PVC NON-POTABLE WATER (NPW) LINE
EXISTING FENCE

MAGNETIC

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.
100 YEAR FLOOD EL.722.00

POGGEMEYER DESIGN GROUP, INC.
PLANNERS
ENGINEERS
ARCHITECTS
1168 NORTH MAIN STREET (419) 352-7537 BOWLING GREEN, OHIO 43402

WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

YARD PIPING SITE PLAN

DRAWN BY	CHECKED BY
W.M.V.	S.R.W.

REVISION

STATE OF OHIO
MICHAEL ATHERINE, JR. 43597
REGISTERED PROFESSIONAL ENGINEER

3 OF 22

JOB NUMBER 1457-003

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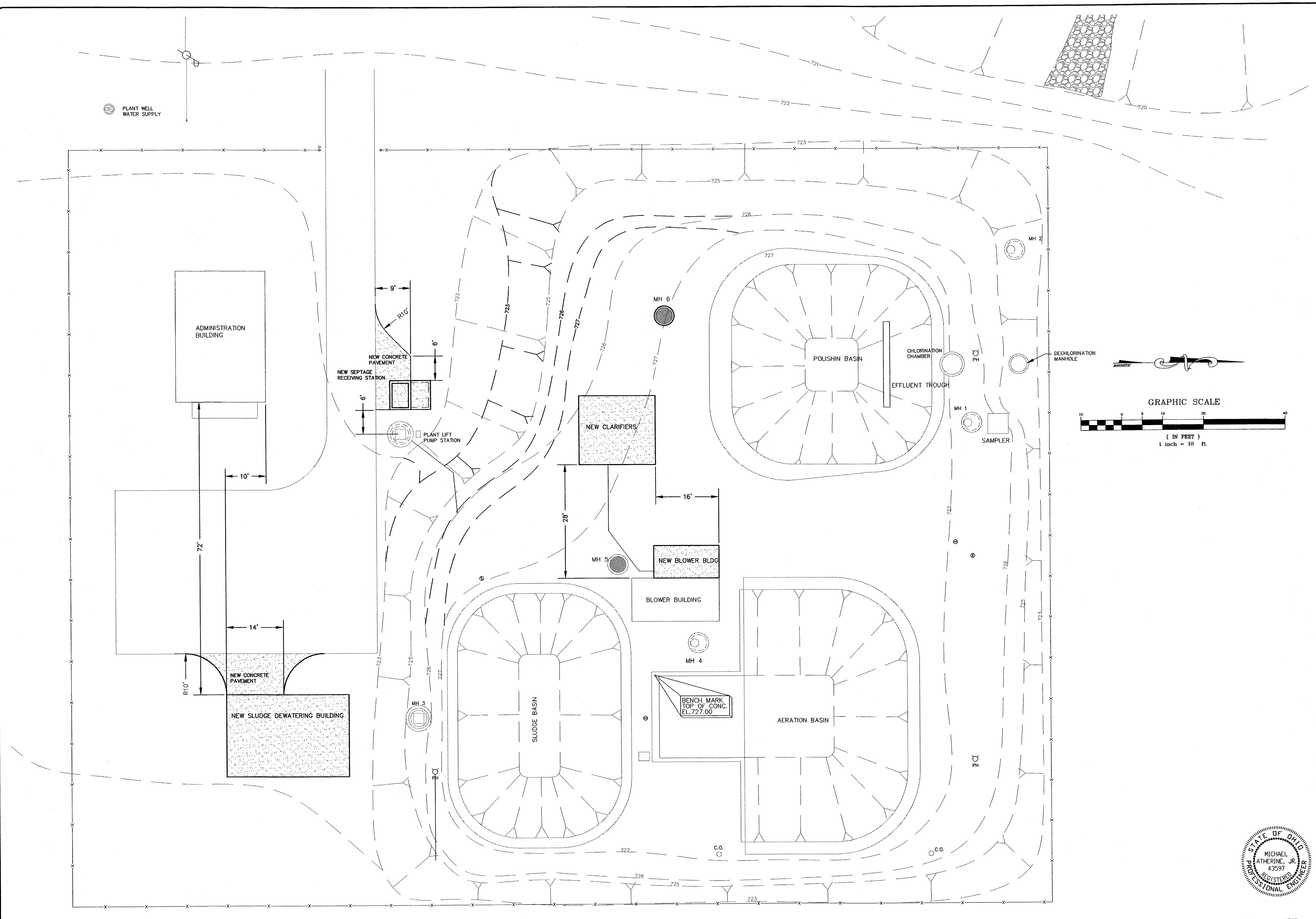

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POGGEMEYER DESIGN GROUP, INC.
ARCHITECTS • ENGINEERS • PLANNERS
1168 NORTH MAIN STREET (419) 352-7537 BOWLING GREEN, OHIO 43402

WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

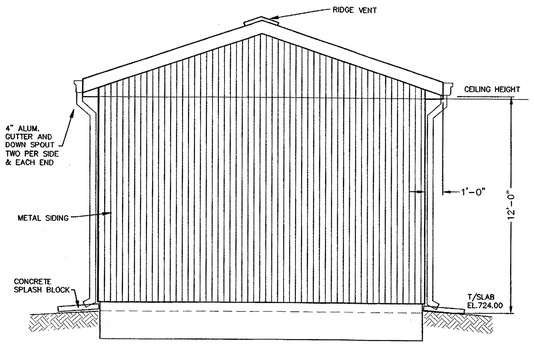
SITE GRADING PLAN

STATE OF OHIO
MICHAEL ATHERINE, JR.
43597
REGISTERED PROFESSIONAL ENGINEER

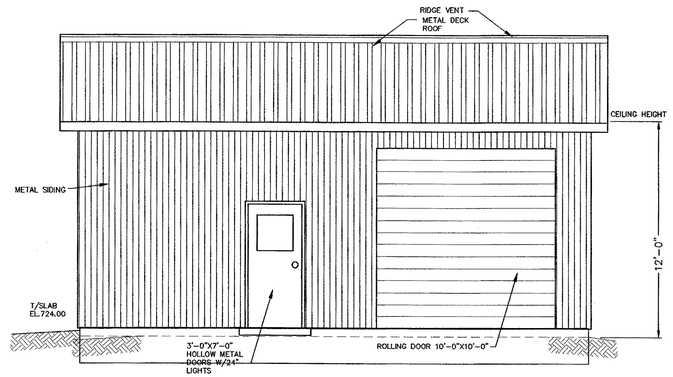
DRAWN BY	CHECKED BY
W.M.V.	S.R.W.
REVISION	

4 OF 22

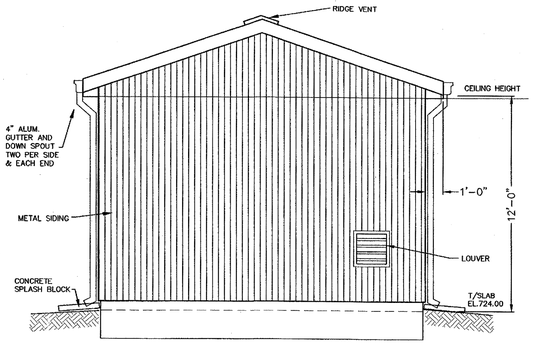
JOB NUMBER 1457-003



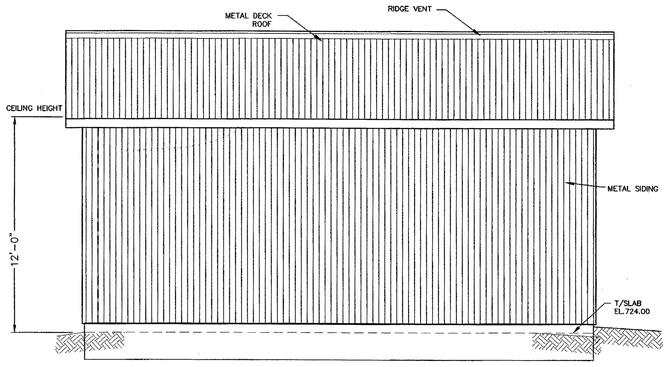
NORTH ELEVATION
SCALE: 1/4" = 1'-0"



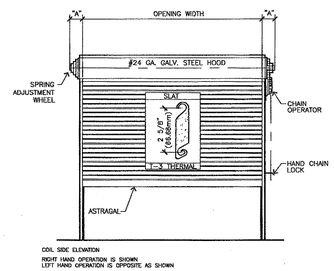
WEST ELEVATION
SCALE: 1/4" = 1'-0"

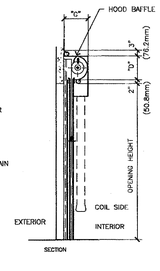


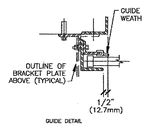
SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



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



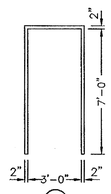




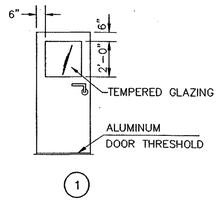
ROLLING DOOR FRAME DETAILS
NOT TO SCALE

DOOR SCHEDULE

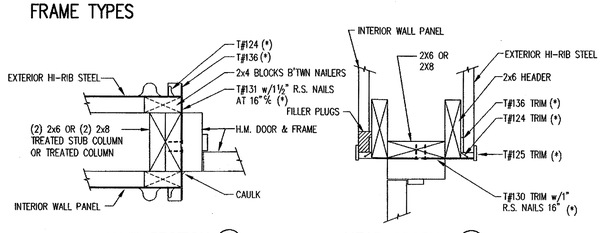
MARK	DOOR SIZE	DOOR		FRAME				JAMB	HEAD	REMARKS
		TYPE	MAT'L	FACE	JAMB	MAT'L	TYPE	TYPE	TYPE	
D1	3'-0"x7'-0"	1	H.M.	2"	2"	M	1	B	A	WITH WEATHER STRIPPING



1
FRAME TYPES



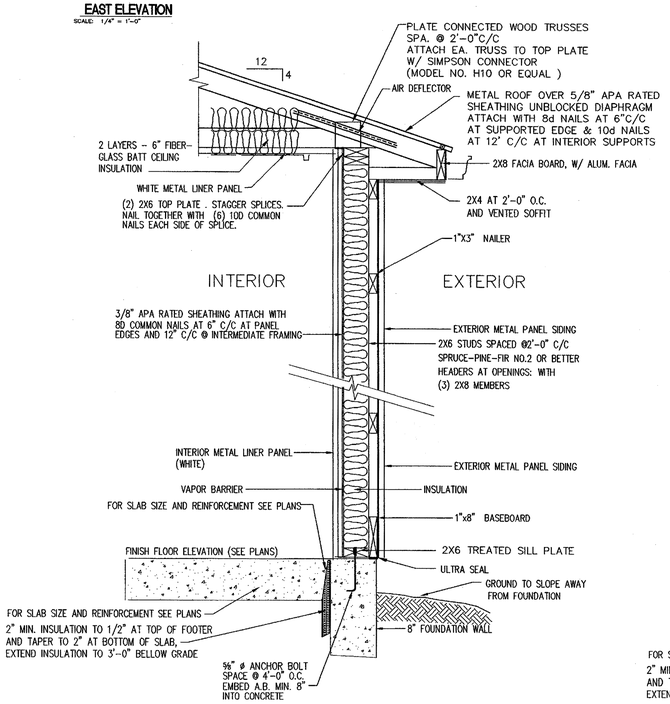
1
DOOR TYPE



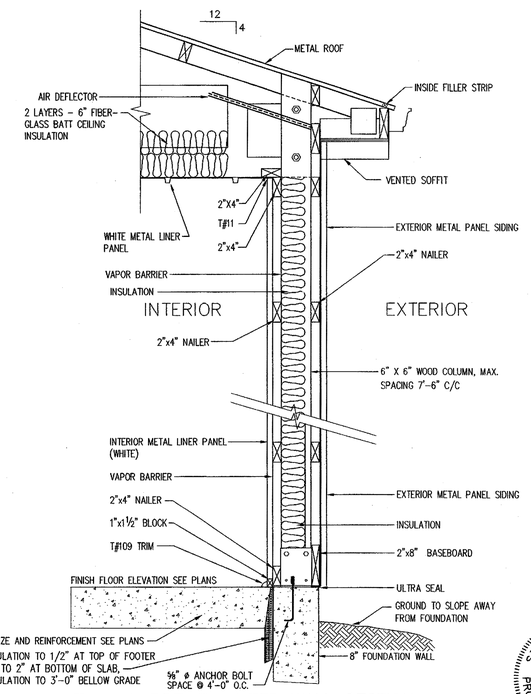
JAMB SECTION (B) HEAD SECTION (A)

DOOR FRAME DETAILS
NOT TO SCALE

(*) T@109 TRIM – REPRESENTS MORTON BUILDING DESIGNATION OR APPROVED EQUAL (TYPICAL)



TYPICAL CONVENTIONAL WALL SECTION
NTS



TYPICAL PRE-ENGINEER WALL SECTION
NTS

STATE OF OHIO
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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

SLUDGE BLDG. ELEVATIONS & WALL DETAILS

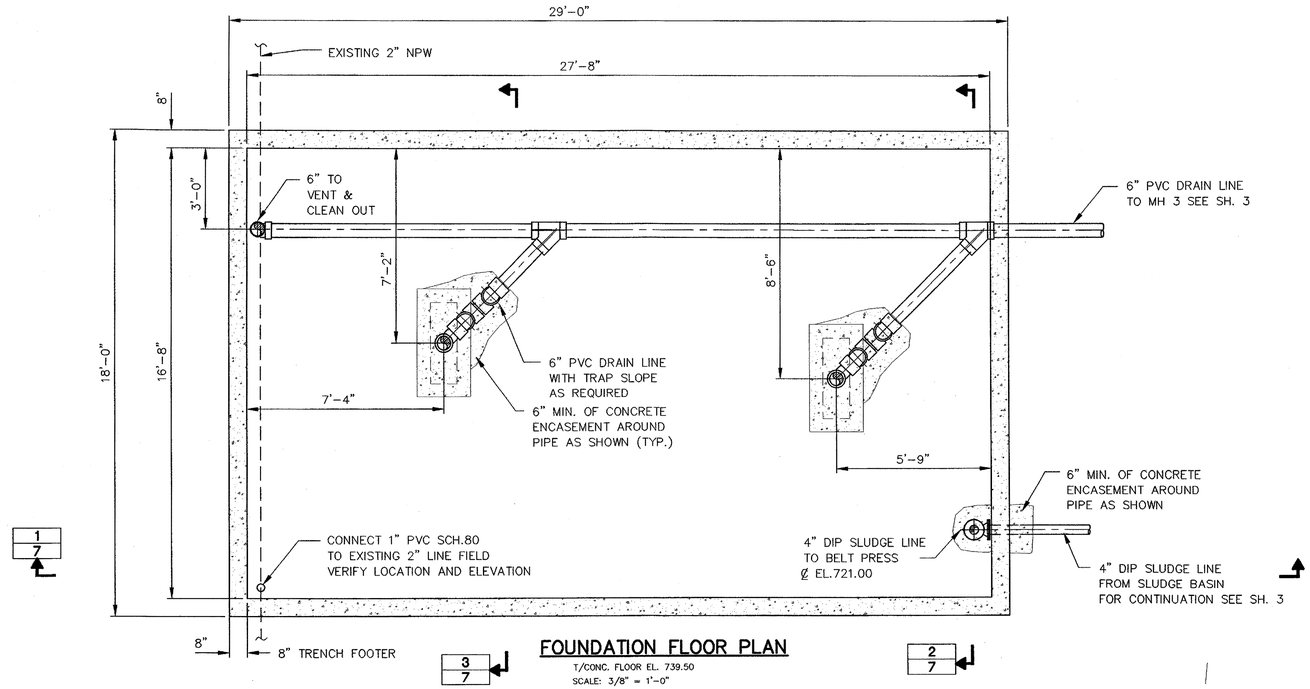
DRAWN BY	CHECKED BY
W.M.V.	S.R.W.

REVISION

5 OF 22

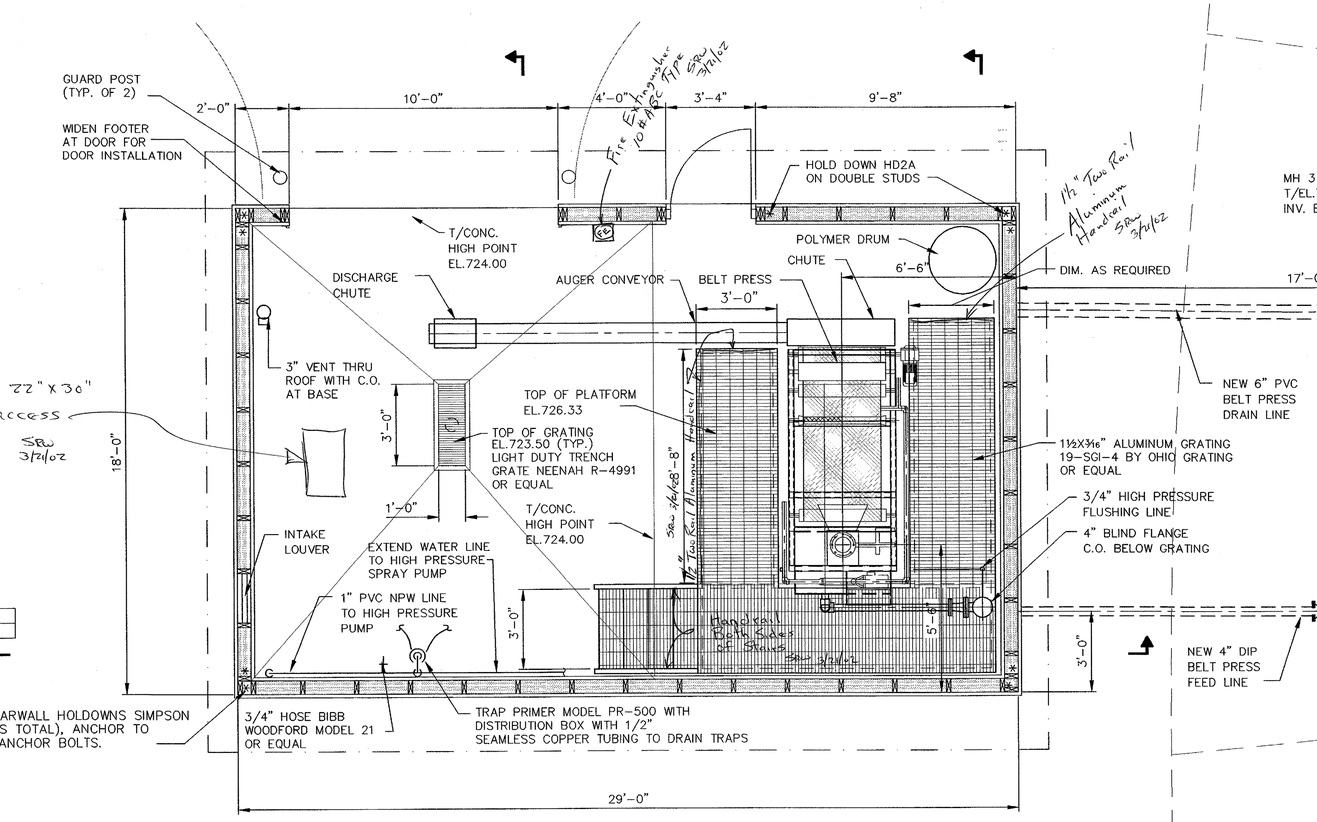
JOB NUMBER 1457-003

14570305.dwg 3-14-02 9:40:33 am EST



FOUNDATION FLOOR PLAN

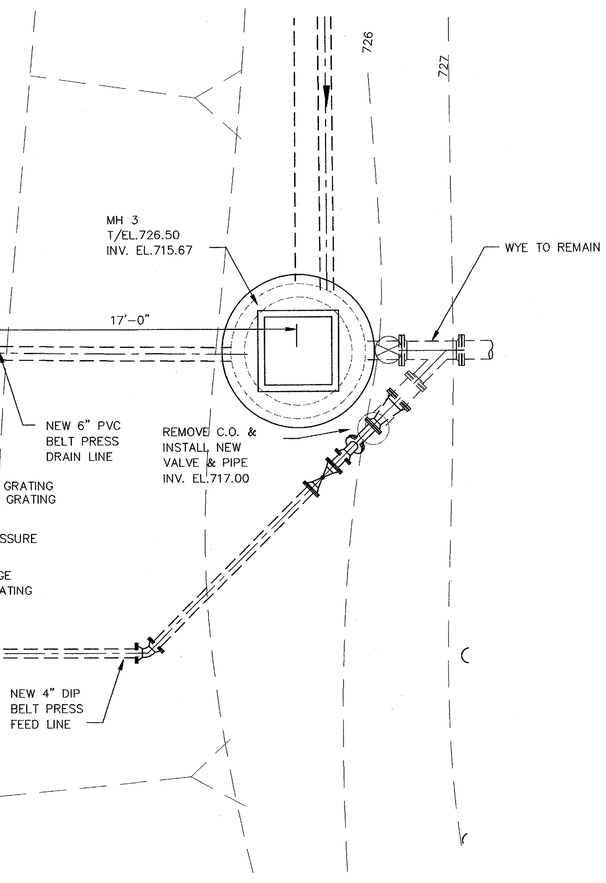
T/CONC. FLOOR EL. 739.50
SCALE: 3/8" = 1'-0"



GRADE FLOOR PLAN

T/CONC. FLOOR EL. 739.50
SCALE: 3/8" = 1'-0"

DRAIN AND VENT PIPING SHALL BE SCHEDULE 40 ASTM D2665-82, DWV WITH SOLVENT WELDED SOCKET JOINTS.



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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

SLUDGE DEWATERING BLDG. PLANS

DRAWN BY	CHECKED BY
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STATE OF OHIO
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REGISTERED PROFESSIONAL ENGINEER

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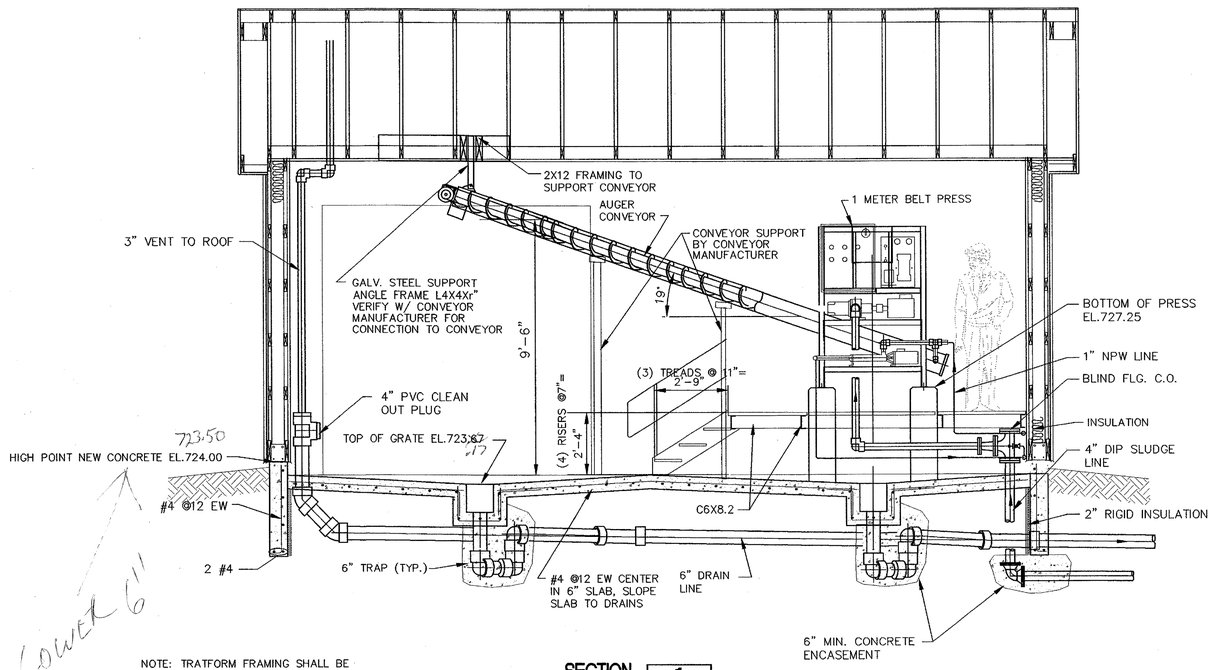
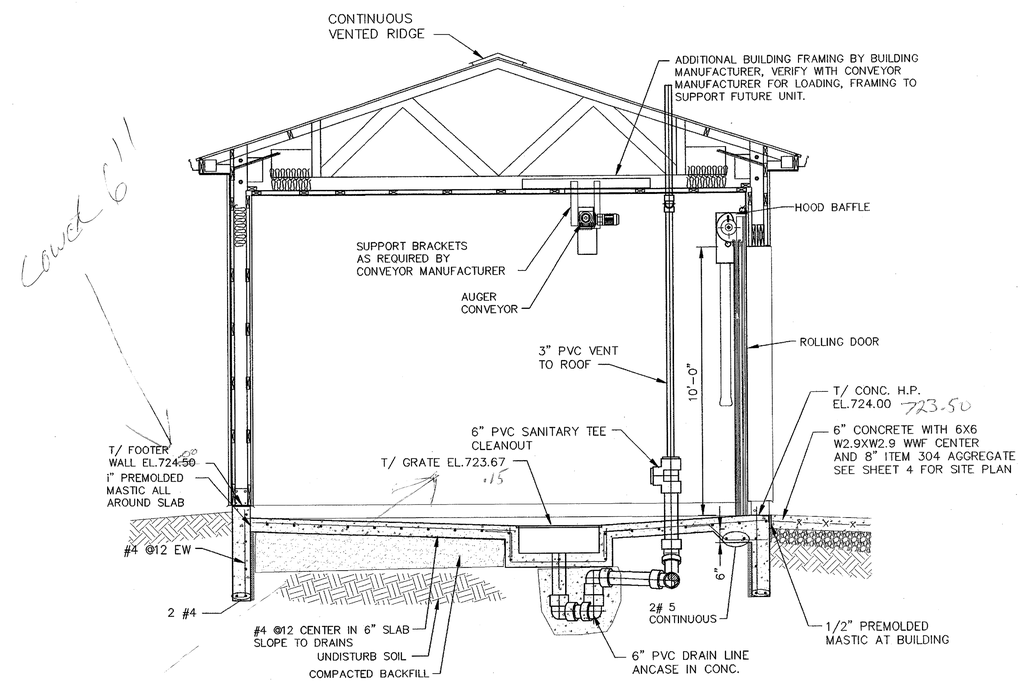
JOB NUMBER 1457-003

1457030b.dwg 3-15-02 1:34:27 pm EST

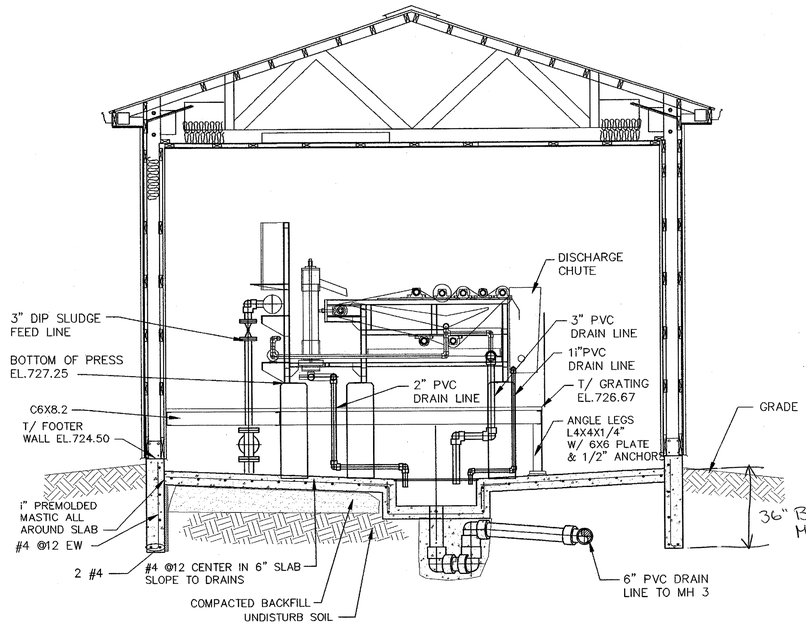


NOTE: TRATFORM FRAMING SHALL BE GALVANIZED AFTER FABRICATION

SECTION 1 / 6
SCALE: y" = 1'-0"



SECTION 3 / 6
SCALE: y" = 1'-0"



SECTION 2 / 6
SCALE: y" = 1'-0"

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(419) 352-7537

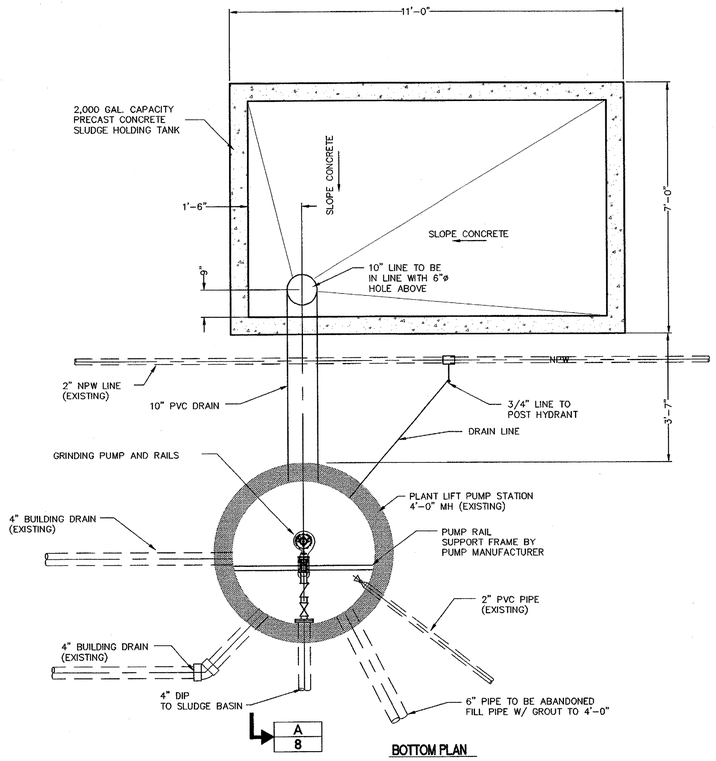
WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

SLUDGE DEWATERING BLDG. SECTIONS & DET.

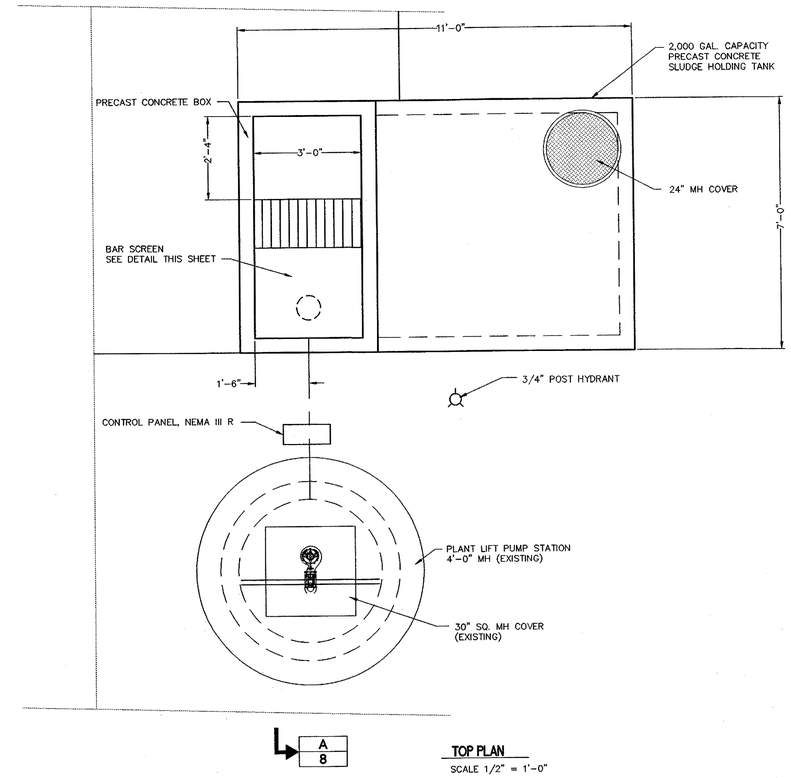
DRAWN BY: W.M.V. | CHECKED BY: S.R.W.
REVISION

7 OF 22

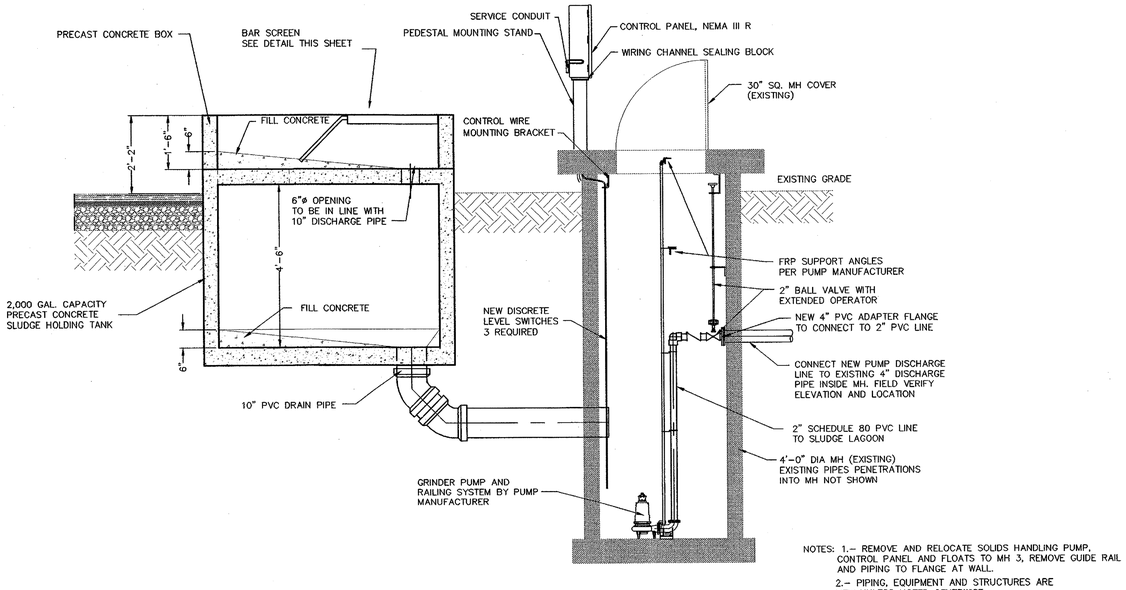
JOB NUMBER 1457-003



BOTTOM PLAN
SCALE 1/2" = 1'-0"

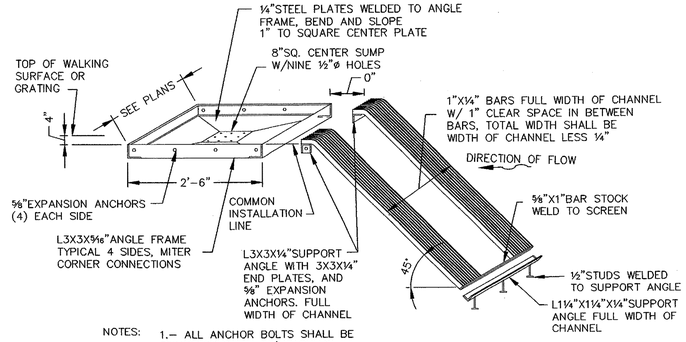


TOP PLAN
SCALE 1/2" = 1'-0"



NOTES: 1.– REMOVE AND RELOCATE SOLIDS HANDLING PUMP, CONTROL PANEL AND FLOATS TO MH 3, REMOVE GUIDE RAIL AND PIPING TO FLANGE AT WALL.
2.– PIPING, EQUIPMENT AND STRUCTURES ARE NEW UNLESS NOTED OTHERWISE.

SECTION
SCALE: ½ " = 1'-0"
A
8



NOTES: 1.– ALL ANCHOR BOLTS SHALL BE STAINLESS STEEL W/ WASHERS AND LOCK NUTS.
2.– CONSTRUCTION SHALL BE WELDED
3.– GALVANIZED ALL STEEL AFTER FABRICATION.

MANUAL BAR SCREEN DETAILS
SCALE: 3/8" = 1'-0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

SEPTAGE RECEIVING STA. PLANS & SECT.

DRAWN BY	CHECKED BY
W.M.V.	S.R.W.

REVISION

STATE OF OHIO
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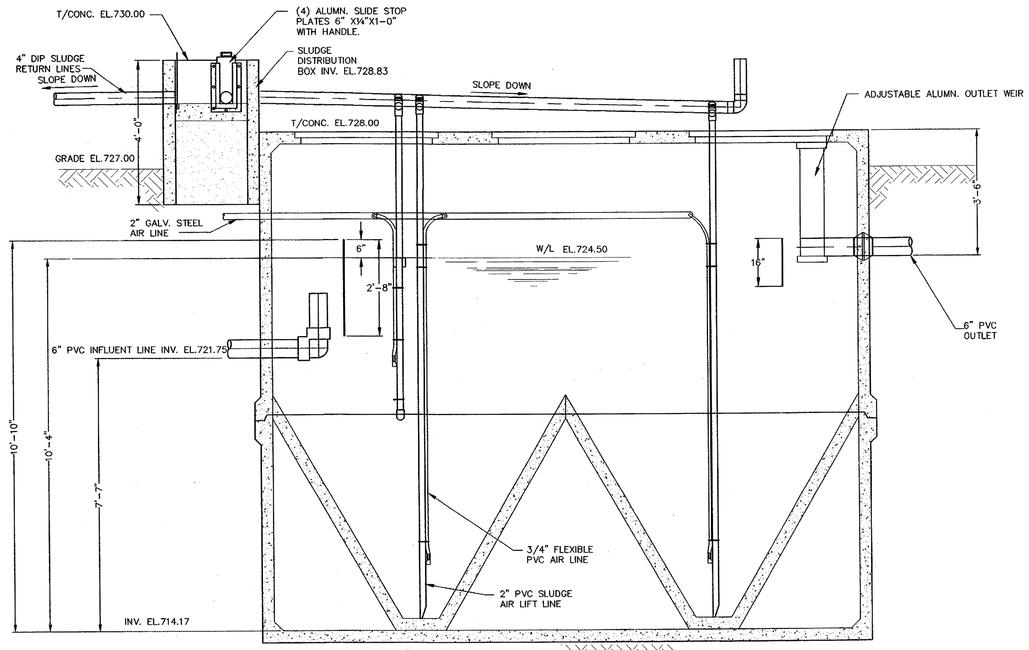
43597
REGISTERED PROFESSIONAL ENGINEER

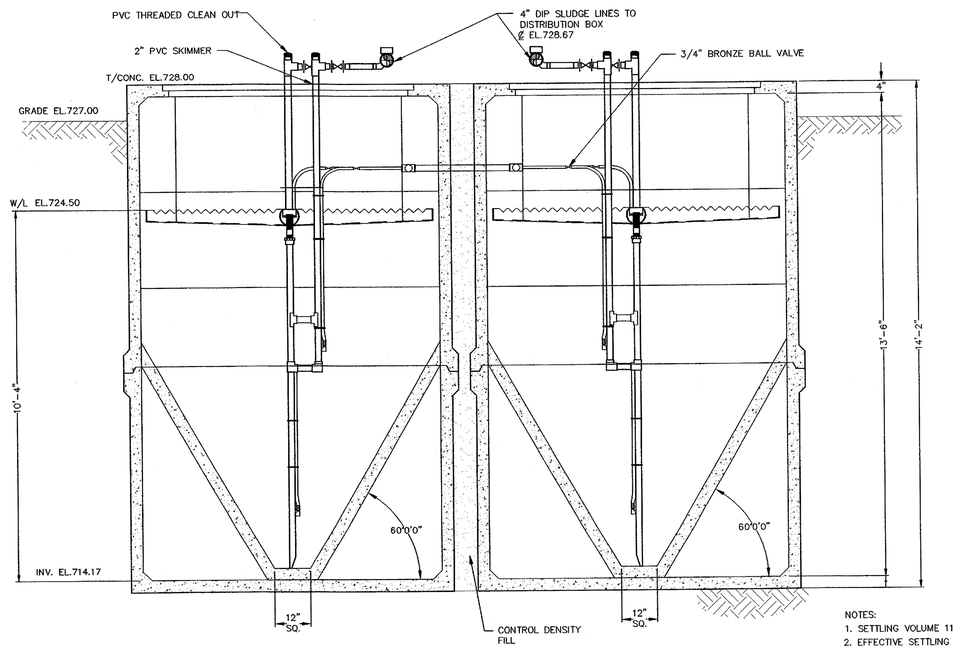
8 OF 22

JOB NUMBER 1457-003

14570308.dwg 3-13-02 4:48:54 pm EST

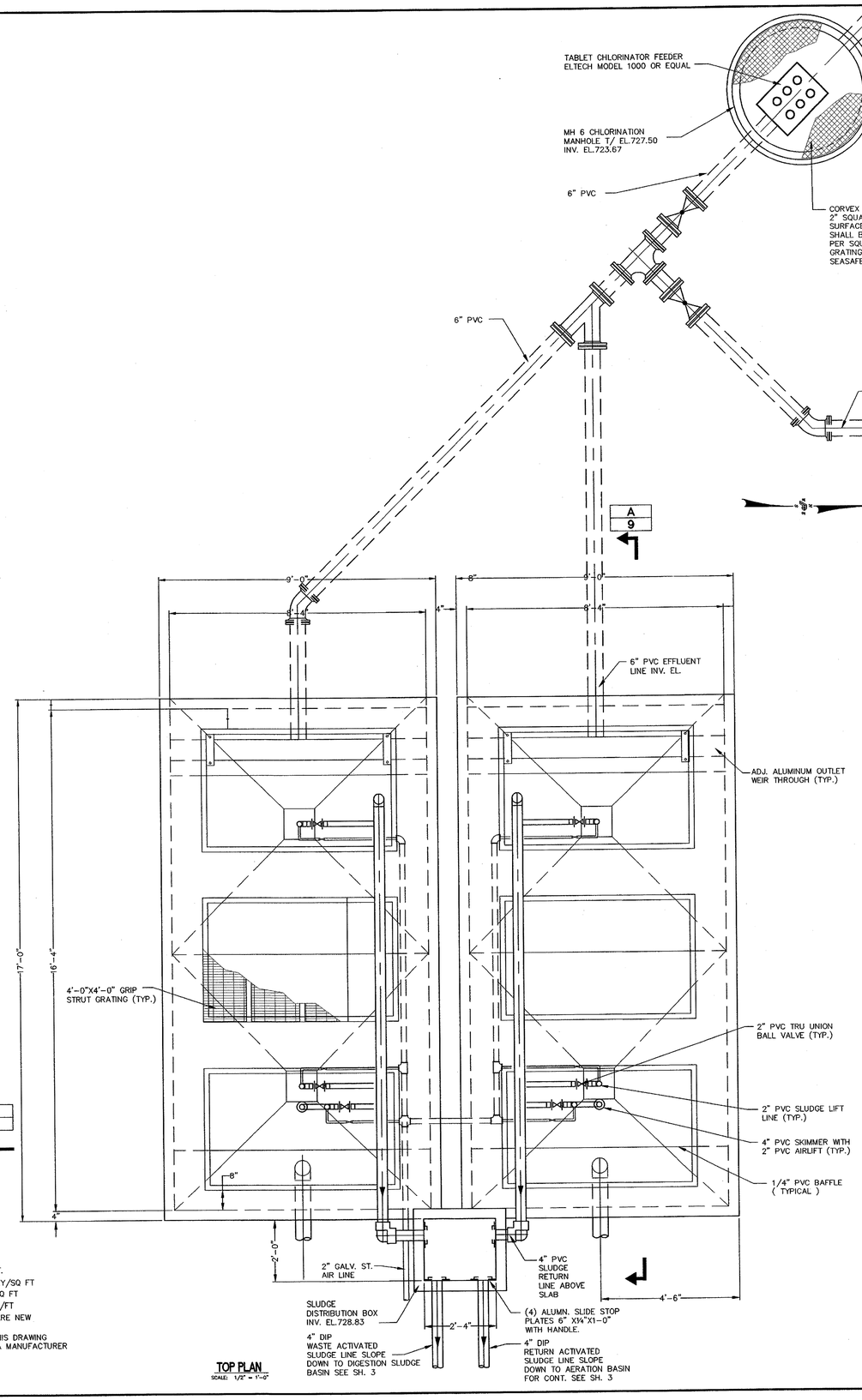


SECTION A 9
SCALE: ½ " = 1'-0"



SECTION B 9
SCALE: ½ " = 1'-0"

NOTES:
1. SETTLING VOLUME 11,320 GAL.
2. EFFECTIVE SETTLING AREA 240 SQ. FT.
3. SURFACE SETTLING RATE 266 GAL/DAY/SQ FT
4. SOLIDS LOADING RATE 28 LBS/DAY/SQ FT
5. WEIR OVERFLOW RATE 1,947 GAL/DAY/FT
6. ALL PIPING, EQUIPMENT AND TANKS ARE NEW UNLESS NOTED OTHER WISE.
7. ALL CONCRETE TANKS SHOWN ON THIS DRAWING ARE PRECAST CONCRETE PROVIDED BY A MANUFACTURER SEE SPECIFICATIONS.



TOP PLAN
SCALE: 1/2" = 1'-0"

POGGEMEYER DESIGN GROUP, INC.
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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

CLARIFIERS TANKS PLANS & SECT.

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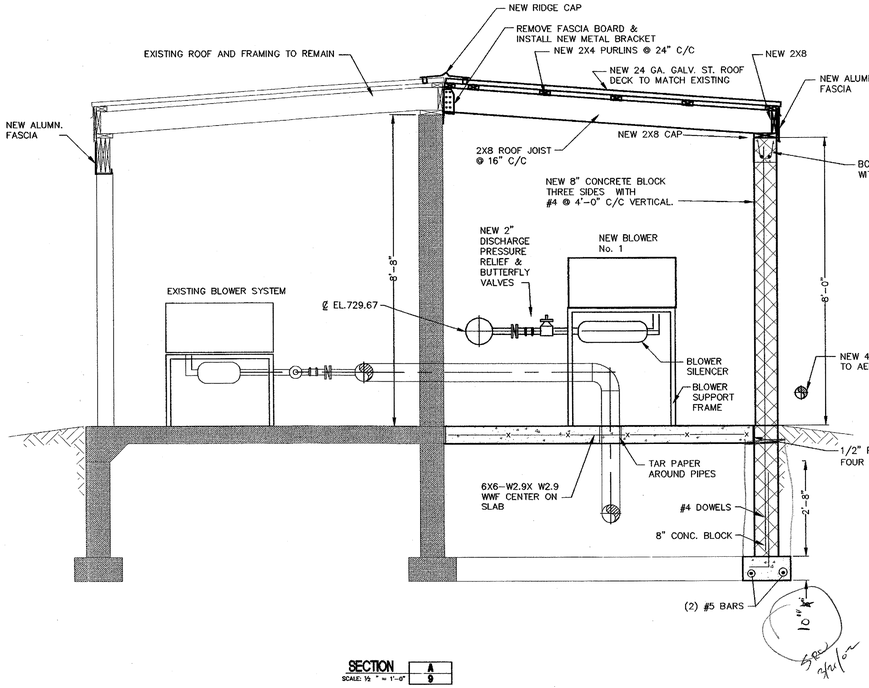
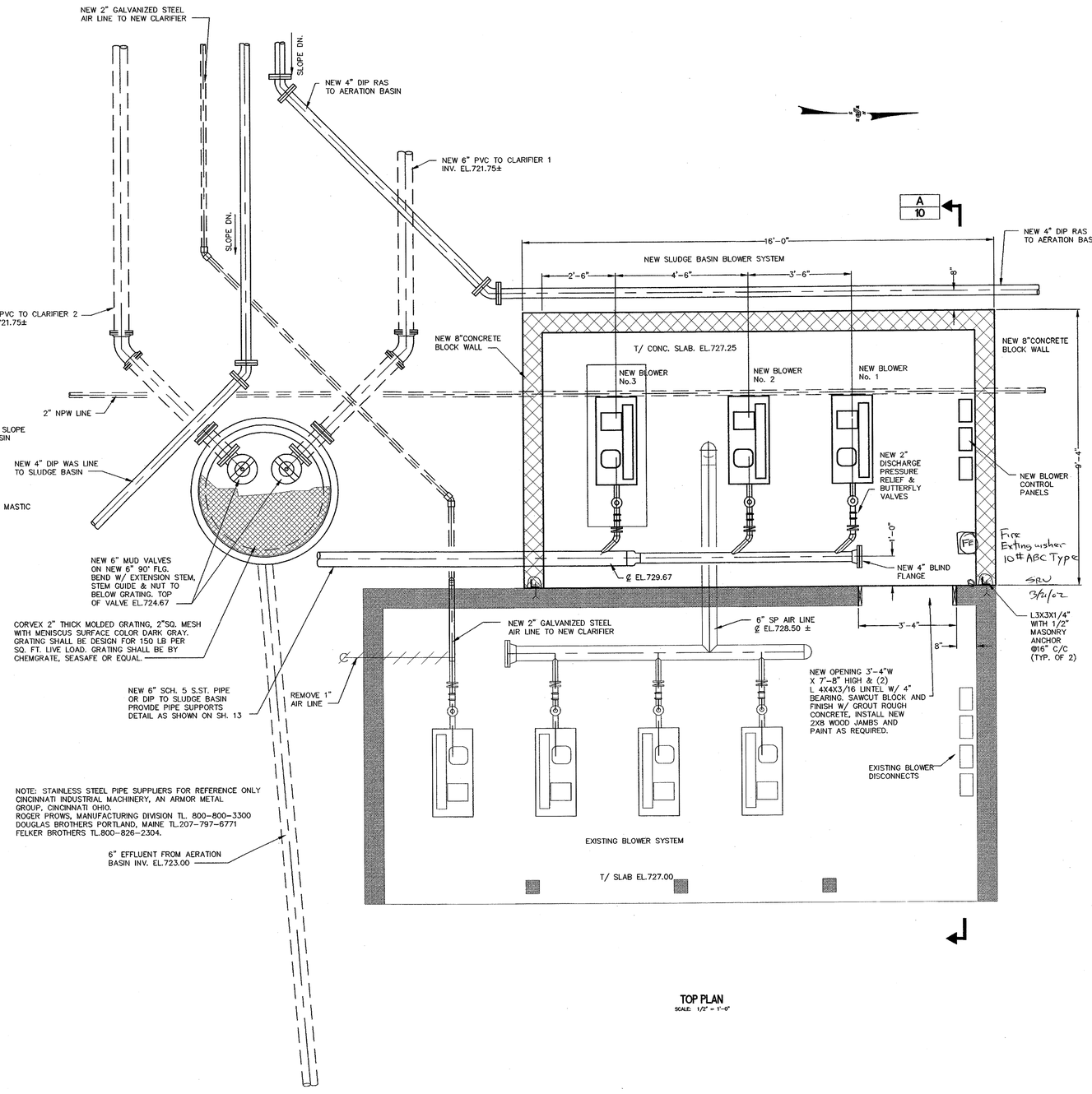
STATE OF OHIO MICHAEL ATHERINE, JR. 43597 REGISTERED PROFESSIONAL ENGINEER

9 OF 22

JOB NUMBER 1457-003



SECTION
SCALE: ½ " = 1'-0"
A
9



TOP PLAN
SCALE: 1/2" = 1'-0"

POGGEMEYER DESIGN GROUP, INC.
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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

BLOWER STRUCTURE PLANS & SECT.

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JOB NUMBER 1457-003

STATE OF OHIO
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1457O310.dwg 3-14-02 10:15:55 am EST

CELL I LAGOON PLAN
SCALE 1/4" = 1'-0"

SECTION A/11
SCALE: 1/4" = 1'-0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

AERATION BASIN RENOVATION PLAN, SECT. & DET.

DRAWN BY	CHECKED BY
JAB	SRW

REVISION

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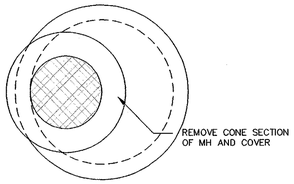
REGISTERED PROFESSIONAL ENGINEER

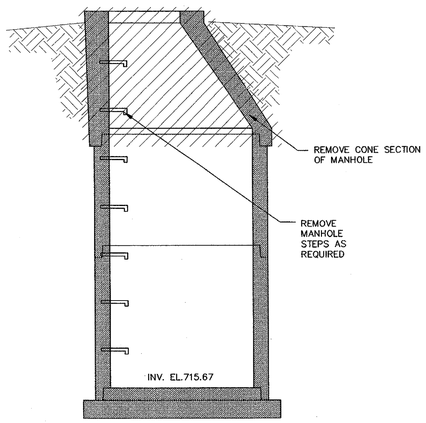
11 OF 22

JOB NUMBER 1457-003

14570311.dwg 31402 84312



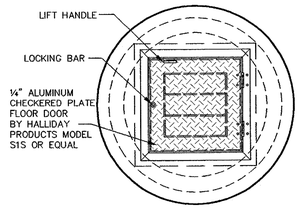
PLAN (REMOVALS)



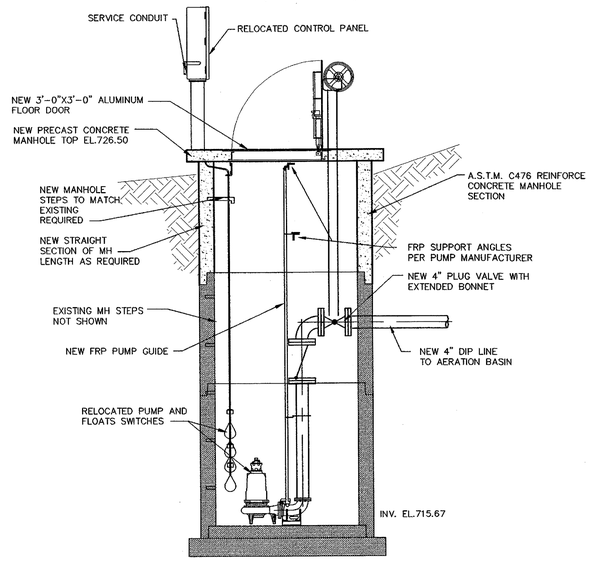
SECTION (REMOVALS)

MANHOLE NO. 3 (REMOVALS)

1/2" = 1'-0"



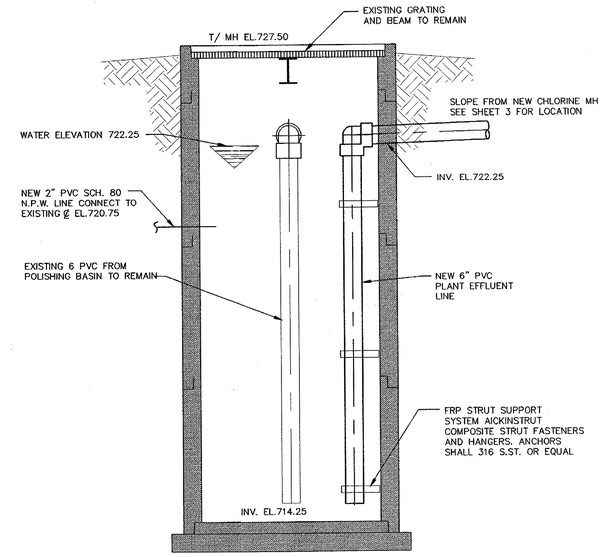
PLAN (RENOVATION)



SECTION (RENOVATION)

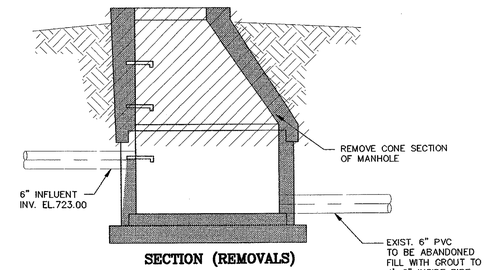
MANHOLE NO. 3 (RENOVATION)

1/2" = 1'-0"



CHLORINATION CHAMBER

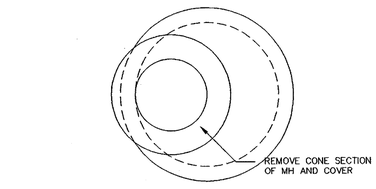
1/2" = 1'-0"



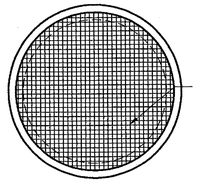
SECTION (REMOVALS)

MANHOLE NO. 5

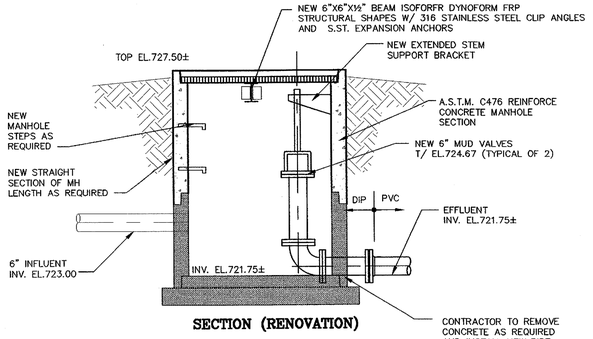
1/2" = 1'-0"



PLAN (REMOVALS)



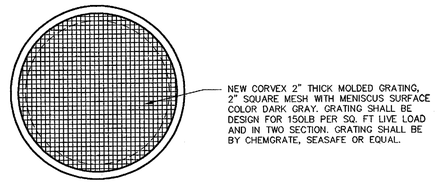
PLAN (RENOVATION)



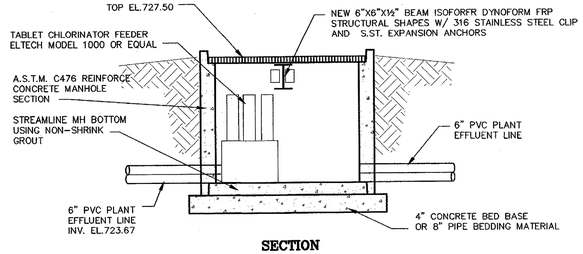
SECTION (RENOVATION)

MANHOLE NO. 5

1/2" = 1'-0"



TOP PLAN



SECTION

NEW CHLORINATION MANHOLE NO. 6

1/2" = 1'-0"

POGGEMEYER DESIGN GROUP, INC.
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ARCHITECTS
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WASTEWATER TREATMENT PLANT
IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

MANHOLE PLANS
AND SECTIONS

DRAWN BY	CHECKED BY
JAB	SRW

REVISION

STATE OF OHIO
MICHAEL
ATHERINE, JR.
43597
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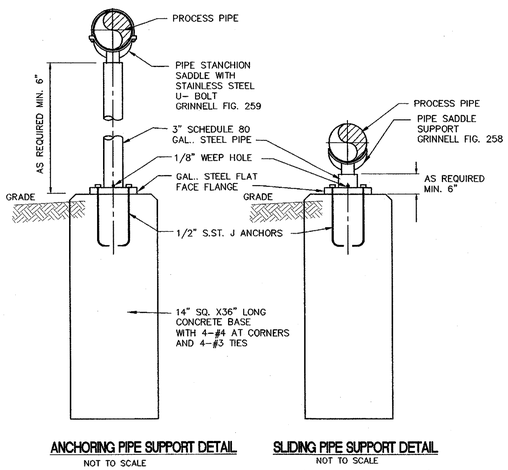
PROFESSIONAL ENGINEER

12
OF
22

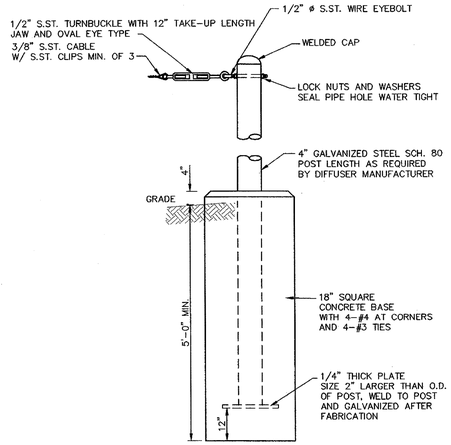
JOB NUMBER
1457-003

14570312.dwg 3-15-02 9:01:13 am EST

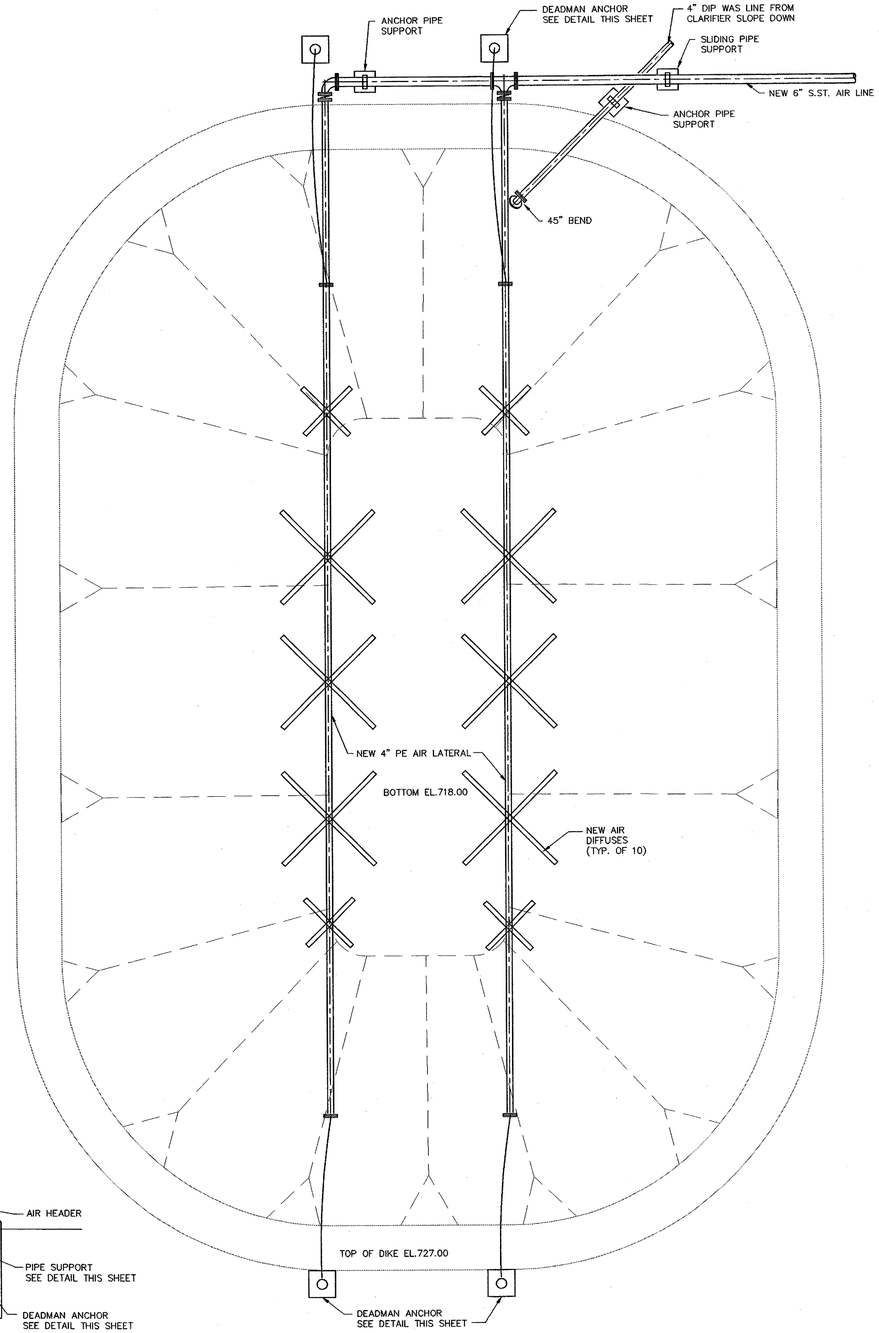


ANCHORING PIPE SUPPORT DETAIL
NOT TO SCALE

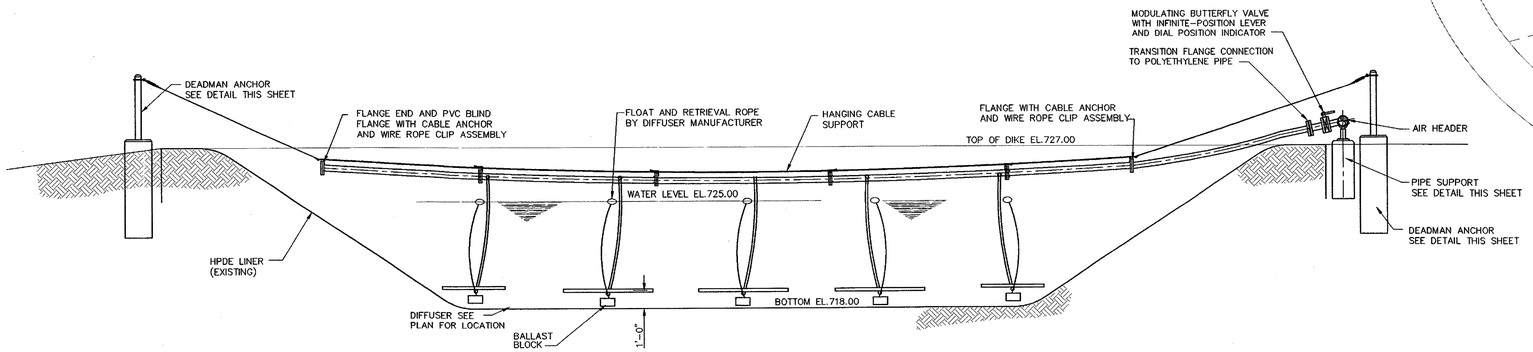
SLIDING PIPE SUPPORT DETAIL
NOT TO SCALE



DEADMAN ANCHOR DETAIL
NOT TO SCALE



SLUDGE BASIN PLAN
SCALE 1/4" = 1'-0"



SECTION A/13
SCALE: 1/4" = 1'-0"

POGGEMEYER DESIGN GROUP, INC.
ARCHITECTS ENGINEERS PLANNERS
1168 NORTH MAIN STREET (419) 352-7537 BOWLING GREEN, OHIO 43402

WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

SLUDGE BASIN AERATION SYSTEM-DETAILS

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JAB	SRW

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13 OF 22

JOB NUMBER 1457-003

4" FORCE MAIN PLANT FEED LINE

10" VILLAGE SEWER SYSTEM

EXISTING PLANT FEED PUMP STATION

P-2

P-3

CHLORINATION MH 8

NEW 6" EFFLUENT LINE

WEST CREEK

EFFLUENT METER MH 2

EXISTING POLISHING BASIN

NEW CLARIFIERS 1 & 2

EFFLUENT TROUGH

EFFLUENT TROUGH

NEW SLUDGE AIR LIFT PUMP (TYPICAL)

NEW SLUDGE AIR LIFT PUMP (TYPICAL)

CHLORINATION MH

DECHLORINATION MH 7

SAMPLING POINT MH 1

NEW SEPTAGE SCREEN

NEW 8" RAW SEWAGE 2,000 GAL. HOLDING TANK

NEW 8" RAW SEWAGE

4" BUILDING DRAIN LINES

NEW 2" RAW SEWAGE LINE

NEW GRINDER PUMP

EXISTING MH 6

NEW SLUDGE DISTRIBUTION BOX

NEW 2" AIR LINE

NEW 2" AIR LINE

4" RAW SEWAGE LINE

CONTROL VALVES

8" INFLUENT

MH 5 FLOW SPLITTER

EXISTING BLOWER SYSTEM

4" DECANT LINE

NEW 6" DECANT LINE

NEW 4" WAS

NEW 4" RAS LINE

4" DECANT LINE

NEW BELT PRESS

NEW 6" DRAIN

M

MH 3

EXISTING SLUDGE BASIN

6" EFFLUENT

RELOCATED DECANT RETURN PUMP

P-1

NEW BELT PRESS FEED PUMP

NEW 4" RAS LINE

4" DECANT LINE

4" RAW SEWAGE LINE

EXISTING AERATION BASIN

NEW SLUDGE BASIN BLOWER SYSTEM

LEGEND

NEW PIPING AND EQUIPMENT

EXISTING PIPING AND EQUIPMENT

NEW AIR PIPING

STATE OF OHIO
MICHAEL ATHERINE, JR.
43597
REGISTERED PROFESSIONAL ENGINEER

14570314.dwg 3-14-02 111729 am EST

POGGEMEYER DESIGN GROUP, INC.
PLANNERS
ARCHITECTS ENGINEERS
1168 NORTH MAIN STREET (419) 352-7537 BOWLING GREEN, OHIO 43402

WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

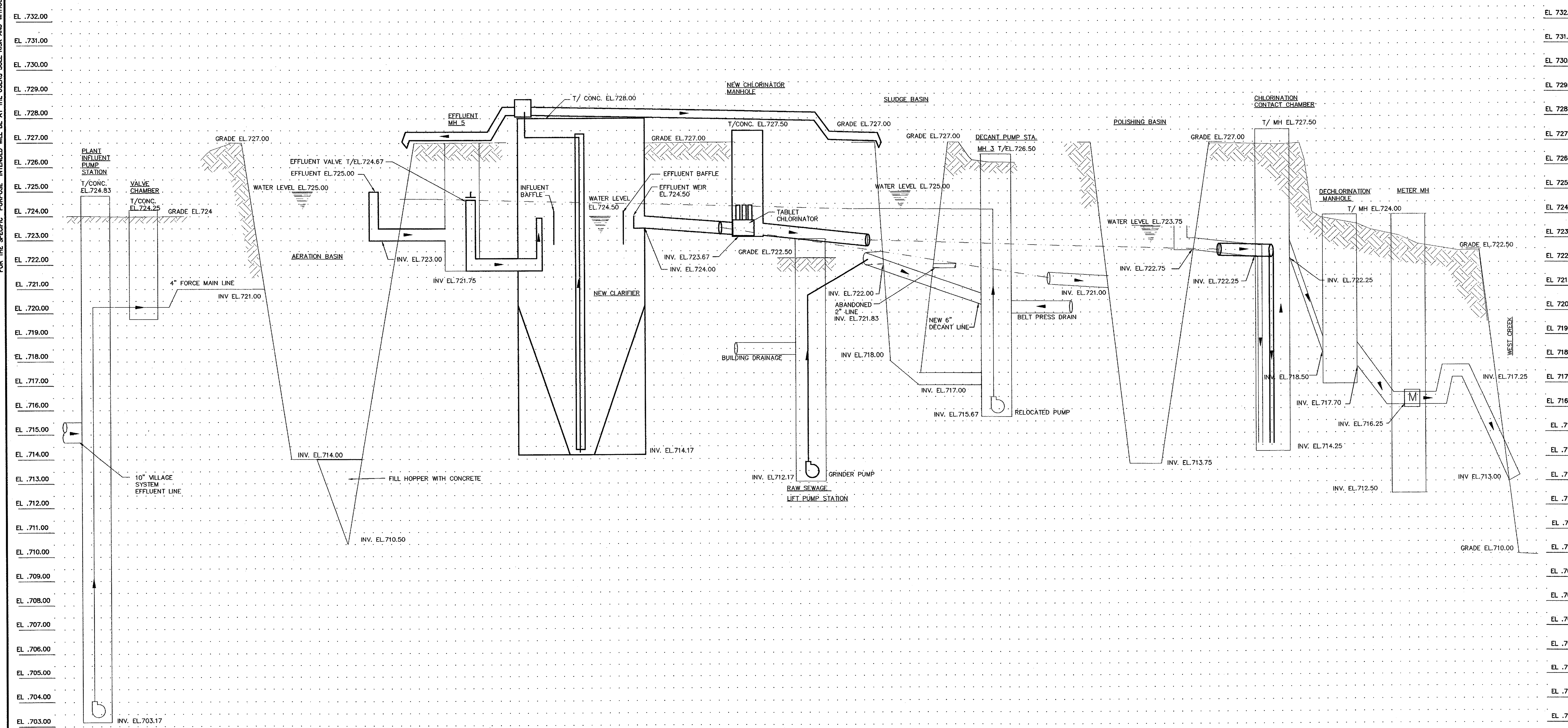
PLANT FLOW SCHEMATIC DIAGRAM

DRAWN BY	CHECKED BY
W.M.V.	S.R.W.

REVISION

14 OF 22

JOB NUMBER 1457-003



SCALE: VERTICAL 1/2"=1'-0", HORIZONTAL NONE

100 YEAR FLOOD ELEVATION 722.00

LEGEND
EXISTING PIPING AND EQUIPMENT
PROPOSED PIPING AND EQUIPMENT
PRESSURE PIPE LINE (PUMP DISCHARGE)

STATE OF OHIO
MICHAEL ATHERINE, JR.
43597
REGISTERED
PROFESSIONAL ENGINEER

POGGEMEYER DESIGN GROUP, INC.
ARCHITECTS • ENGINEERS • PLANNERS
1168 NORTH MAIN STREET (419) 352-7537 BOWLING GREEN, OHIO 43402

WESTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

PLANT HYDRAULIC PROFILE

DRAWN BY	CHECKED BY
W.M.V.	S.R.W.

REVISION

JOB NUMBER
1457-003

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GENERAL NOTES

1. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE WHEN COMPLETED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE PROCEDURES FOR ERECTION AND CONSTRUCTION SEQUENCES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE BUILDING AND ITS OCCUPANTS THROUGHOUT CONSTRUCTION.
2. SHOP DRAWINGS REVIEWED BY THE CONTRACTOR AND STAMPED INDICATING APPROVAL SHALL BE SUBMITTED TO THE A/E FOR REVIEW PRIOR TO FABRICATION DETAILING ALL NECESSARY COMPONENTS. REPRODUCTIONS OF THE CONTRACT DOCUMENTS WILL NOT BE ACCEPTED WITHOUT PRIOR PERMISSION OF A/E.

DESIGN CRITERIA

1. ALL DESIGN LOADS SHALL COMPLY WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE BUILDING CODE USED BY THE AUTHORITY HAVING JURISDICTION OVER BUILDING WHERE THE PROJECT IS LOCATED.

FLOOR 150LB

ROOF 20psf LIVE LOAD (MIN)

SNOW UNIFORM & DRIFTING BASED ON 25psf GROUND SNOW LOAD (Pg)
Pf = 17.5
Ce = 0.7
I = 1.0

WIND 80mph BASIC WIND SPEED
I = 1.0
EXP C
P = VARIES (Pv = 16.4)

SEISMIC	Av = 0.06		EXPOSURE GROUP	I
	Aa = 0.06		PERFORMANCE CATEGORY	B
			SOIL PROFILE	S4 (S=2.0)
			ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE PROCEDURE

PUMP STATION BUILDING
R = 3 1/2
Cd = 3

STORAGE BUILDING
R = 6 1/2
Cd = 4

FOUNDATIONS AND EARTHWORK

1. FOUNDATIONS SHALL BEAR ON UNDISTURBED SOIL OR ENGINEERED FILL PROVIDING A SAFE BEARING CAPACITY OF 2500psf FOR SHALLOW FOUNDATIONS OF PUMP STATION AND 8000 psf FOR DEEP FOUNDATIONS OF PUMP STATION, CLARIFIER TANKS AND OXIDATION DITCH. MATERIALS AT BEARING ELEVATIONS WHICH DOES NOT CONFORM WITH THESE REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE A/E FOR REVIEW AND DETERMINATION.
2. FILL UNDER BUILDING SLABS, PAVINGS, CURBS, WALKS, ETC. SHALL BE MADE WITH COARSE SAND, GRAVEL, OR CRUSHED STONE COMPACTED TO NOT LESS THAN 100% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698.
3. THE STABILITY AND POSITION OF WALLS SHALL BE MAINTAINED DURING BACKFILLING BY BRACING OF THE WALL OR PLACEMENT OF THE FILL SHALL BE SUCH THAT THE HEIGHT OF FILL ON EACH SIDE OF THE WALL IS APPROXIMATELY EQUAL.
4. FOR WALLS SPANNING FROM GROUND FLOORS TO THE FIRST SUPPORTED FLOOR OR ROOF (BASEMENTS), THE GROUND FLOOR SLAB AND THE FLOOR OR ROOF STRUCTURE AT THE TOP SHALL BE IN PLACE BEFORE BACKFILL IS PLACED AGAINST THE WALL.
5. UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS FOUNDATIONS SHALL EXTEND BELOW LOCAL FROST DEPTHS.

CONCRETE

1. DESIGN, FURNISH, AND PLACE CONCRETE IN ACCORDANCE WITH THE LATEST SPECIFICATIONS OF THE ACI.
2. UNLESS NOTED OR SPECIFIED OTHERWISE, CONCRETE SHALL BE CONTROLLED STONE OR GRAVEL CONCRETE. CONCRETE SHALL HAVE THE FOLLOWING MINIMUM 28 DAY COMPRESSIVE STRENGTHS:

   UNEXPOSED FOUNDATIONS 3000psi

   FLOORS AND EXPOSED WORK 4000psi
3. EXTERIOR CONCRETE OR CONCRETE SUBJECT TO FREEZE-THAW CYCLING SHALL BE AIR-ENTRAINED (6% ±1%).
4. DESIGN, DETAIL, FABRICATE, AND ERECT REINFORCING STEEL ACCORDING TO THE LATEST ACI AND CRSI SPECIFICATIONS FROM ASTM A-615, GRADE 60 MATERIAL.
5. WALL AND FOOTING REINFORCING SHALL BE HOOKED AROUND CORNERS A MINIMUM OF 30 BAR DIAMETERS OR SEPARATE CORNER BARS SHALL BE PROVIDED
6. REINFORCING BARS SHALL LAP A MINIMUM OF 30 BAR DIAMETERS, BUT NOT LESS THAN 12".
7. PROVIDE A 1" NOMINAL CHAMFER AT ALL EXPOSED CORNERS OF BEAMS, COLUMNS, AND WALLS.
8. AT ALL CONSTRUCTION JOINTS PROVIDE KEYWAYS 1 1/2" DEEP BY 1/3 THE WIDTH OF THE MEMBER (3 1/2" MIN).
9. PROVIDE CONTROL JOINTS IN FLOOR SLABS AT 20' c/c MAXIMUM EACH WAY UNLESS OTHERWISE NOTED ON DRAWINGS.
10. PROVIDE THE FOLLOWING PROTECTION (COVER) OVER REINFORCING:

COLUMNS, BEAMS, AND GIRDERS	1 1/2"
SLABS AND WALLS	3/4"
MEMBERS IN CONTACT WITH OR OVER WATER	2"
FORMED MEMBERS IN CONTACT WITH EARTH	2"
MEMBERS PLACED AGAINST EARTH	3"

MASONRY

1. MASONRY CONSTRUCTION SHALL CONFORM TO THE LATEST ACI AND NCMA SPECIFICATIONS PERTINENT TO THE PARTICULAR TYPE OF CONSTRUCTION OR CONDITION OCCURRING.
2. ASTM C-90 CONCRETE MASONRY UNITS SHALL BE USED. MORTAR SHALL BE TYPE S. REINFORCED MASONRY DESIGN IS BASED ON f'm = 1350psi. USE ONLY PORTLAND CEMENT FOR REINFORCED MASONRY.
3. THREE COURSES (24" MIN) OF SOLID BEARING, BUILT IN A PYRAMID FASHION, SHALL BE PROVIDED BELOW ALL BEAM AND JOIST BEARINGS AND LINTELS IN BEARING WALLS. OTHER LINTELS OR LOAD CONCENTRATIONS SHALL BE PROVIDED WITH 16" MINIMUM DEPTH OF SOLID MASONRY BEARING.
4. SINGLE WYTHE WALLS SHALL HAVE TRUSS DESIGN MASONRY WALL REINFORCEMENT IN EVERY OTHER HORIZONTAL JOINT (16" c/c) AND IN EACH JOINT (8" c/c) FOR TWO JOINTS ABOVE AND BELOW OPENINGS. REINFORCEMENT SHALL BE CONTINUOUS WITH 6" MINIMUM LAPS. REINFORCEMENT AT OPENINGS SHALL EXTEND 2' BEYOND EACH SIDE OF THE OPENING. CAVITY WALLS SHALL HAVE ONE ROD FOR EACH BED JOINT. NO "TRUSS" RODS SHALL EXTEND THROUGH THE CAVITY.
5. PROVIDE CONTROL JOINTS IN CONCRETE MASONRY WALLS AT A MAXIMUM SPACING OF 40' c/c OR AS OTHERWISE SHOWN ON THE DRAWINGS. EXPANSION JOINTS IN BRICK MASONRY VENEERS SHALL BE PROVIDED AT A MAXIMUM SPACING OF 20' c/c OR AS OTHERWISE SHOWN ON THE DRAWINGS.
6. FASTENERS/ANCHORS USED IN MASONRY CONSTRUCTION SHALL BE SLEEVE TYPE EXPANSION ANCHORS, MIN 3/8"DIA UNLESS NOTED OTHERWISE. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.
7. WHERE MASONRY WYTHES CHANGE THICKNESS, PROVIDE SOLID (OR GROUTED) COURSE IMMEDIATELY BELOW CHANGE.

MISCELLANEOUS METALS

1. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, PROVIDE LOOSE ANGLE LINTELS OVER ALL MASONRY OPENINGS AND RECESSES AS REQUIRED. LINTELS NOT SCHEDULED ON DRAWINGS SHALL CONSIST OF A SINGLE ANGLE WITH A 3 1/2" HORIZONTAL LEG FOR EACH FOUR INCHES OF WALL THICKNESS. ANGLES SHALL BE AS FOLLOWS:

MASONRY OPENING	ANGLE SIZE	BEARING (EACH END)
4'-0" (OR LESS)	3 1/2 x 3 1/2 x 5/16	4"
4'-0" - 6'-0"	4 x 3 1/2 x 5/16	6"
6'-0" - 8'-0"	5 x 3 1/2 x 5/16	8"
8'-0" - 10'-0"	6 x 3 1/2 x 5/16	8"

2. ALUMINUM IN CONTACT WITH CONCRETE OR A DISSIMILAR METAL SHALL BE COATED WITH A BITUMASTIC PAINT.

STRUCTURAL STEEL

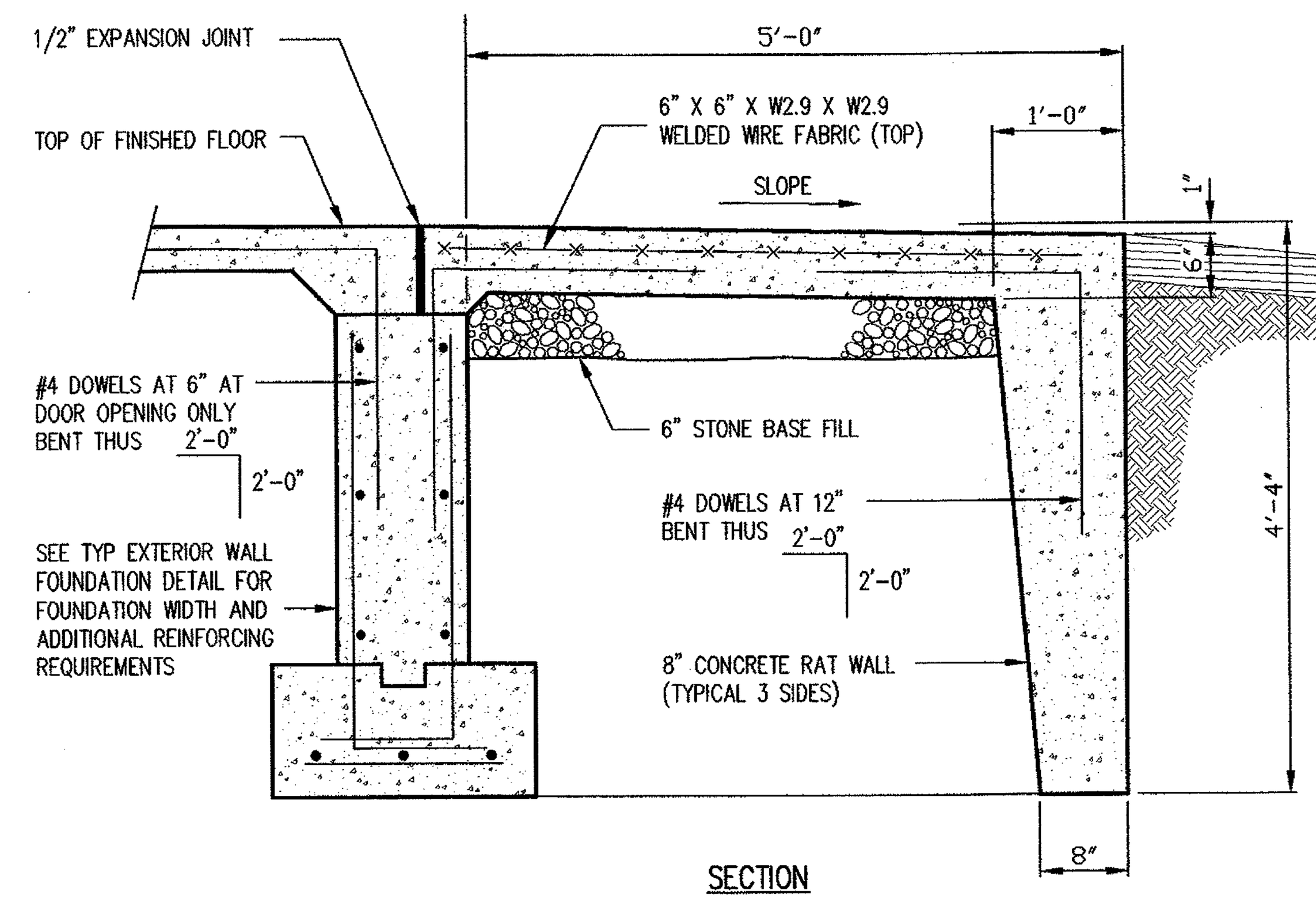
1. DESIGN, DETAIL, FABRICATE, AND ERECT STEEL IN ACCORDANCE WITH THE LATEST AISC SPECIFICATIONS.
2. STEEL SHAPES SHALL BE ASTM A36; TUBING ASTM A500 GRADE B; AND PIPE ASTM A53 GRADE B.
3. ALL STRUCTURAL STEEL SHALL HAVE ONE SHOP COAT OF APPROVED PRIMING PAINT. PARTS INACCESSIBLE AFTER ERECTION SHALL RECEIVE TWO COATS.
4. CONNECTIONS SHALL BE SHOP WELDED AND FIELD BOLTED UNLESS OTHERWISE SHOWN.
5. UNLESS INDICATED OTHERWISE ON THE DRAWINGS, CONNECTIONS SHALL DEVELOP THE FULL STRENGTH OF THE MEMBER AS DETERMINED BY THE LOAD TABLES IN THE AISC MANUAL.
6. BOLTED CONNECTIONS SHALL BE OF 3/4"ø, A325, WITH A MINIMUM OF 2 BOLTS PER CONNECTION.
7. ALL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST AISC AND AWS SPECIFICATIONS USING E70 ELECTRODES.
8. BASE PLATES SHALL BE WELDED TO COLUMNS.
9. ALL COLUMNS SHALL HAVE 3/4" NON SHRINK GROUT AND A 1/4" LEVELING PLATE BETWEEN THE BASE PLATE AND CONCRETE.
10. ANCHOR BOLTS SHALL BE A307, 3/4"ø WITH A MINIMUM OF 8" PLUS A HOOK EMBEDDED IN THE CONCRETE UNLESS NOTED OTHERWISE.

CARPENTRY

1. ALL WOOD CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION".
2. LUMBER AND WOOD FRAMING SHALL NOT HAVE A MOISTURE CONTENT GREATER THAN 19% BY WEIGHT WHEN PLACED INTO THE CONSTRUCTION.
3. LUMBER FOR FRAMING SHALL BE SPRUCE-PINE-FIR #2 OR BETTER.
4. PRESERVATIVE OR FIRE RETARDANT TREATED LUMBER SHALL BE SOUTHERN PINE #2 OR BETTER.
5. PROVIDE WOOD FRAMING AS SHOWN AND AS REQUIRED TO COMPLETE THE PROJECT.
   A. STUDS SHALL BE OF SIZE AND SPACING AS SHOWN ON THE DRAWINGS, DOUBLED AROUND OPENINGS AND TRIPLED AT CORNERS.
   B. PROVIDE PLATES TOP AND BOTTOM OF STUD WALLS (DOUBLE TOP PLATES). SPLICES IN TOP PLATES SHALL BE MADE OVER STUDS AND STAGGERED.
6. JOIST, RAFTERS, AND OTHER FRAMING MEMBERS SHALL BE SECURELY ANCHORED TO THEIR SUPPORTING MEMBERS AND BLOCKED TO PREVENT ROTATION. PROVIDE GALVANIZED METAL CONNECTORS WHERE INDICATED.
7. ALL HEADERS SHALL BE MULTIPLE 2x10's (1 FOR EACH NOMINAL 2" OF WALL), UNLESS NOTED OTHERWISE.
8. ALL HEADERS SHALL BEAR ON MINIMUM 1 STUD, SISTERED TO 1 FULL HEIGHT STUD UNLESS NOTED OTHERWISE.
9. UNLESS NOTED OTHERWISE, ALL BEAMS BEARING ON WALLS SHALL BE SUPPORTED BY 1 STUD FOR EACH NOMINAL 2" OF BEAM, SISTERED TO 1 FULL HEIGHT STUD.

WOOD ROOF TRUSSES

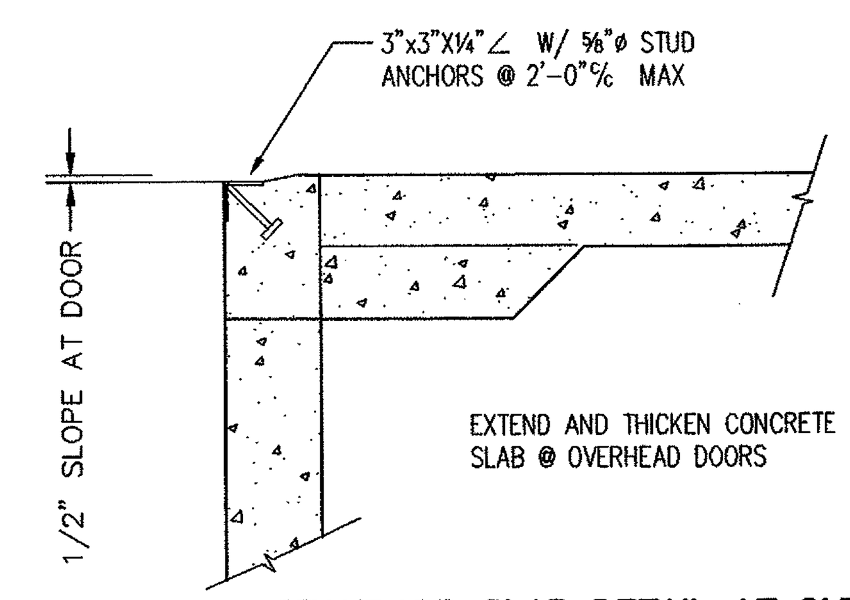
1. ROOF TRUSSES SHALL BE DESIGNED AND FABRICATED IN ACCORDANCE WITH THE LATEST TRUSS PLATE INSTITUTE SPECIFICATIONS.
2. STRUCTURAL COMPUTATIONS AND DETAILS SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE LOCALITY OF THE PROJECT SHALL BE SUBMITTED FOR EACH TRUSS CONFIGURATION.
3. TRUSSES SHALL BE DESIGNED FOR 10psf DEAD LOAD AND 25psf LIVE LOAD ALL ON THE TOP CHORD, AND 10psf DEAD LOAD ON THE BOTTOM CHORD, PLUS ANY ADDITIONAL LOADING SHOWN ON THE DRAWINGS. SNOW LOADS SHALL BE APPLIED ACCORDING TO THE APPLICABLE BUILDING CODE INCLUDING INCREASES DUE TO DRIFTING OR SLIDE OFF FROM AN ADJACENT ROOF.
4. PROVIDE GALVANIZED METAL TRUSS CLIPS TO ANCHOR EACH END OF TRUSS.
5. ALL TRUSS HANGERS SHALL BE DESIGNED AND SUPPLIED BY THE TRUSS MANUFACTURER TO ACCOMMODATE TRUSSES SUPPLIED.
6. PROVIDE TRUSS BRACING CONFORMING TO TRUSS PLATE INSTITUTE STANDARDS. PROVIDE TEMPORARY BRACING DURING ERECTION. PROVIDE PERMANENT BRACING AS REQUIRED IN THE DESIGN OF THE TRUSS AS INDICATED. IN ADDITION TO THE ABOVE PROVIDE PERMANENT BRACING AS FOLLOWS UNLESS OTHERWISE NOTED:
   A. UNLESS SHEATHED WITH APA RATED SHEATHING, PROVIDE CONTINUOUS LATERAL BRACING OF THE TOP CHORD AS INDICATED ON THE DRAWINGS. PROVIDE DIAGONAL BRACING ON BOTH SIDES OF THE RIDGE AT END BAYS AND AT 20' INTERVALS FOR BUILDINGS OVER 60' IN LENGTH.
   B. PROVIDE DIAGONAL BRACING IN THE PLANE OF WEB MEMBERS AT 12-16' INTERVALS ALONG THE LENGTH OF TRUSSES AT END BAYS AND AT 20' INTERVALS ALONG THE LENGTH OF THE BUILDING.
   C. UNLESS CONTINUOUSLY SHEATHED PROVIDE CONTINUOUS LATERAL BRACING OF THE BOTTOM CHORD AT 8-10' INTERVALS AT OR NEAR PANEL POINTS, OR AS INDICATED ON THE DRAWINGS. PROVIDE DIAGONAL BRACING ON BOTH SIDES OF THE RIDGE AT END BAYS AND AT 20' INTERVALS FOR BUILDINGS OVER 60' IN LENGTH.



SECTION

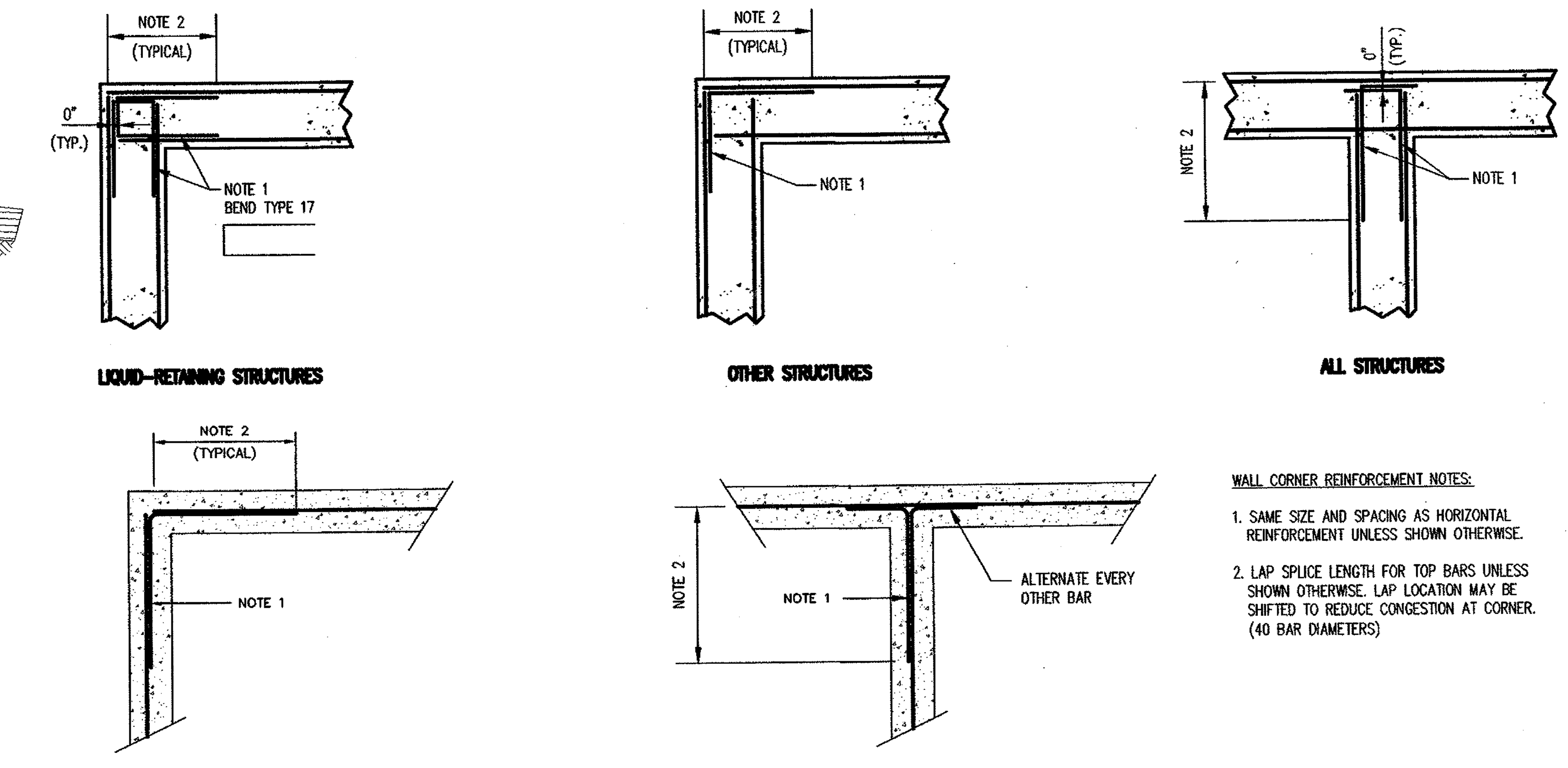
TYPICAL STOOP DETAIL

SCALE: 3/4" = 1'-0"



STANDARD SLAB DETAIL AT OVERHEAD DOORS

SCALE NONE

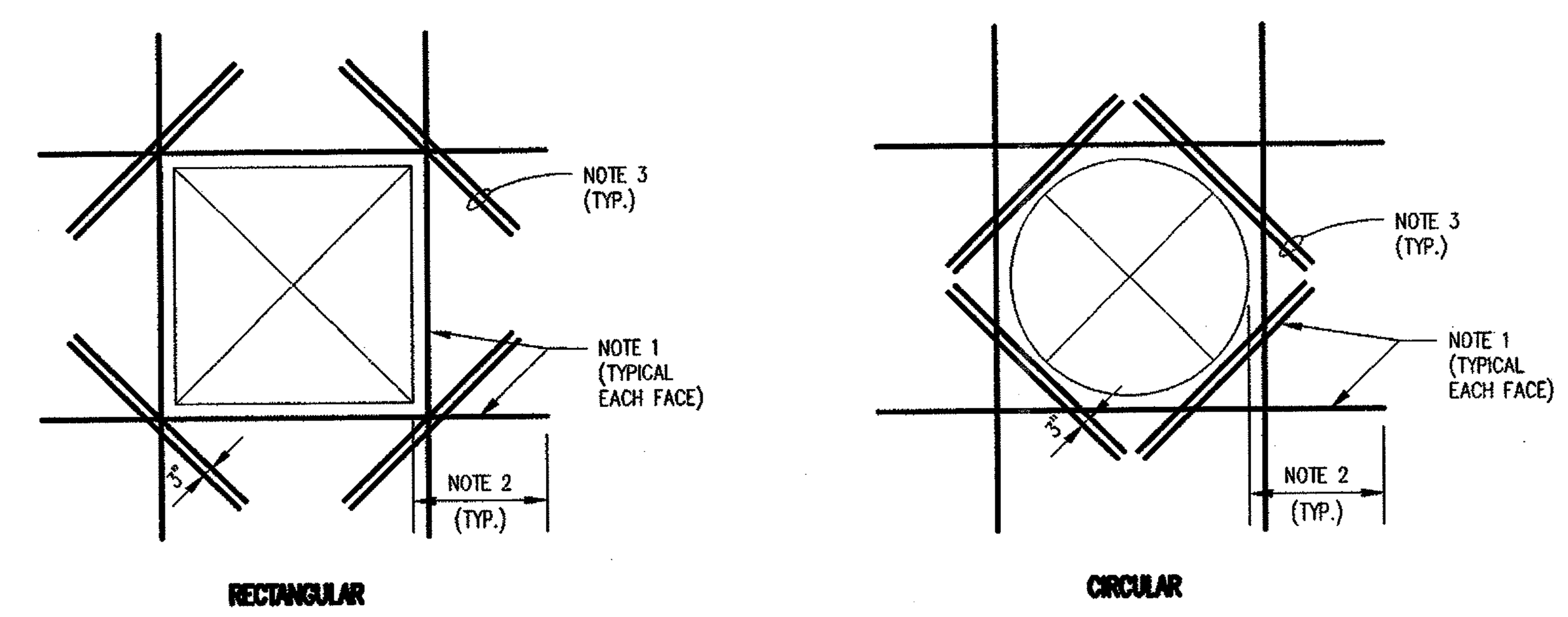


WALL CORNER REINFORCEMENT NOTES:

1. SAME SIZE AND SPACING AS HORIZONTAL REINFORCEMENT UNLESS SHOWN OTHERWISE.
2. LAP SPLICE LENGTH FOR TOP BARS UNLESS SHOWN OTHERWISE. LAP LOCATION MAY BE SHIFTED TO REDUCE CONGESTION AT CORNER. (40 BAR DIAMETERS)

TYPIAL CORNER REINFORCEMENT WALL TYPICAL

NOT TO SCALE



REINFORCEMENT AT OPENING NOTES:

1. ADDITIONAL REINFORCEMENT EQUAL IN AREA TO REINFORCEMENT CUT BY OPENING.
2. LAP SPLICE LENGTH FOR TOP BARS. (40 BAR DIAMETERS)
3. DIAGONAL BARS - EACH FACE, 2 EACH CORNER - SIZE AS FOLLOWS:

CONC. THICKNESS	BAR SIZE	LENGTH
LESS THAN 12"	#4	3'-0"
12" TO 18"	#5	3'-6"
GREATER THAN 18"	#6	4'-0"

TYPIAL ADDITIONAL REINFORCEMENT AT OPENINGS LARGER THAN 12"

NOT TO SCALE

STATE OF OHIO
MICHAEL
ATHERINE, JR.
43597
REGISTERED
PROFESSIONAL ENGINEER

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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

STRUCTURAL DETAILS AND GENERAL NOTES

DRAWN BY	CHECKED BY
W.M.V.	S.R.W.

REVISION

JOB NUMBER 1457-003

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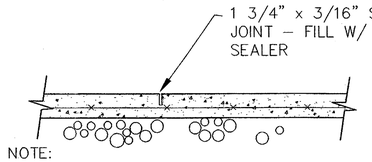
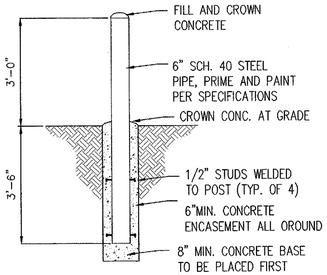


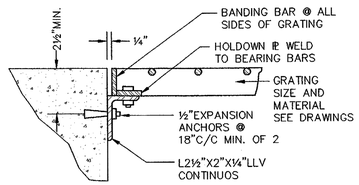
NOTE:
SEE PLANS FOR SLAB & BASE THICK.

TYP. SLAB ON GRADE CONTROL JOINT

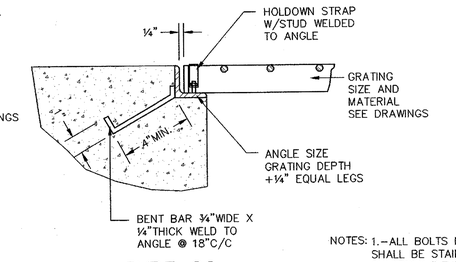


GUARD POST DETAIL

N.T.S.

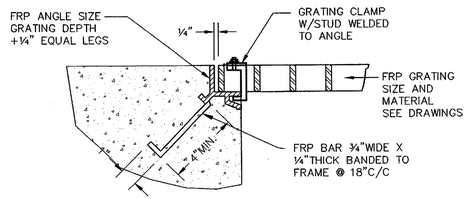


TYPE C1

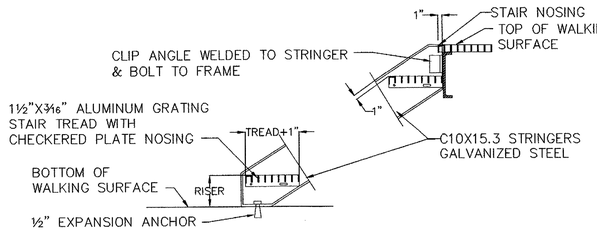


TYPE C2

NOTES: 1.–ALL BOLTS NUTS AND WASHERS SHALL BE STAINLESS STEEL.
2.–APPLY BITUMINOUS PAINT TO ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE
4.–FRAMING ANGLES TO BE THE SAME MATERIAL AS GRATING.

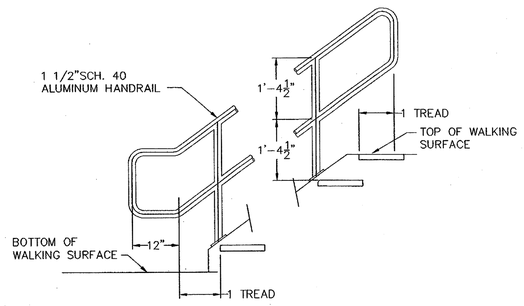


FRP GRATING FRAME DETAILS



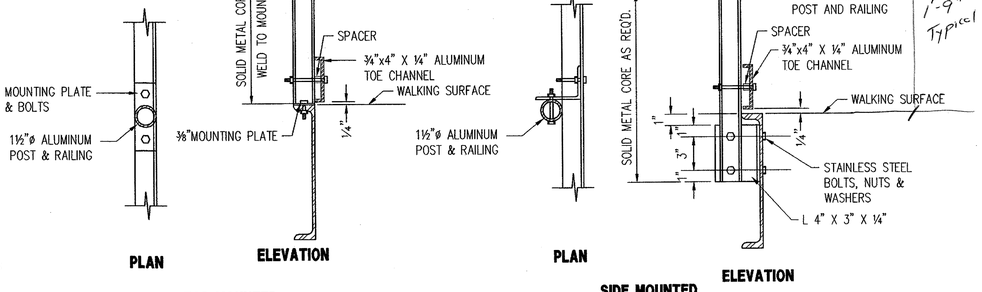
METAL STAIR DETAIL

N.T.S.



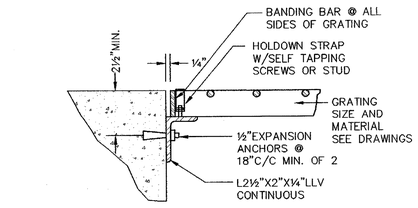
STAIR RAILING DETAIL

N.T.S.



STEEL MOUNTED HANDRAIL DETAILS

SCALE: NONE



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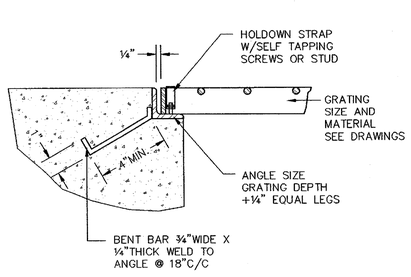
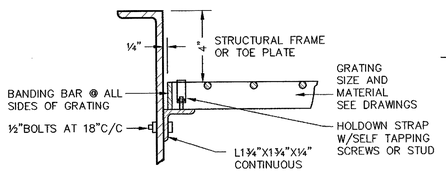
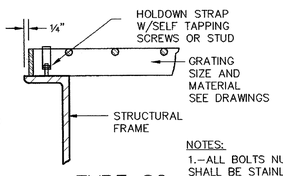


TYPE C2



TYPE S1



TYPE S2

NOTES:
1.–ALL BOLTS NUTS AND WASHERS SHALL BE STAINLESS STEEL.
2.–APPLY BITUMINOUS PAINT TO ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE
4.–FRAMING ANGLES TO BE THE SAME MATERIAL AS GRATING.

GRATING FRAME DETAILS

NTS

POGGEMEYER DESIGN GROUP, INC.
ARCHITECTS • ENGINEERS • PLANNERS
1168 NORTH MAIN STREET (419) 352-7537 BOWLING GREEN, OHIO 43402

WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

STRUCTURAL MISCELLANEOUS DETAILS

DRAWN BY	CHECKED BY
W.M.V.	S.R.W.

REVISION

17 OF 22

JOB NUMBER 1457–003

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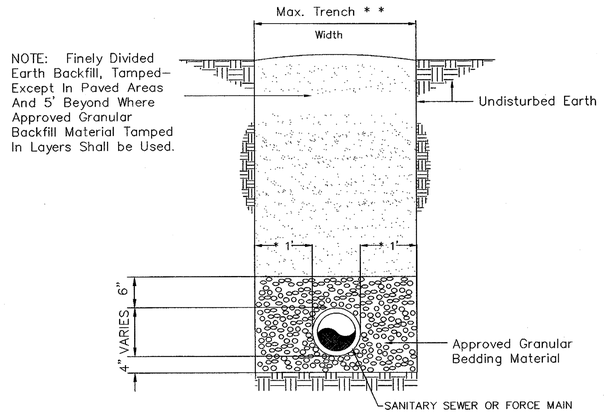
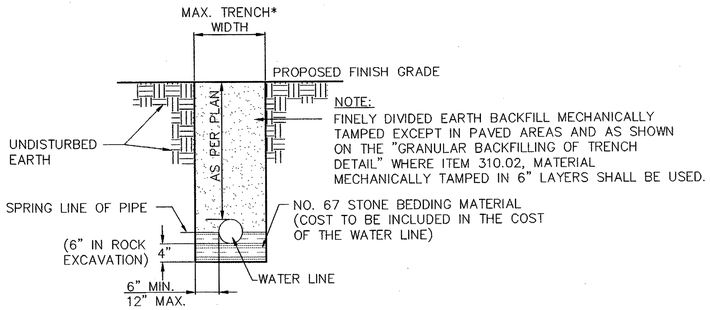


** Pay Limits Only, Maximum Trench Width Shall Be The Same As The Trench Width At The Top Of The Pipe.

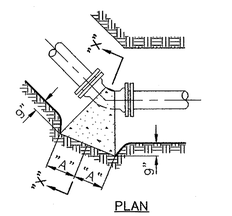
* For Sewer Up To 24" I.D. (Max. Is 18" For Sewers Over 24" I.D.)

GRAVITY SANITARY SEWER TRENCH DETAIL

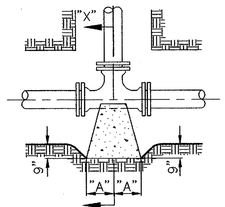


P.V.C. WATER LINE TRENCH DETAIL

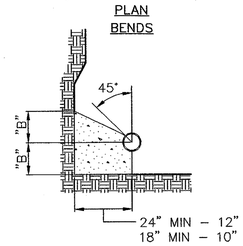
* FOR PAY LIMITS ONLY, MAXIMUM TRENCH WIDTH SHALL BE THE SAME AS THE TRENCH WIDTH AT THE TOP OF THE PIPE.



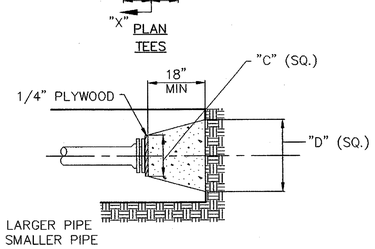
PLAN
BENDS



PLAN
TEES



SECTION X-X
BENDS AND TEES



PLAN AND ELEVATION
PLUGS

STANDARD BLOCKING

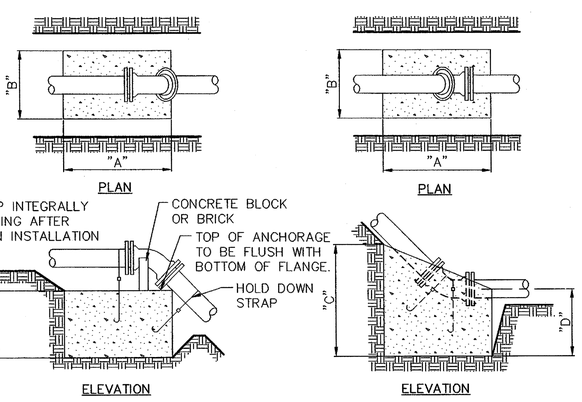
TYPE	SIZE	1/4 BENDS		1/8 BENDS		1/16 BENDS		TEES		PLUGS	
		A	B	A	B	A	B	A	B	C	D
2000 PSF SOIL	6"	16"	10"	9"	10"	6"	8"	10"	12"	10"	21"
	8"	22"	13"	12"	13"	8"	10"	13"	16"	12"	29"
	10"	26"	17"	14"	17"	10"	13"	16"	20"	14"	36"
	12"	29"	21"	16"	21"	11"	16"	18"	24"	16"	41"
	14"	35"	24"	19"	24"	12"	20"	22"	27"	18"	48"
	16"	38"	27"	21"	27"	12"	24"	24"	30"	20"	54"
	20"	46"	36"	25"	36"	15"	30"	30"	39"	24"	68"
	24"										

NOTE
BASED ON 100 P.S.I. STATIC PRESSURE PLUS A.W.W.A. WATER HAMMER.

ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.

ALL PIPE SURFACES COMING IN CONTACT WITH CONCRETE SHALL BE WRAPPED WITH 6MIL POLYETHELENE.

CONCRETE FOR BLOCKING SHALL BE CAST IN PLACE AND SHALL CONFORM TO O.D.O.T. ITEM 499, CLASS "C" AS PER THE O.D.O.T. CONSTRUCTION AND MATERIAL SPECIFICATIONS.

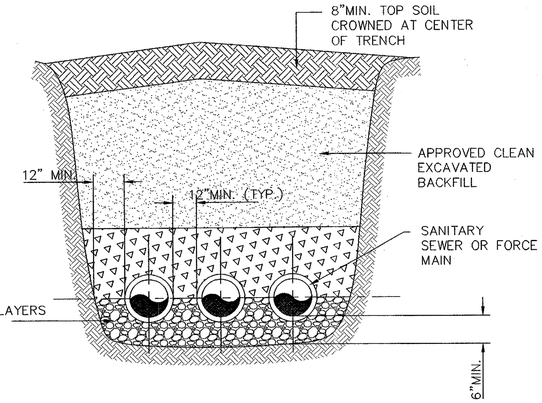


STANDARD BLOCKING

NOTE:
6" TO 8" 1-1/4"x1-1/8" STRAP
10" TO 12" 2-1/4"x1-1/4 STRAP
14" TO 16" 2-3/8"x1-1/2" STRAP
18" TO 20" 2-1/2"x1-3/4" STRAP

VERTICAL BENDS

SOIL TYPE	SIZE	TYPE A			TYPE B			
		A	B	C	A	B	C	D
2000 PSF SOIL	6"	36"	30"	24"	24"	24"	24"	16"
	8"	42"	36"	24"	30"	24"	30"	18"
	10"	48"	42"	30"	36"	30"	33"	18"
	12"	54"	48"	36"	36"	36"	36"	21"
	14"	54"	48"	60"	42"	42"	42"	24"
	16"	60"	54"	60"	48"	48"	44"	24"
	20"	72"	60"	72"	60"	54"	54"	30"
	24"							



MULTIPLE PIPE INSTALLATION

LEGEND

COMPACTED EARTH BACKFILL

UNDISTURBED EARTH

ITEM 310.02 GRANULAR BACKFILL

NO. 67 STONE

STATE OF OHIO
MICHAEL ATHERINE, JR.
43597
REGISTERED PROFESSIONAL ENGINEER

POGGEMEYER DESIGN GROUP, INC.
ARCHITECTS • ENGINEERS • PLANNERS
1168 NORTH MAIN STREET (419) 352-7537 BOWLING GREEN, OHIO 43402

WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

TRENCH AND PIPING DETAILS

DRAWN BY	CHECKED BY
W.M.V.	S.R.W.

REVISION

18 OF 22

JOB NUMBER 1457-003

14570318.dwg 31402 110537

HVAC SYSTEM SPECIFICATIONS

A. CONTRACT DRAWINGS: IN GENERAL, DRAWINGS ARE SCHEMATIC IN NATURE AND ARE INTENDED AS A GUIDE TO THE CONTRACTOR, BUT DO NOT NECESSARILY SHOW ALL DETAILS. ALL DRAWINGS ARE TO BE THOROUGHLY INSPECTED. THE CONTRACTOR'S WORK SHALL CONFORM TO THE INFORMATION CONTAINED IN THIS SPECIFICATION AND/OR AS INDICATED IN THE LATEST REVISION OF THE DRAWINGS REFERRED TO THEREIN. THE CONTRACTOR SHALL CONSULT WITH THE ENGINEER REGARDING ALL QUESTIONS, UPON WHICH HE MAY BE IN DOUBT, BEFORE PROCEEDING WITH FABRICATION OF PARTS AFFECTED. THE CONTRACTOR SHALL PREPARE ALL ADDITIONAL DETAIL OR FIELD INSTALLATION DRAWINGS NECESSARY AT HIS OWN EXPENSE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS INDICATED ON THE ENGINEER'S LAYOUT DRAWINGS AND DETERMINE IF ANY CHANGES ARE REQUIRED TO AVOID INTERFERENCE. MAJOR CHANGES SHALL NOT BE MADE WITHOUT THE APPROVAL OF THE ENGINEER. WHILE THE DRAWINGS ARE TO BE ADHERED TO AS CLOSELY AS POSSIBLE, THE CONTRACTOR HAS THE RIGHT TO VARY THE RUN OF CONDUITS, PIPING AND/OR DUCTS DURING PROGRESS OF THE WORK AS MAY BE FOUND NECESSARY OR DESIRABLE TO AVOID INTERFERENCES. MAJOR REVISIONS SHALL BE VERIFIED WITH THE ENGINEER.

B. VERIFICATION: OF NECESSITY, OPENINGS, SUPPORTING STEEL, ELECTRICAL DATA, SPACE REQUIREMENTS, ETC., WERE DESIGNED AROUND SPECIFIC PARAMETERS. WHEN THE CONTRACTOR DETERMINES THE MAKE OF EQUIPMENT TO BE PROVIDED FOR THE JOB, IT SHALL BE HIS RESPONSIBILITY TO VERIFY AND COORDINATE UNIT DIMENSIONS WITH THE GENERAL CONTRACTOR AND ALL OTHER INTERESTED CONTRACTORS ON THE JOB. IT SHALL ALSO BECOME THE CONTRACTOR'S RESPONSIBILITY TO CHANGE AS NECESSARY, THROUGH THE ENGINEER, ALL REQUIRED DIMENSIONS SO THAT OPENINGS, SUPPORTING STEEL, ELECTRICAL DATA, ETC. WILL FIT THE EQUIPMENT SUPPLIED. ANY ADDITIONAL COST WILL BE THE SOLE RESPONSIBILITY OF THIS CONTRACTOR. IN ADDITION, ELECTRICAL POWER, INTERLOCK AND CONTROL DIAGRAMS AND PIPING ARRANGEMENTS WERE DESIGNED AROUND ONE SPECIFIC MANUFACTURER. IF ADDITIONAL WIRING, PIPING CONTROLS, ETC., ARE REQUIRED FOR OTHER EQUIPMENT, THIS CONTRACTOR SHALL INCLUDE THE COST OF THE SAME IN HIS PRICE. ALL MEASUREMENTS, THE EXACT DETERMINATION OF RELATIVE ELEVATIONS OR LOCATIONS, THE ASCERTAINING OF ACCURACY OF ALL GIVEN ELEVATIONS AND DIMENSIONS AND THE ASCERTAINING OF ALL NECESSARY ADDITIONAL INFORMATION TO INSURE THE PROPER FIT AND COORDINATION OF ALL CONDUIT EQUIPMENT, DUCTS, AND PIPING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

C. GUARANTEE: THE CONTRACTOR GUARANTEES BY HIS ACCEPTANCE OF THE CONTRACT THAT ALL WORK WILL BE FREE FROM DEFECTS IN WORKMANSHIP AND/OR MATERIALS AND THAT ALL APPARATUS WILL DEVELOP CAPACITIES AND CHARACTERISTICS SPECIFIED. SHOULD ANY DEFECTS IN WORKMANSHIP AND/OR MATERIALS REQUIRE REDESIGN OF ANY PART OF THE ELECTRICAL, MECHANICAL, PLUMBING OR ARCHITECTURAL LAYOUT, ALL SUCH REDESIGN AND ALL NEW DRAWINGS AND DETAILING REQUIRED THEREOF SHALL, WITH THE APPROVAL OF THE ARCHITECT, BE PREPARED BY THE CONTRACTOR AT HIS OWN EXPENSE. WHERE SUCH APPROVED DEVIATION REQUIRES A DIFFERENT QUANTITY AND ARRANGEMENT OF DUCTWORK, PIPING, WIRING, CONDUIT AND/OR EQUIPMENT FROM THAT SPECIFIED OR DETAILED ON THE DRAWINGS, WITH THE APPROVAL OF THE ARCHITECT, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SUCH MATERIALS AND/OR EQUIPMENT REQUIRED BY THE SYSTEM AT NO ADDITIONAL COST TO THE OWNER.

D. SUBMITTALS: AFTER RECEIVING APPROVAL OF EQUIPMENT MANUFACTURERS AND PRIOR TO DELIVERY OF ANY MATERIAL TO THE JOB SITE AND SUFFICIENTLY IN ADVANCE OF THE REQUIREMENTS TO ALLOW ARCHITECT AMPLE TIME FOR CHECKING, SUBMIT FOR REVIEW DETAILED DIMENSIONED DRAWINGS AND/OR EQUIPMENT CUT SHEETS SHOWING CONSTRUCTION SIZE, ARRANGEMENT, OPERATING CLEARANCES, PERFORMANCE CHARACTERISTICS AND CAPACITY OF MATERIAL AND EQUIPMENT. SHOP DRAWINGS SHALL SHOW THE RATINGS OF ITEMS AND SYSTEMS AND HOW THE COMPONENTS OF AN ITEM AND SYSTEMS ARE ASSEMBLED, FUNCTION TOGETHER AND HOW THEY WILL BE INSTALLED ON THE PROJECT. DATA AND SHOP DRAWINGS FOR COMPONENT PARTS OF AN ITEM OR SYSTEM SHALL BE COORDINATED AND SUBMITTED AS A UNIT. SUBMITTAL DRAWINGS SHALL INCLUDE STAMP OF APPROVAL OF THE CONTRACTOR TO SHOW THAT SUBMITTALS HAVE BEEN APPROVED BY THE CONTRACTOR. IT IS THE INTENT OF THESE CONTRACT DRAWINGS TO HAVE THE MECHANICAL CONTRACTOR PREPARE "AS-BUILT" RECORD DRAWINGS IN ACCORDANCE WITH THESE CONTRACT DOCUMENTS.

E. PRODUCT SUBSTITUTIONS: THE MANUFACTURERS LISTED IN THE EQUIPMENT SCHEDULES ARE INCLUDED AS A BASIS OF DESIGN. SUBMISSION OF ALTERNATE MANUFACTURERS OF SIMILAR EQUIPMENT IS SUBJECT TO ENGINEER APPROVAL. UNITS OF EQUIPMENT, OTHER THAN THOSE LISTED AS THE BASIS OF DESIGN, MUST BE PROVEN TO BE PHYSICALLY ACCEPTABLE, IN ADDITION TO MEETING ALL PERFORMANCE AND EQUIPMENT SPECIFICATIONS. LIABILITY OF NON-CONFORMANCE SHALL LIE WITH THE CONTRACTOR/SUBMITTER. BIDDERS DESIRING CONSIDERATION FOR THE USE OF MATERIAL, EQUIPMENT, ETC. NOT NAMED IN THE SPECIFICATIONS MAY SUBMIT THE CHANGE IN WRITING AT LEAST TEN (10) DAYS PRIOR TO BID OPENING, INCLUDING THE SPECIFICATIONS AND DESCRIPTION TO THE ARCHITECT FOR REVIEW. IF APPROVED, THE CHANGE WILL BE ISSUED IN AN ADDENDUM AT LEAST FIVE (5) DAYS PRIOR TO THE OPENING OF BIDS.

F. PERMITS AND CODES: CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH PERMITS, TAXES AND INSURANCE. ALL WORK SHALL BE INSTALLED IN COMPLETE CONFORMITY WITH LOCAL CODES AND ORDINANCES AS WELL AS THE FOLLOWING:

1. NFPA 90
2. OBBC
3. LOCAL CODES & ORDINANCES
4. ASHRAE
5. ASTM
6. ANSI
7. UL
8. NEC
9. AMCA
10. SMACNA

G. NEW WORK: UNLESS OTHERWISE NOTED, ALL WORK INDICATED THROUGHOUT THESE DRAWINGS SHALL BE CONSIDERED TO BE NEW WORK AND SHALL BE INCLUDED AS AN INTEGRAL PART OF THIS CONTRACT.

H. CENTRIFUGAL WALL FAN (EF-1):
1. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
   a. ACME ENGINEERING & MANUFACTURING CORP.
   b. CARNES CO.
   c. COOK (LOREN) CO.
   d. GREENHECK FAN CORP.
   e. HARTZELL FAN INC.
   f. ILG INDUSTRIES, INC.
   g. JENN INDUSTRIES INC.
   h. PENN VENTILATOR CO., INC.
2. DESCRIPTION: BELT DRIVEN CENTRIFUGAL FAN, AS INDICATED, CONSISTING OF HOUSING, WHEEL, FAN SHAFT, BEARINGS, MOTOR AND DISCONNECT SWITCH, DRIVE ASSEMBLY, CURB BASE, AND ACCESSORIES.
3. HOUSING: REMOVABLE, SPUN ALUMINUM DOME AND OUTLET BAFFLE; ONE PIECE ALUMINUM BASE WITH VENTURI INLET CONE.
4. FAN WHEELS: ALUMINUM HUB AND WHEEL WITH BACKWARD INCLINED BLADES.
5. BELT DRIVEN DRIVE ASSEMBLY: RESILIENTLY MOUNTED TO THE HOUSING, WITH THE FOLLOWING FEATURES:
   a. FAN SHAFT: TURNED, GROUND, AND POLISHED STEEL DRIVE SHAFT KEYED TO WHEEL HUB.
   b. SHAFT BEARINGS: PERMANENTLY LUBRICATED, PERMANENTLY SEALED, SELF ALIGNING BALL BEARINGS.
   c. PULLEYS: CAST-IRON, ADJUSTABLE PITCH MOTOR PULLEY.
   d. FAN AND MOTOR ISOLATED FROM EXHAUST AIR STREAM.
6. ACCESSORIES: THE FOLLOWING ITEMS ARE REQUIRED AS INDICATED:
   a. DISCONNECT SWITCH: NON-FUSIBLE TYPE, WITH THERMAL OVERLOAD PROTECTION MOUNTED INSIDE FAN HOUSING, FACTORY WIRED THROUGH AN INTERNAL ALUMINUM CONDUIT.
   b. BIRD SCREENS: REMOVABLE 1/2 INCH (13-MM) MESH, ALUMINUM OR BRASS WIRE.
   c. DAMPERS: MOTORIZED, PARALLEL BLADE BACK DRAFT DAMPERS MOUNTED IN WALL SLEEVE; FACTORY SET TO CLOSE WHEN FAN STOPS.

I. LOUVER (L-1):
1. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS MANUFACTURED BY ONE OF THE FOLLOWING:
   a. AMERICAN WARMING AND VENTILATINGND
   b. CONSTRUCTION SPECIALTIES,
   c. GREENHECK
   d. LOUVERS & DAMPERS INC.
   e. RUSKIN
2. DESCRIPTION: FACTORY FABRICATED LOUVER, TO FIT IN OPENINGS OF SIZES INDICATED, WITH ALLOWANCES MADE FOR FABRICATION AND INSTALLATION TOLERANCES, ADJOINING MATERIALS' TOLERANCES, AND PERIMETER SEALANT JOINTS. INCLUDE SUPPORTS, ANCHORAGES, AND ACCESSORIES REQUIRED FOR COMPLETE ASSEMBLY.
3. CONSTRUCTION: FIXED-BLADE LOUVERS WITH EXTRUDED-ALUMINUM FRAMES AND BLADES.
4. HORIZONTAL LOUVERS: DRAINABLE BLADE TYPE COMPLYING WITH THE FOLLOWING:
   a. LOUVER DEPTH: 4 INCHES
   b. FRAME THICKNESS: 0.081 INCH.
   c. BLADE THICKNESS: 0.081 INCH.
   d. BLADE ANGLE AND SPACING: 45 DEGREES AND 5 INCHES O.C.
   e. AMCA SEAL: MARK UNITS WITH AMCA CERTIFIED RATINGS SEAL.

J. CLOSE-OUT: CONTRACTOR SHALL PROVIDE FIELD TESTING, CHECK-OUT AND SYSTEM DEMONSTRATIONS TO OWNER TO ASSURE PROPER PERFORMANCE AND ADJUSTMENT OF ITEMS PROVIDED UNDER THE CONTRACT. REMOVE ALL DEBRIS CREATED BY THE CONSTRUCTION WORK AND CLEAN ALL EQUIPMENT, AIR DEVICES ETC., INSIDE AND OUTSIDE. PROVIDE A HARDBOUND BINDER WHICH INCLUDES: COPIES OF EACH SHOP DRAWING, PREVENTATIVE MAINTENANCE PROCEDURES, OPERATION AND INSTRUCTION MANUALS, LITERATURE SUPPLIED WITH MECHANICAL EQUIPMENT, AND A LIST OF ALL CONTRACTOR'S PURCHASE ORDERS WITH SUPPLIERS NAMES, ADDRESSES AND PHONE NUMBERS, FOR ALL MATERIALS. PROVIDE INSTRUCTION TO PERSONNEL SELECTED BY THE OWNER, TO FAMILIARIZE THEM WITH THE LOCATION OF SIGNIFICANT EQUIPMENT, TRAIN THEM ON EQUIPMENT FUNCTIONS, REVIEW MAINTENANCE PROCEDURES AND COORDINATE INFORMATION AVAILABLE IN THE CLOSE-OUT BINDER.

K. TEMPERATURE CONTROL WIRING: ALL CONTROL WIRING FOR THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

L. TEMPERATURE CONTROL SYSTEM AND SEQUENCE OF OPERATION:
1. INTENT: THE INTENT OF THIS SPECIFICATION IS TO VERBALLY DESCRIBE THE DESIRED ACTIONS OF THE HVAC EQUIPMENT SPECIFIED HEREIN FOR THIS FACILITY. MECHANICAL CONTRACTOR (M.C.) SHALL FAMILIARIZE HIMSELF WITH THESE WRITTEN SEQUENCES.
2. UNIT HEATER (BY ELECTRICAL CONTRACTOR): THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND WIRE A WALL MOUNTED THERMOSTAT WITH ADJUSTABLE SETPOINT. THE UNIT HEATER AND HEATER FAN SHALL CYCLE TO MAINTAIN THE SETPOINT.
3. EXHAUST FAN: THE EXHAUST FAN SHALL SEQUENCE IN CONJUNCTION WITH WALL SWITCH. POWER AND CONTROL WIRING BY ELECTRICAL CONTRACTOR. MOTORIZED DAMPER AT INTAKE LOUVER L-1 SHALL BE INTERLOCKED TO OPEN ANY TIME EXHAUST FAN EF-1 IS OPERATING.

M. TESTING, ADJUSTING & BALANCING: PRIOR TO THE FINAL INSPECTION OF THE BUILDING, AIR HANDLING EQUIPMENT SHALL BE ADJUSTED AS NECESSARY TO PROVIDE THE REQUIRED DESIGN EXHAUST AIR QUANTITIES. FINAL MEASUREMENT OF AIR QUANTITIES SHALL BE VARIED BY ADJUSTMENT OF FAN SPEED. FURNISH SIX (6) CERTIFIED REPORTS.

LOUVER SCHEDULE

(REFER TO SPECIFICATIONS PARAGRAPH "I" ON THIS DRAWING FOR ADDITIONAL REQUIREMENTS.)

TAG #	AREA SERVED	SERVICE	OVERALL SIZE ("Wx"H)	# OF PANELS	PANEL SIZE ("Wx"H)	CFM	MAX. VELOCITY (FPM)	MIN. FREE AREA (SQ. FT.)	MAX PRESS. DROP (IN. W.C.)	DEPTH (IN.)	BLADE ANGLE	BLADE SPACING (IN.)	BLADE STYLE	FRAME/BLADE THICKNESS (IN.)	APPROX. MOUNTING ELEVATION TO BOTTOM	REMARKS
L-1	SLUDGE DEWATERING BUILDING	INTAKE	22x22	1	22x22	700	600	1.2	0.03	4	45	5	FIXED DRAINABLE	0.81/0.81	2'-0"	1, 2 & 3

REMARKS:
1. BASIS OF DESIGN - AMERICAN WARMING AND VENTILATING MODEL LE-21.
2. FURNISH LOUVER WITH BIRD SCREEN.
3. FURNISH LOUVER WITH BAKED ENAMEL FINISH. COLOR TO BE SELECTED BY ARCHITECT.

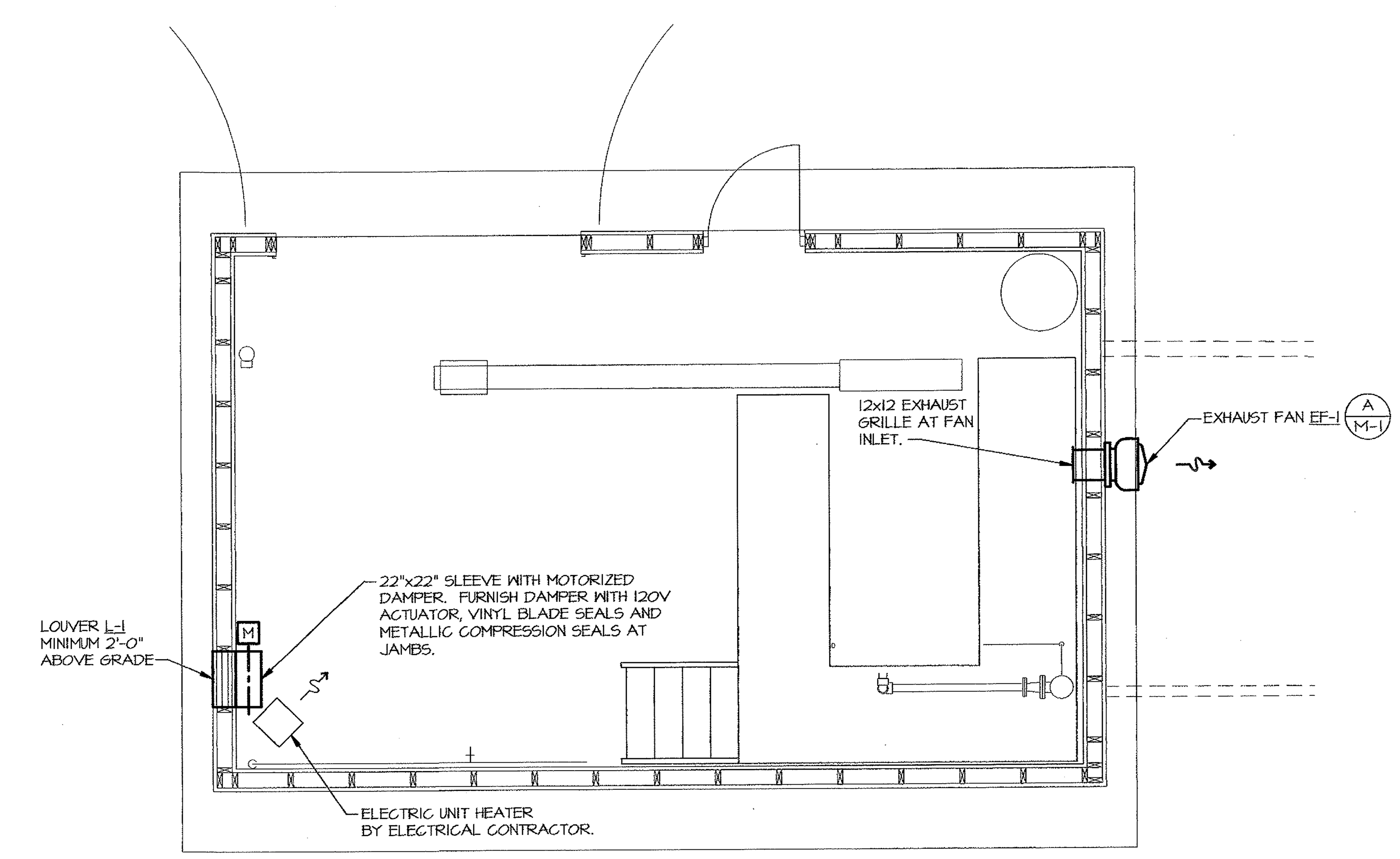
FAN SCHEDULE

(REFER TO SPECIFICATIONS PARAGRAPH "H" ON THIS DRAWING FOR ADDITIONAL REQUIREMENTS.)

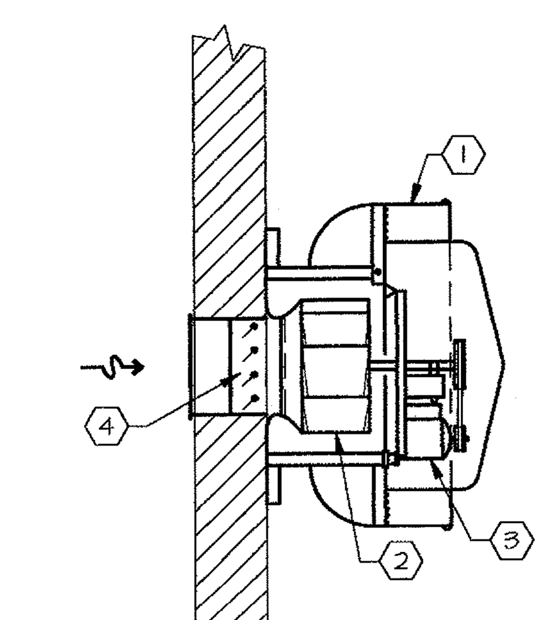
TAG #	AREA SERVED	SERVICE	CFM	ESP (IN. W.C.)	FAN RPM	BHP	DRIVE TYPE	DISC'T BY FAN MANF'T	BIRD SCREEN BY FAN MANF'T	BACK DRAFT DMPR BY FAN MANF'T	MAX. SOUND LEVEL (SONES)	FAN ELECT DATA		MEANS OF CONTROL	APPROX. WEIGHT (LBS)	WALL OPENING SIZE (IN)	MAKE/ MODEL	REMARKS:
												HP	VOLTS/ PHASE					
EF-1	SLUDGE DEWATERING BUILDING	EXHAUST	700	0.125	1,198	0.06	BELT	YES	YES	YES	10	1/4	120/1	A	55	12.5x12.5	GREENHECK CWB-098-4	1, 2 & 3

MEANS OF CONTROL: FAN SHALL SEQUENCE IN CONJUNCTION WITH...
A ...WALL MOUNTED SWITCH (SWITCH FURNISHED & WIRED BY ELECTRICAL CONTRACTOR)

REMARKS:
1 FURNISH FAN WITH MOUNTED AND WIRED DISCONNECT SWITCH.
2 FURNISH FAN WITH HIGH EFFICIENCY MOTOR.
3 FURNISH FAN WITH DAMPER AND 120V ACTUATOR.



SLUDGE DEWATERING BLDG HVAC PLAN
SCALE: 1/4" = 1'-0"



1. ALUMINUM CASING
2. CENTRIFUGAL BLOWER
3. VIBRATION ISOLATED MOTOR
4. MOTORIZED BACKDRAFT DAMPER

A / M-1 SIDEWALL EXHAUST FAN DETAIL
NO SCALE

3/15/2002

STATE OF OHIO — ROBERT T. BRANNAN — E-54100 — REGISTERED PROFESSIONAL ENGINEER

03/15/02 ISSUED FOR BIDS

DESIGN ENGINEERS & CONSULTING ASSOCIATES, INC.
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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

HVAC SPECS, SCHEDS, DETAILS & FLOOR PLAN

DRAWN BY	CHECKED BY
MPW	JTK

REVISION

M-1 OF 1

JOB NUMBER 1457-0

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ELECTRICAL OUTLINE SPECIFICATIONS

A SCOPE OF WORK: FURNISH AND INSTALL ALL LABOR, MATERIALS, TOOLS, ETC., TO PROVIDE A COMPLETE AND OPERATIONAL ELECTRICAL INSTALLATION, AS INDICATED ON THE PLANS. CONTRACTOR SHALL REFER TO THE WORK INDICATED ON THE ASSOCIATED MECHANICAL, ARCHITECTURAL, STRUCTURAL PLANS, ETC., AS WORK SHOWN THEREON MAY AFFECT OR INCLUDE ADDITIONAL ELECTRICAL WORK. ALL MATERIALS INCLUDED IN THE WORK SHALL BE NEW UNLESS SPECIFICALLY NOTED OTHERWISE; EACH ITEM SHALL BE U.L. LISTED OR LABELED TO ASSURE ITS SUITABILITY AND APPROVAL FOR THE PURPOSE SHOWN. ALL LABOR SHALL BE PERFORMED BY QUALIFIED AND SKILLED WORKERS, IN A NEAT AND WORKMANLIKE MANNER, AND IN ACCORDANCE WITH INDUSTRY STANDARDS AND PRACTICES.

B SITE VISIT: ALL CONTRACTORS BIDDING THE WORK INDICATED THROUGHOUT THESE CONTRACT DOCUMENTS, ARE REQUIRED TO VISIT AND THOROUGHLY EXAMINE THE PROJECT SITE AND ITS ASSOCIATED CONDITIONS. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS UNDER WHICH THIS WORK MUST BE PERFORMED. ALL BIDDERS SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO SUBMITTING A BID PROPOSAL. FAILURE TO DO SO SHALL BE DEEMED AS ACCEPTANCE OF EXISTING CONDITIONS. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR ANY DEVIATIONS OR DISCREPANCIES TO THESE PLANS AFTER A CONTRACTOR HAS BEEN SELECTED.

C GUARANTEE: THE CONTRACTOR GUARANTEES BY HIS ACCEPTANCE OF THE CONTRACT, THAT ALL WORK WILL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS (EXCEPT INCANDESCENT AND HALOGEN LAMPS), AND THAT ALL SYSTEMS WILL PROVIDE ALL SPECIFIED AND REQUIRED FUNCTIONS. SHOULD ANY DEFECTS IN MATERIALS AND WORKMANSHIP REQUIRE REDESIGN OF ANY PART OF THE ELECTRICAL, MECHANICAL, PLUMBING OR ARCHITECTURAL LAYOUT, ALL SUCH REDESIGN, NEW OR REVISED DRAWINGS AND DETAILING REQUIRED THEREOF, CALCULATIONS, SUBMITTALS, ETC., SHALL WITH THE APPROVAL OF THE ENGINEER, BE PREPARED BY THE CONTRACTOR AT HIS OWN EXPENSE. WHERE SUCH APPROVED DEVIATION REQUIRES A DIFFERENT QUANTITY OR ARRANGEMENT OF CONDUIT, WIRING, STARTERS, PANELS, ETC., DUCTWORK, PIPING AND EQUIPMENT FROM THAT SPECIFIED OR REQUIRED, THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, SHALL PROVIDE ALL SUCH MATERIALS AND EQUIPMENT REQUIRED BY THE REDESIGN, AT NO ADDITIONAL COST TO THE OWNER.

D SUBMITTALS: PRIOR TO RELEASING ANY ORDER FOR MATERIAL FOR THIS PROJECT, THE CONTRACTOR SHALL SUBMIT FOR REVIEW, DETAILED DRAWINGS AND/OR EQUIPMENT CUT SHEETS, SHOWING DIMENSIONS, SIZES, WEIGHTS, ELECTRICAL RATINGS AND OPERATING CHARACTERISTICS, CAPACITIES, MATERIALS, COLORS, AND ROUGH-IN REQUIREMENTS, FOR ALL LIGHTING FIXTURES, DISTRIBUTION EQUIPMENT, MOTOR CONTROL, ALARM AND COMMUNICATION SYSTEMS AND COMPONENTS, AND POWER GENERATION SYSTEMS. SUBMITTALS SHALL BE MADE SUFFICIENTLY IN ADVANCE OF THE REQUIRED ORDER RELEASE DATE, TO ALLOW THE ENGINEER AMPLE TIME TO REVIEW SUCH INFORMATION. MULTIPLE COMPONENTS INTENDED TO FUNCTION TOGETHER, SHALL BE COORDINATED AND SUBMITTED AS A UNIT.

E COORDINATION: CONTRACTOR SHALL COORDINATE HIS PORTION OF THE WORK WITH THAT OF OTHER CONTRACTORS, THE OWNER, AND THE OPERATIONS OF THE OWNER. ALL CONFLICTS, SCHEDULING, AND PROCEDURES SHALL BE RESOLVED IN THE BEST INTEREST OF THE OWNER AND THE SUCCESSFUL COMPLETION OF THE PROJECT. AT PROJECT COMMENCEMENT, SUBMIT A TIME SCHEDULE OF PROPOSED WORK, INCLUDING SIGNIFICANT EQUIPMENT DELIVERY DATES, SEQUENCE OF WORK AREAS, PROPOSED SHUTDOWNS, CUT-OVERS AND UTILITY TIE-INS. UPDATE SCHEDULE AS WORK PROGRESSES. ALL SHUTDOWN WORK SHALL BE PERFORMED AT TIMES WHICH WILL NOT INTERFERE WITH THE REGULAR OPERATION OF THE FACILITY AND THE OWNER. CONTRACTOR SHALL NOTIFY ALL AFFECTED PARTIES AT LEAST SEVEN DAYS PRIOR TO SHUTDOWNS AND CUT-OVERS.

F PERMITS & CODES: CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH PERMITS, PLAN APPROVALS, TAXES & INSURANCE. ALL WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES, AS WELL AS THE LATEST EDITION OF THE FOLLOWING: 1) NATIONAL ELECTRICAL CODE; 2) NATIONAL ELECTRICAL SAFETY CODE; 3) STATE BUILDING CODE; 4) ANSI STANDARDS; 5) IEEE STANDARDS; 6) UNDERWRITERS LABORATORY LISTINGS; 7) ASTM STANDARDS; 8) NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION STANDARDS; 9) APPLICABLE NFPA CODES. COPY OF THE FINAL ELECTRICAL INSPECTION DOCUMENT, FROM THE AUTHORITY HAVING JURISDICTION, SHALL BE SUBMITTED TO THE OWNER AND ENGINEER AT PROJECT COMPLETION.

G AS-BUILT DRAWINGS: CONTRACTOR SHALL ACCURATELY AND NEATLY RECORD ANY DEVIATIONS FROM THE PLANS AND SPECIFICATIONS, INCLUDING FINAL CONDUIT ROUTING, BRANCH CIRCUIT NUMBERING, EQUIPMENT SIZES, ETC. UNDERGROUND FEEDERS AND DUCTBANKS SHALL BE LOCATED BY DIMENSION TO ASSIST IN FUTURE EXCAVATIONS. AS-BUILTS SHALL BE REGULARLY UPDATED DURING THE COURSE OF CONSTRUCTION, AND DELIVERED TO THE ENGINEER AT PROJECT COMPLETION.

H CLOSE-OUT: CONTRACTOR SHALL PROVIDE FIELD TESTING, CHECK-OUT AND SYSTEM DEMONSTRATIONS TO OWNER TO ASSURE PROPER PERFORMANCE AND ADJUSTMENT OF ITEMS PROVIDED UNDER THE CONTRACT. REMOVE ALL DEBRIS CREATED BY THE ELECTRICAL WORK AND CLEAN ALL FIXTURES, PANELS, BOXES, ETC., INSIDE AND OUTSIDE. PROVIDE A HARDBOUND BINDER WHICH INCLUDES: COPIES OF EACH SHOP DRAWING, PREVENTATIVE MAINTENANCE PROCEDURES, OPERATION & INSTRUCTION MANUALS, LITERATURE SUPPLIED WITH ELECTRICAL EQUIPMENT, AND A LIST OF ALL CONTRACTOR'S PURCHASE ORDERS WITH SUPPLIERS NAMES, ADDRESSES AND PHONE NUMBERS, FOR ALL MATERIALS. PROVIDE INSTRUCTION TO PERSONNEL SELECTED BY THE OWNER, TO FAMILIARIZE THEM WITH THE LOCATION OF SIGNIFICANT EQUIPMENT, TRAIN THEM ON EQUIPMENT FUNCTIONS, REVIEW MAINTENANCE PROCEDURES AND COORDINATE INFORMATION AVAILABLE IN THE CLOSE-OUT BINDER.

I CUTTING & PATCHING: PROVIDE CUTTING AND PATCHING OF ALL MATERIALS NECESSARY FOR THE INSTALLATION AS INDICATED OR SPECIFIED. NEATLY REMOVE AND LEGALLY DISPOSE OF ELECTRICAL COMPONENTS AND ITEMS NO LONGER IN USE. PROTECT THE STRUCTURE, FURNISHINGS, FINISHES AND MATERIALS ADJACENT TO THE AREA OF CUTTING AND PATCHING. PATCH EXISTING FINISHED SURFACES AND EQUIPMENT USING NEW MATERIALS AND METHODS, TO MATCH ADJACENT WORK, UTILIZING EXPERIENCED INSTALLERS. PATCHING OF FIRE RATED PARTITIONS, CEILINGS AND OTHER ASSEMBLIES, SHALL MATCH THE RATING OF THE RATED BARRIER WITH MATERIALS LISTED AND IDENTIFIED FOR SUCH USE, AND SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF THE GENERAL TRADES SPECIFICATIONS.

J LABELS: PROVIDE ENGRAVED PLASTIC LAMINATE NAMEPLATES, SECURELY FASTENED TO EQUIPMENT, FOR ALL NEW PANELS, STARTERS, TERMINAL CABINETS, DISCONNECTS, CONTROL PANELS, LARGE PULL BOXES, AND OTHER MAJOR COMPONENTS. NAMEPLATES SHALL BE 1 BY 3 INCHES, MINIMUM, BLACK LETTERS ON WHITE FIELD.

K GROUNDING: GROUND AND BOND ALL METAL RACEWAYS, BOXES, FIXTURES, ENCLOSURES, ETC., PER NEC ARTICLE 250. NEW SERVICES AND SEPARATELY DERIVED SYSTEMS SHALL BE BONDED TO THE GROUNDING ELECTRODE SYSTEM. GROUNDING CONDUCTORS IN PVC RACEWAY SHALL BE EXTENDED TO THE BUILDING STRUCTURAL STEEL, INCOMING POINT OF THE INTERIOR METAL WATER LINE, AND SUPPLEMENTAL GROUND ROD(S). BONDING CONDUCTORS SHALL ALSO BE EXTENDED TO THE INTERIOR WATER LINES, AND TELEPHONE ARRESTERS, WHERE INSTALLED. ALL FEEDERS AND BRANCH CIRCUITS SHALL INCLUDE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR, ROUTED WITH THE CIRCUIT, SIZED PER NEC 250-122.

L WIRE: FURNISH AND INSTALL ALL WIRE, TERMINATIONS AND CONNECTION DEVICES AS SHOWN OR REQUIRED. UNLESS OTHERWISE NOTED, ALL LINE VOLTAGE CIRCUITS SHALL BE STRANDED, COPPER, 600 VOLT INSULATED: (75 DEGREES C THHN/THWN). BRANCH CIRCUIT WIRING SHALL BE #12 AWG MINIMUM. WHERE THE CIRCUIT LENGTH EXCEEDS 100 FEET, FROM THE PANEL TO THE FARTHEST DEVICE, UTILIZE #10 AWG MINIMUM. PHASE CONDUCTORS FOR 240 VOLT (AND LOWER) SYSTEMS SHALL BE RED, BLACK & BLUE; ASSOCIATED NEUTRALS WHITE. PHASE CONDUCTORS FOR 480 VOLT SYSTEMS SHALL BE BROWN, ORANGE & YELLOW; ASSOCIATED NEUTRALS GRAY. CONNECTIONS AND TAPS FOR WIRE #4 AWG AND LARGER SHALL BE MADE WITH SOLDERLESS PRESSURE TYPE CONNECTORS AND LUGS.

M BRANCH CIRCUITS: BRANCH CIRCUIT WIRING SHALL CORRESPOND TO THE CIRCUIT NUMBERING SHOWN ON THE PLANS, BUT THE CONTRACTOR WILL BE PERMITTED MINOR CHANGES TO OPTIMIZE THE PIPING REQUIRED. THE QUANTITY OF CIRCUITS SHALL NOT BE REDUCED, NOR SHALL SEPARATE CIRCUITS BE COMBINED. ROUTING SHALL BE AT THE DISCRETION OF THE CONTRACTOR BUT THE INSTALLATION SHALL MEET ALL OTHER SPECIFIED CRITERIA. IN GENERAL, NOT MORE THAN SIX BRANCH CIRCUITS SHALL BE PERMITTED IN A HOME RUN AND NOT MORE THAN NINE CURRENT CARRYING WIRES SHALL BE PERMITTED IN A RACEWAY. WHERE "HOME RUNS" ARE SHOWN ON PLAN, THE QUANTITY OF THESE RUNS SHALL BE MAINTAINED AS A MINIMUM.

N RACEWAYS: UNLESS NOTED OTHERWISE, ALL NEW WIRING SHALL BE INSTALLED IN SPECIFIED RACEWAYS. RACEWAYS SHALL BE INSTALLED, CONCEALED WITHIN NEW AND EXISTING CONSTRUCTION, UNLESS NOTED OTHERWISE. RACEWAYS INSTALLED OUTDOORS, UNDERGROUND, CAST IN CONCRETE, OR EXPOSED IN UNFINISHED SPACES, SHALL BE RIGID, METAL CONDUIT, SCHEDULE 40, HOT-DIPPED GALVANIZED, INSTALLED PER NEC 344, COMPLETE WITH THREADED FITTINGS, DOUBLE LOCK-NUTS AND BUSHINGS AT BOXES AND CABINETS. CONDUIT WITHIN INTERIOR WALLS AND ABOVE SUSPENDED CEILINGS, IN TRADE SIZES 1/2 INCH THRU 2 INCH DIA., SHALL BE ELECTRICAL METALLIC TUBING, INSTALLED PER NEC 358, COMPLETE WITH STEEL COMPRESSION OR SET-SCREW FITTINGS. UNDERGROUND OR UNDER-SLAB CONDUIT MAY BE SCHEDULE 40 PVC, IN TRADE SIZES 3/4 INCH THRU 4 INCH DIA., COMPLETE WITH INSULATED GROUND WIRE, AND RGS ELBOWS WHERE RISER IS EXPOSED. CONNECTIONS TO RECESSED FIXTURES, AND OTHER ITEMS SUBJECT TO VIBRATION OR OCCASIONAL MOTION, SHALL BE MADE WITH FLEXIBLE METAL, ZINC-COATED STEEL CONDUIT, COMPLETE WITH STEEL FITTINGS, IN LENGTHS NOT TO EXCEED 6 FEET, INSTALLED PER NEC 348. FOR PUMPS AND PROCESS EQUIPMENT, OR WHERE SUBJECT TO DAMPNESS OR OILY ENVIRONMENTS, FLEXIBLE CONDUIT SHALL BE NEOPRENE JACKETED, COMPLETE WITH APPROVED FITTINGS.

O BOXES: INTERIOR DEVICE BOXES SHALL BE DEEP, GALVANIZED, STAMPED STEEL BOXES, WITH PLASTER RINGS WHERE REQUIRED. INTERIOR PULL AND JUNCTION BOXES SHALL BE NEMA 1 GALVANIZED OR PAINTED STAMPED STEEL WITH SCREW COVERS. SMALL EXTERIOR BOXES SHALL BE CAST TYPE WITH GASKETED COVERS, OR NEMA 4X STAINLESS STEEL FOR LARGER BOXES. FLUSH-IN-GRADE EXTERIOR BOXES SHALL BE NON-METALLIC, 12 BY 12 BY 12 INCH MINIMUM, WITH MATCHING COVER, QUAZITE PC SERIES OR EQUAL.

P DISCONNECTS: SAFETY SWITCHES SHALL BE HEAVY DUTY, H.P. RATED, WITH GROUND LUG, REJECTION STYLE FUSE CLIPS AND NEMA 1 ENCLOSURE; AS MANUFACTURED BY SQUARE D, SIEMENS, GENERAL ELECTRIC, OR CUTLER-HAMMER.

Q FUSES: FUSES SHALL BE DUAL-ELEMENT, TIME-DELAY, REJECTION STYLE, CLASS RK-5 FOR FUSES UP TO 600 AMPERES; BUSSMANN TYPE "FRN" (250 VOLT) OR TYPE "FRS" (600 VOLT). LARGER FUSES SHALL BE CLASS L, BOLT-IN STYLE; BUSSMANN "HI-CAP". EQUAL FUSES MANUFACTURED BY CHASE-SHAWMUT OR LITTLEFUSE, WILL BE ACCEPTABLE.

R STARTERS: PROVIDE A MANUAL STARTER, WITH OVERLOAD, PILOT LIGHT, TOGGLE SWITCH OPERATOR, AND NEMA 1 ENCLOSURE (FLUSH MOUNTED WHEREVER POSSIBLE), FOR EACH FRACTIONAL HORSEPOWER, SINGLE PHASE, MOTOR. LOCATE STARTERS WHERE SHOWN, OR ADJACENT TO MOTOR. MANUAL STARTERS SHALL BE SQUARE D CLASS 2510, OR EQUAL BY ALLEN-BRADLEY, SIEMENS, GENERAL ELECTRIC, OR CUTLER-HAMMER. PROVIDE A COMBINATION MAGNETIC TRIP CIRCUIT BREAKER & MAGNETIC STARTER, COMPLETE WITH NEMA 1 ENCLOSURE, PILOT LIGHT, H-O-A CONTROL AND FUSED C.P.T., FOR EACH THREE PHASE MOTOR LARGER THAN 1/2 H.P. COMBINATION STARTERS SHALL BE SQUARE D CLASS 8539, OR EQUAL BY ALLEN-BRADLEY, SIEMENS, GENERAL ELECTRIC, OR CUTLER-HAMMER. SELECTED COMBINATION STARTERS SHALL BE ASSEMBLED IN MOTOR CONTROL CENTERS (SEE BELOW).

S LIGHT FIXTURES: FURNISH AND INSTALL THE LIGHT FIXTURES AS INDICATED ON THE PLANS AND SCHEDULES. FIXTURES SHALL BE COMPLETE WITH LAMPS, SOCKETS, CANOPIES, SUSPENSION ACCESSORIES, REFLECTORS, BALLASTS, LENSES, LOUVERS, PLASTER FRAMES, ETC. PRISMATIC LENSES SHALL BE 100% ACRYLIC, ONE-EIGHTH INCH NOMINAL THICKNESS. FLUORESCENT TUBE SOCKETS SHALL BE TWIST AND LOCK. FLUORESCENT BALLASTS SHALL BE ELECTRONIC, HIGH POWER FACTOR, 20% THD MAXIMUM, AS MANUFACTURED BY MOTOROLA, MAGNETEK, OR ADVANCE. H.I.D. BALLASTS SHALL BE HIGH POWER FACTOR TYPE. LAMPS SHALL BE AS MANUFACTURED BY GENERAL ELECTRIC, SYLVANIA, PHILLIPS, OR VENTURE. FIXTURES SHALL NOT RELY ENTIRELY ON THE CEILING SUSPENSION SYSTEM FOR MOUNTING, BUT SHALL ALSO BE SUPPORTED FROM THE STRUCTURE. EXTERIOR FIXTURES SHALL ALSO BE PROVIDED WITH THE GROUNDING, LOW TEMPERATURE BALLASTS, ETC., AS NOTED OR REQUIRED.

T WIRING DEVICES: DEVICES SHALL BE SPECIFICATION GRADE, COMPLETE WITH THERMOPLASTIC FACE OR HANDLE, OF THE TYPE, RATING, AND CONFIGURATION AS INDICATED ON THE PLANS. DEVICES SHALL BE SUPPLIED FROM A SINGLE MANUFACTURER, WHEREVER POSSIBLE, TO STANDARDIZE ON COLOR AND REPLACEMENTS. DEVICE COLOR SHALL BE GRAY, OR AS SELECTED BY THE ARCHITECT/OWNER, TO MATCH THE BUILDING FINISHES. COVER PLATES SHALL BE BRUSHED STAINLESS STEEL IN FINISHED COMMERCIAL AREAS, SMOOTH HIGH IMPACT MATCHING PLASTIC IN UNFINISHED AREAS, GALVANIZED IN INDUSTRIAL AREAS, AND GASKETED, FLAP-TYPE PLASTIC "IN-USE" TYPE IN OUTDOOR AREAS. WIRING DEVICES AND COVER PLATES SHALL BE AS MANUFACTURED BY HUBBELL, PASS & SEYMOUR, LEVITON, EAGLE, OR SLATER.

U MINI-POWER CENTERS: EACH SHALL BE A SELF-CONTAINED, PACKAGE TYPE ASSEMBLY THAT INCLUDES A PRIMARY BREAKER, TRANSFORMER, SECONDARY MAIN BREAKER AND LOAD CENTER ALL IN ONE NEMA 3R ENCLOSURE. TRANSFORMER SHALL BE TOTALLY ENCLOSED AND SEALED, 115 DEGREE C RISE, COPPER WINDINGS WITH TAPS, KVA RATED AS NOTED, AT 480 to 240/120 VOLTS, SINGLE PHASE AND 60 HERTZ. LOAD CENTER SHALL CONTAIN THE NUMBER AND SIZE OF BREAKERS AS INDICATED. BREAKERS SHALL HAVE AN INTERRUPTING CAPACITY OF 10,000 AMPERES MINIMUM, AND BE PLUG-IN TYPE. PANEL SHALL HAVE COPPER BUSSES AND CONNECTORS. UNITS SHALL BE INTERNALLY PRE-WIRED, AND BE COMPLETE WITH ADEQUATE WIRING AND GUTTER SPACE, TYPEWRITTEN, GLAZED, AND DESCRIPTIVE CIRCUIT DIRECTORY. MINI-POWER CENTERS SHALL BE MOUNTED WITH TOP OF ENCLOSURE SIX FEET ABOVE THE FLOOR, WITH SPACERS TO PERMIT BACK VENTILATION. SECONDARY NEUTRALS SHALL BE SOLIDLY GROUNDED TO THE BUILDING GROUND SYSTEM VIA SEPARATE INSULATED GROUNDING CONDUCTORS AS REQUIRED BY THE NEC. MINI-POWER CENTERS SHALL BE AS MANUFACTURED BY ACME, SQUARE D CO., OR CUTLER-HAMMER.

V SERVICE ENTRANCE: SELECTED PANELS OR SAFETY SWITCHES, AS INDICATED, SHALL BE UTILIZED AND BE U.L. RATED AS SERVICE ENTRANCE EQUIPMENT. THESE SHALL BE COMPLETE WITH AN INSULATED SOLID NEUTRAL ASSEMBLY, REMOVABLE BONDING LINK, AND GROUND LUGS FOR THE CONDUCTORS SHOWN OR REQUIRED. PROVIDE GROUNDING BUSHINGS AS REQUIRED, AND ADDITIONAL LABELING TO DENOTE SERVICE ENTRANCE USAGE.

W SUPPORTS: FURNISH AND INSTALL ALL REQUIRED MISCELLANEOUS STEEL SUPPORTS FOR MOUNTING OF PANELS, RACEWAYS, FIXTURES, CABINETS, BOXES, ETC. ALL EQUIPMENT SHALL BE RIGIDLY SUPPORTED FROM THE BUILDING STRUCTURE, WITH COMPONENTS RATED FOR TWICE THE ACTUAL LOAD OR WEIGHT. ALL INTERIOR SUPPORTS SHALL BE PAINTED STEEL STRUT WITH MATCHING FITTINGS AND HARDWARE, PLATED THREADED ROD, AND AUXILIARY STRUCTURAL STEEL. EXTERIOR SUPPORTS SHALL BE GALVANIZED STRUT WITH MATCHING FITTINGS AND STAINLESS STEEL HARDWARE. PROVIDE A 4 INCH HIGH CONCRETE HOUSEKEEPING PAD FOR ALL FLOOR MOUNTED EQUIPMENT.

X MOTOR CONTROL CENTERS: PROVIDE THE NUMBER OF SECTIONS AND BRANCH UNITS AS INDICATED ON THE PLANS. SECTIONS SHALL BE TWENTY INCHES SQUARE (NOMINAL) BY NINETY INCHES HIGH WITH NEMA 12, GASKETED DOOR ENCLOSURES, NEMA RATED STARTERS, WITH MAGNETIC ONLY CIRCUIT BREAKERS, AND ACCESSORIES AS SCHEDULED. MAIN BUS SHALL BE 300 AMPERE, COPPER, WITH 25% GROUND BUS, EXTENDING THE FULL LENGTH OF THE MCC. ALL UNUSED SPACES SHALL BE FULLY BUSSED, SUITABLE FOR FUTURE ADDITIONAL COMPONENTS. ALL STARTERS SHALL BE COMPLETE WITH FUSED 120 VOLT C.P.T.'S, 120 VOLT COILS, PUSH-TO-TEST PILOT LIGHT, AND TWO AUXILIARY CONTACTS. MCC'S SHALL BE SQUARE D MODEL 6, OR EQUAL BY CUTLER-HAMMER, GENERAL ELECTRIC OR SIEMENS.

Y DEMOLITION: ELECTRICALLY DISCONNECT THE MECHANICAL EQUIPMENT AND APPLIANCES SHOWN OR SCHEDULED FOR REMOVAL, TO ACCOMMODATE SUCH BY OTHERS. REMOVE THE LIGHT FIXTURES, DEVICES, PANELS, STARTERS, ETC., INDICATED FOR DEMOLITION, AND ALL ASSOCIATED WIRING, NO LONGER IN SERVICE, BACK TO ITS ELECTRICAL SOURCE. REMOVE ALL EXPOSED CONDUIT, BOXES AND RACEWAYS ASSOCIATED THEREWITH. CUT OFF FLUSH WITH ADJACENT FINISHED SURFACE AND PERMANENTLY PLUG, ANY CONCEALED RACEWAYS WHICH ARE NOT RE-USEABLE. NEATLY CAP FOR FUTURE USE, AND LABEL WITH TERMINUS, ANY CONCEALED RACEWAYS WHICH MAY BE USABLE.

Z RENOVATIONS: REWORK THE EXISTING ELECTRICAL INSTALLATION AS REQUIRED TO ACCOMMODATE THE FINISHED AND OPERATING SYSTEMS AS INDICATED ON THE PLANS. NEW RACEWAYS SHALL BE CONCEALED IN FINISHED SPACES WHEREVER PRACTICALLY POSSIBLE. EXISTING BOXES AND ENCLOSURES SHALL NOT BE RENDERED INACCESSIBLE DUE TO THE NEW WORK OF ANY TRADE. PANEL DIRECTORIES IN RENOVATED AREAS SHALL BE NEATLY UPDATED. INTERRUPTIONS TO EXISTING SYSTEMS SHALL BE PERFORMED AT OFF HOURS, UNLESS SCHEDULED OTHERWISE WITH THE OWNER.

AA ELECTRICAL SITE WORK: COORDINATE ALL EXTERIOR WORK WITH AFFECTED UTILITIES AND THE OWNER. PROVIDE THE EXCAVATION, BACKFILL, COMPACTION AND TESTING, NECESSARY TO INSTALL THE UNDERGROUND RACEWAYS, HANDHOLES, AND EQUIPMENT FOUNDATIONS SHOWN ON THE PLANS. ALL PAVING SHALL BE SAWCUT PRIOR TO REMOVAL. REPAIR ALL LAWNS, PLANTINGS, PAVEMENT, AND OTHER EXTERIOR FINISHES TO MATCH THE ADJACENT AREAS AT THE COMPLETION OF THE PROJECT.

BB CONTROLS: PROVIDE THE EQUIPMENT, COMPONENTS, WIRING, AND TESTING, FOR A COMPLETE AND OPERATIONAL ELECTRICAL INSTALLATION AS INDICATED ON THE PLANS, INCLUDING RELAYS, PUSHBUTTONS, SELECTOR SWITCHES, PILOT LIGHTS, DEVICES, ETC. PROVIDE ALL INTERCONNECTING WIRING TO THE MOTOR STARTERS, AND PROCESS EQUIPMENT, INSTRUMENTATION OR OTHER APPLIANCES AS SHOWN. ALL CONTROL AND INSTRUMENTATION WIRING SHALL BE IDENTIFIED AT EACH TERMINATION TO CORRESPOND TO THE NUMBERING SYSTEM INDICATED ON THE SUPPLIER'S APPROVED SCHEMATIC DIAGRAMS. ALL 120 VOLT WIRING SHALL BE #14 AWG MINIMUM WITH 600 VOLT INSULATION; WIRING FOR 24 VOLT (OR LOWER) SYSTEMS MAY BE #18 AWG WITH 300 VOLT INSULATION WHERE FED FROM A POWER LIMITED SOURCE. DEVICES AND ENCLOSURES SHALL BE PROVIDED WITH ENGRAVED LAMINATE NAMEPLATES. ROUTE AC AND DC CONDUCTORS, DIGITAL AND ANALOG SIGNAL WIRING, IN SEPARATE RACEWAYS.

ELECTRICAL LEGEND

ABBREVIATIONS

A12	ALPHANUMERIC LABEL INDICATES PANEL AND CIRCUIT TO WHICH ITEM IS CONNECTED (I.E. PANEL A, CIRCUIT 12)
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
CCT	CIRCUIT
C.P.	COVER PLATE
E.C.	ELECTRICAL (SUB) CONTRACTOR
EXTG.	EXISTING
F.B.O.	FURNISHED BY OTHERS, INSTALLED AND/OR WIRED BY ELECTRICAL CONTRACTOR
G.C.	GENERAL (SUB) CONTRACTOR
HP	HORSEPOWER
L.D.	LOCATE AS DIRECTED
MAX	MAXIMUM
M.C.	MECHANICAL (HVAC, PLBG, FP, OR TC) (SUB) CONTRACTOR
MH	MOUNTING HEIGHT TO BOTTOM OF DEVICE, BOX, OR FIXTURE, UNO
MIN	MINIMUM
OREQ	OR EQUAL
R/M	REMOVE
R/L	RELOCATE/RELOCATED
TWLK	TWIST/TURN TO LOCK TYPE RECEPT/PLUG
UNO	UNLESS NOTED OTHERWISE
W/	COMPLETE WITH
WP	WEATHERPROOF DEVICE, ENCLOSURE OR COVER PLATE.

Symbol	Description
(2)	INDICATES NOTE-SEE TABULATION ON SAME SHEET
	FLUORESCENT FIXTURE-SEE SCHEDULE-SHOWN TO SCALE (APPROX.)
	WALL MOUNTED FIXTURE-SEE SCHEDULE
$	LOCAL SWITCH-1 POLE-20A-120/277V-W/C.P.- M.H. 44" HUBBELL #CSB120 OREQ.
$3	LOCAL SWITCH-3 WAY-20A-120/277V-W/C.P.- M.H. 44" HUBBELL #CSB320 OREQ.
	DUPLEX RECEPT.-20A-120V-NEMA 5-20R W/C.P.-M.H. 16" HUBBELL #5352 OREQ.
	DUPLEX GFI RECEPT.-20A-125V-NEMA 5-20R W/C.P.-M.H. 16" HUBBELL #GF5352 OREQ.
WP	DUPLEX GFI RECEPT.-TO MATCH ABOVE- W/W.P. "IN USE" CLEAR PLASTIC SPRING FLAP C.P.-M.H. 24" HUBBELL #GF5352/WP826MP OREQ.
	WIRE TICKS INDICATE BRANCH CIRCUIT PHASE, NEUTRAL, & GROUND WIRES, RESPECTIVELY
J	JUNCTION BOX-REQUIRED WHERE SHOWN
	CONDUIT-CONCEALED IN CEILING, WALL OR FLOOR OF NEW CONSTRUCTION. CONCEALED WHEREEVER POSSIBLE IN EXISTING CONSTRUCTION (1/2" DIA. MIN.)
	HOMERUN TO PANEL OR LOCATION NOTED
	INDICATES CONCEALED CONDUIT UNDERGROUND/UNDERFLOOR - 3/4" MIN.
	INDICATES LOCAL SWITCHING OR CONTROL FUNCTION
	RECEPT. PANEL-CIRCUIT BREAKER TYPE-120/240V-1 PHASE-3 WIRE-MH 6'0"
T	DRY TRANSFORMER-KVA AND VOLTAGE AS NOTED-SUPPORTED FROM WALL OR ROOF STRUCTURE UNO
30	FUSED SAFETY SWITCH-AMP SIZE AS NOTED-VOLTAGE AS REQD-NEMA 1 ENCLOSURE U.N.O.-MH 6'0" TO TOP UNO (NF=NON-FUSED; 3R=NEMA 3R ENCL; 6K=NEMA 12 GASKETED ENCL; 4X=NEMA 4X STAINLESS STEEL ENCL.)
	MANUAL MOTOR SWITCH -120V-1 SPEED-W/OVERLOAD HEATER & PILOT LT.- MH 44" (2P= TWO POLE) SQUARE D CLASS 2510 SERIES OREQ
	MAGNETIC MOTOR STARTER IN MCC
CP	PRE-WIRED CONTROL PANEL WITH MAGNETIC STARTERS, CONTACTORS, ETC., PROVIDED WITH EQUIPMENT. WITH OR WITHOUT DISCONNECT AS SHOWN. POWER FEED WIRING BY E.C.
	MOTOR-FRACTIONAL H.P.-120 VOLT (EF=EXH. FAN; UH=UNIT HEATER; MD=MOTORIZED DAMPER)
3	MOTOR-SIZE AND FUNCTION AS NOTED - 3 PHASE
	GROUND ROD-COPPERWELD-3/4" x 10 FT.-TOP AT 6" BELOW GRADE-COMPLETE WITH CADWELD CONNECTION TO BUILDING STEEL OR EQUIPMENT.
HH	HAND HOLE - FLUSH IN GRADE, NON-METALLIC. SEE SPECS.
	PROCESS CONTROL OR INSTRUMENTATION DEVICE - FURNISHED, AND INSTALLED BY OTHERS. ALL WIRING BY E.C. PER SUPPLIER'S APPROVED WIRING DIAGRAMS.
*	INDICATES EXISTING ITEM TO BE REMOVED INCLUDING ASSOCIATED CONDUIT AND WIRING NO LONGER IN SERVICE
	ITEMS SHOWN DASHED ARE TO REMAIN - UNO
	EXISTING MOTOR OR MOTOR DRIVEN EQUIPMENT TO REMAIN
	DISCONNECT EXISTING MOTOR OR MOTORIZED EQUIPMENT OR APPLIANCE, FOR REMOVAL BY OTHERS.

FIXTURE SCHEDULE

MARK	LAMP CATEGORY	LAMP QTY/TYPE	VOLTS	DESCRIPTION	MFR. AND CATALOG SERIES
A	FLUOR	2-32W-T8 48"-RS-SP35	120	4'-0" ENCLOSED INDUSTRIAL, SURFACE MOUNTED, FIBERGLASS HOUSING, WHITE FINISH, ACRYLIC LENS, ELECTRONIC BALLAST	LITHONIA DM-232-REV DAY-BRITE DWAE-232-REV COLUMBIA LUN4-232-REV
B	INC.	100W A19	120	SURFACE MOUNTED, PORCELAIN LAMP HOLDER, ENCLOSED AND GASKETED, GLOBE AND GUARD	ADALET VE-227 HUBBELL ADXF-11110

ELECTRICAL DRAWING LIST

DWG NO.	TITLE	FILE NO.
E-1	ELECTRICAL SPECIFICATIONS, LEGEND, AND FIXTURE SCHEDULE	01275E1.dwg
E-2	ELECTRICAL SITE PLAN AND SINGLE LINE DIAGRAM	01275E2.dwg
E-3	ELECTRICAL FLOOR PLANS: SLUDGE, BLOWER, AND ADMIN. BLDG.	01275E3.dwg

3/15/2002
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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

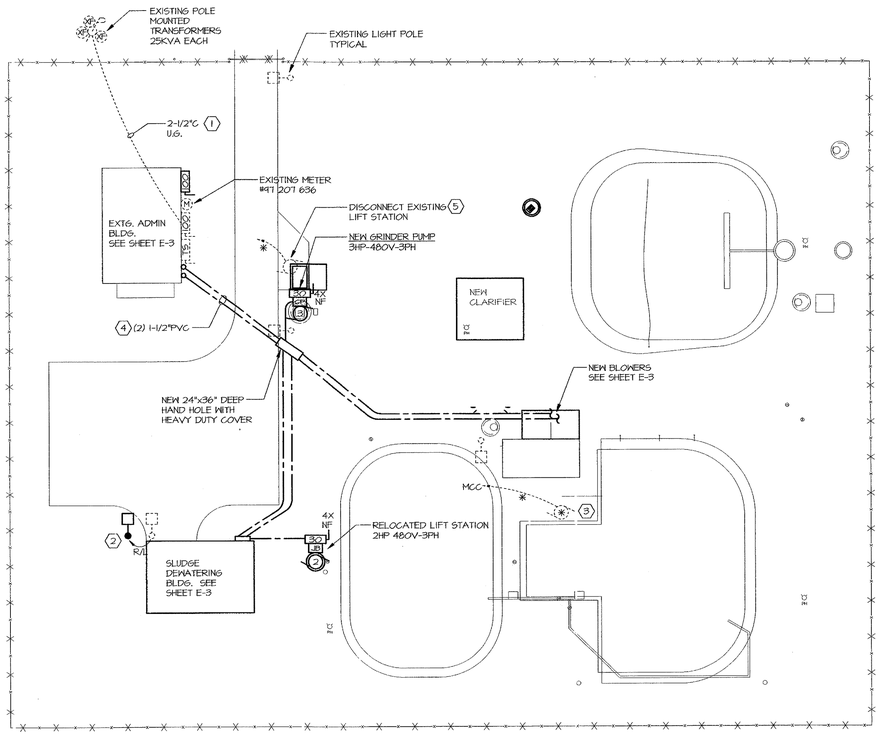
ELECTRICAL FLOOR PLANS

DRAWN BY	CHECKED BY
DECA	MMB

REVISION

E-1 OF 3

JOB NUMBER 1457-003



ELECTRICAL SITE PLAN
SCALE: 1" = 20'-0"

SITE PLAN NOTES:

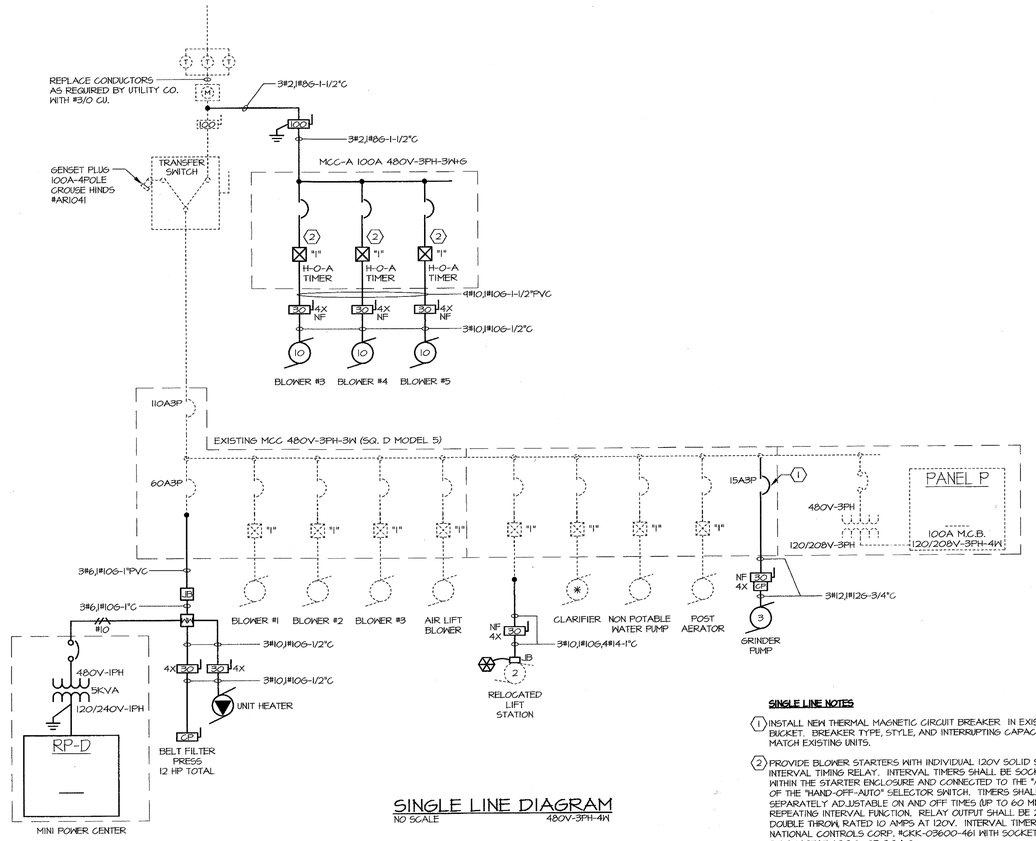
(1) PERFORM ALL SERVICE WORK IN ACCORDANCE WITH UTILITY COMPANY SPECIFICATIONS AND PER APPROVED UTILITY COMPANY ENGINEERED WORK ORDERS.

(2) EXISTING POLE MOUNTED LIGHT FIXTURE SHALL BE RELOCATED AS SHOWN. EXTEND EXISTING LOCAL CIRCUIT CONDUIT AND WIRE AS REQUIRED. PROVIDE FLUSH-IN-GRADE HANDHOLES AS NEEDED TO EXTEND CONDUIT. REMOVE EXISTING CONCRETE POLE BASE. PROVIDE NEW POLE BASE TO MATCH EXISTING.

(3) DISCONNECT EXISTING CLARIFIER DRIVE. REMOVE DISCONNECT SWITCH NO LONGER IN SERVICE, REMOVE CONDUCTORS, AND RE-LABEL STARTER IN EXISTING MCC AS "SPARE".

(4) COMBINE ALL BRANCH CIRCUITS #10 OR LESS INTO ONE OF THESE RACEWAYS.

(5) REWORK EXISTING CONDUIT AND WIRING AS REQUIRED TO MAINTAIN EXISTING CONVENIENCE RECEPTACLE. RE-INSTALL BOX, DEVICE, AND COVER PLATE AS REQUIRED.

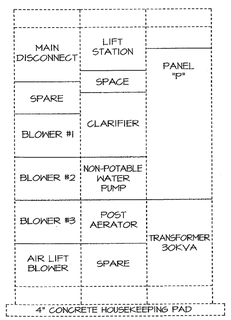


SINGLE LINE DIAGRAM
NO SCALE 480V-3PH-4W

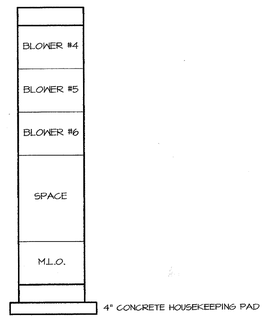
SINGLE LINE NOTES

(1) INSTALL NEW THERMAL MAGNETIC CIRCUIT BREAKER IN EXISTING SPARE BUCKET. BREAKER TYPE, STYLE, AND INTERRUPTING CAPACITY TO MATCH EXISTING UNITS.

(2) PROVIDE BLOWER STARTERS WITH INDIVIDUAL 120V SOLID STATE INTERVAL TIMING RELAY. INTERVAL TIMERS SHALL BE SOCKET MOUNTED WITHIN THE STARTER ENCLOSURE AND CONNECTED TO THE "AUTO" SIDE OF THE "HAND-OFF-AUTO" SELECTOR SWITCH. TIMERS SHALL HAVE SEPARATELY ADJUSTABLE ON AND OFF TIMES (UP TO 60 MINUTES) FOR A REPEATING INTERVAL FUNCTION. RELAY OUTPUT SHALL BE 2 POLE, DOUBLE THROW, RATED 10 AMPS AT 120V. INTERVAL TIMERS SHALL BE NATIONAL CONTROLS CORP. #CRK-03600-461 WITH SOCKET, OR EQUAL BY AGASTAT, I.S.S.C., OR S.S.A.C.



EXISTING MCC



NEW MCC-A

ELEVATION: MCC
N.T.S.

STATE OF OHIO MARTIN M. BRAUN 45322 REGISTERED PROFESSIONAL ENGINEER
3/14/2002

03/15/02 ISSUED FOR BIDS

DESIGN ENGINEERS & CONSULTING ASSOCIATES, INC.
415 CONANT STREET MAUMEE, OH 43537
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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

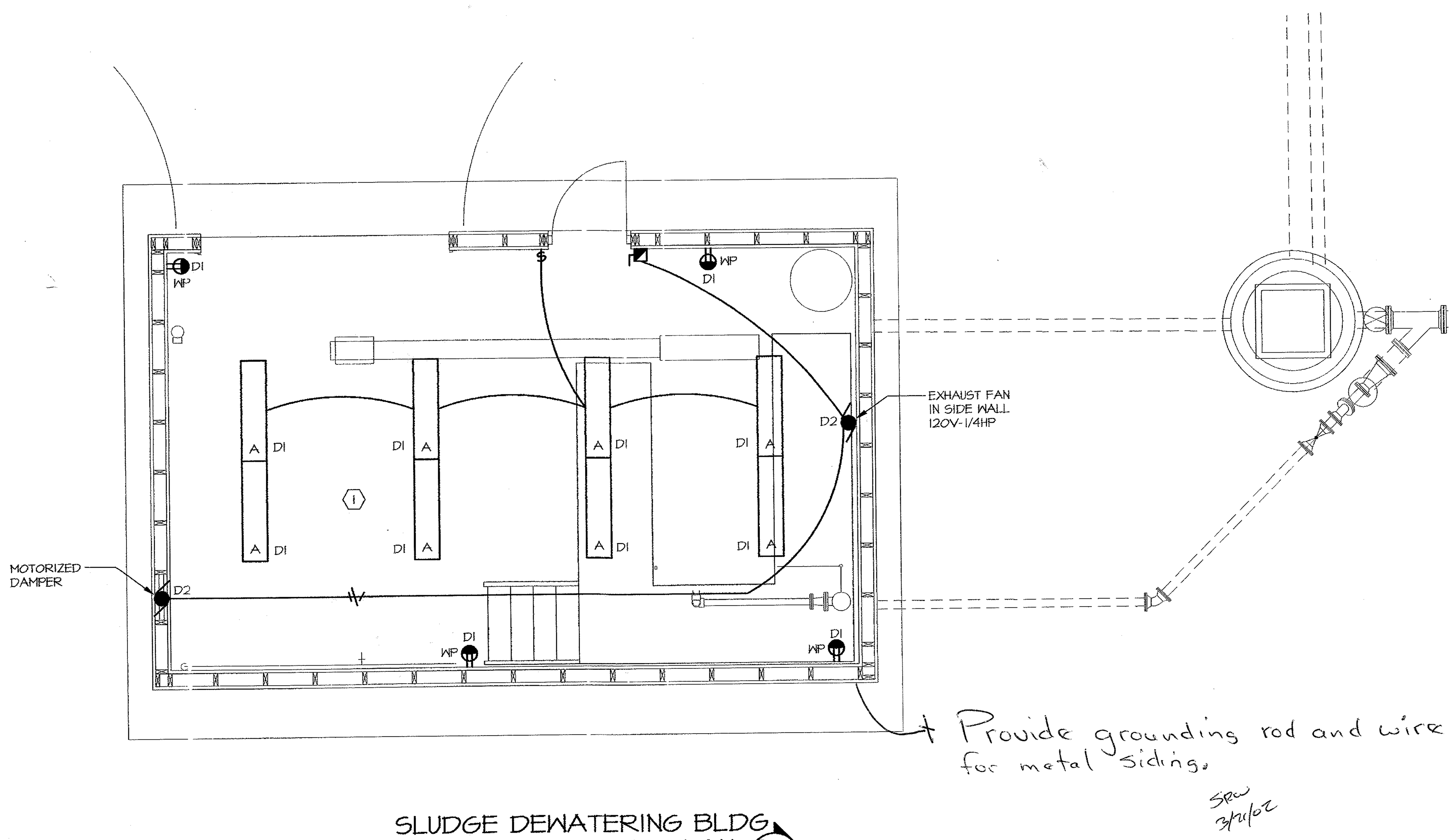
ELECTRICAL SITE PLAN & SINGLE LING DIAGRAM

DRAWN BY	CHECKED BY
DECA	MMB

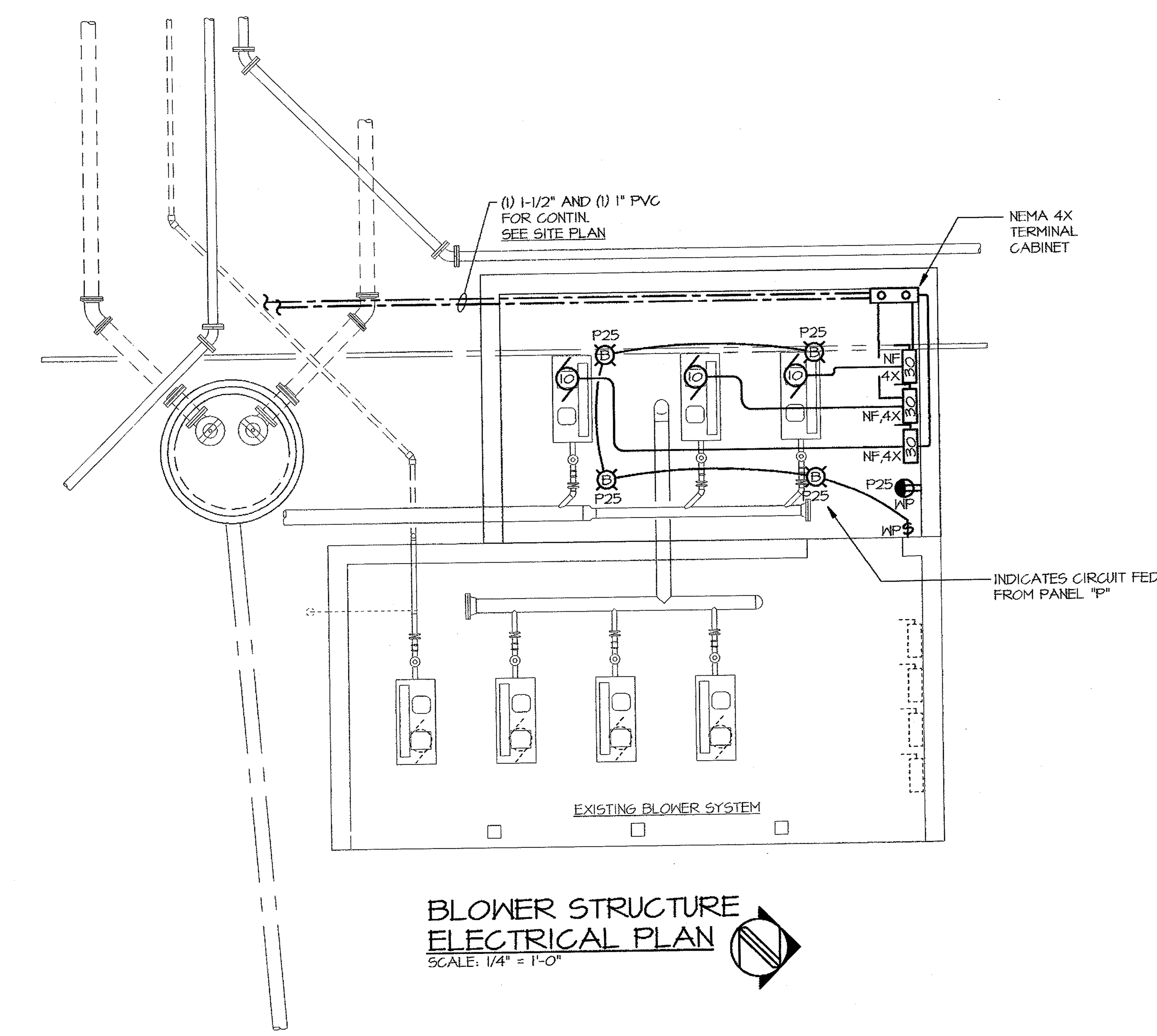
REVISION

E-2
OF
3

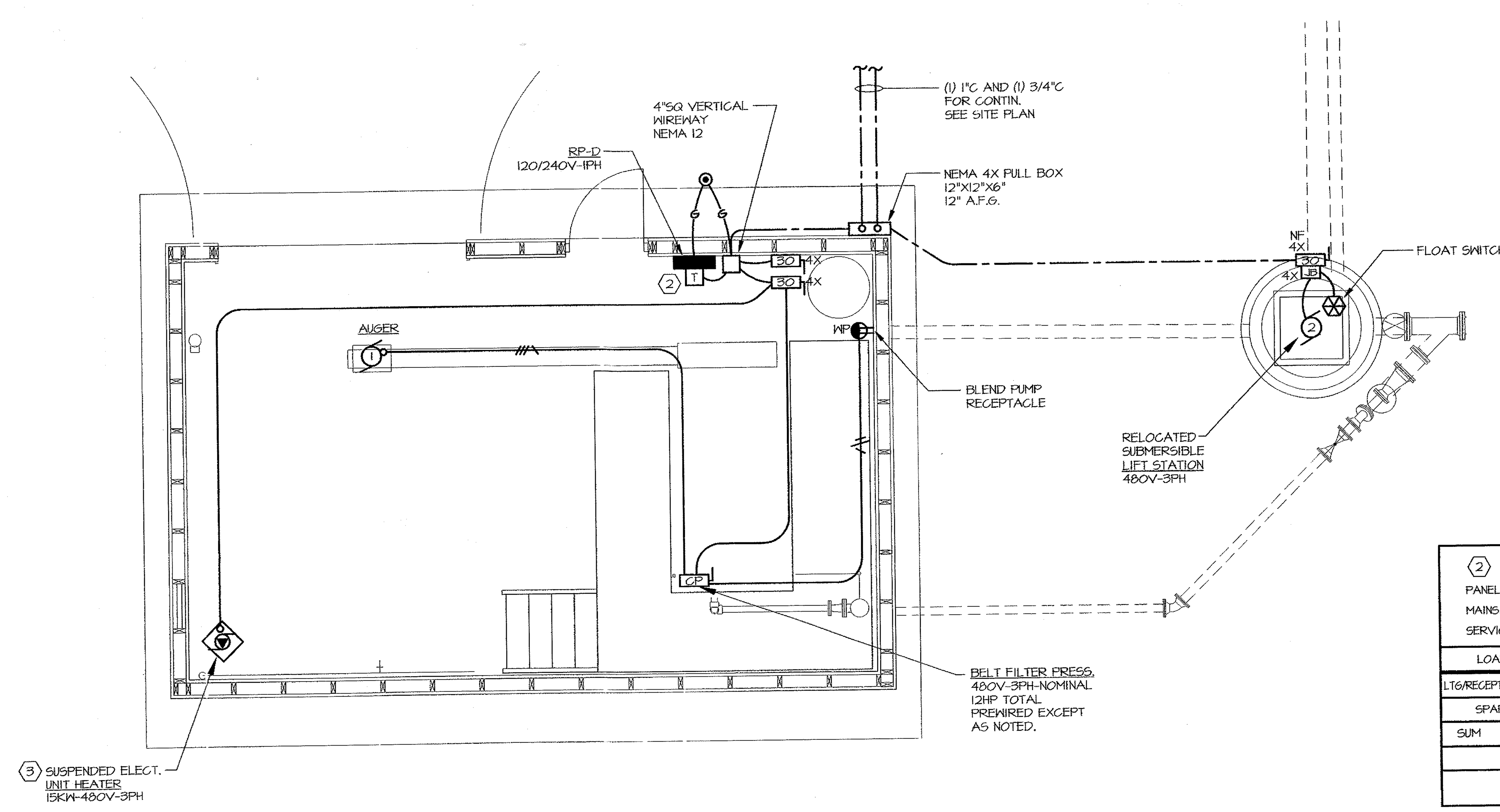
JOB NUMBER 1457-003



SLUDGE DEWATERING BLDG
POWER & SYSTEMS PLAN
SCALE: 1/4" = 1'-0"



BLOWER STRUCTURE
ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"

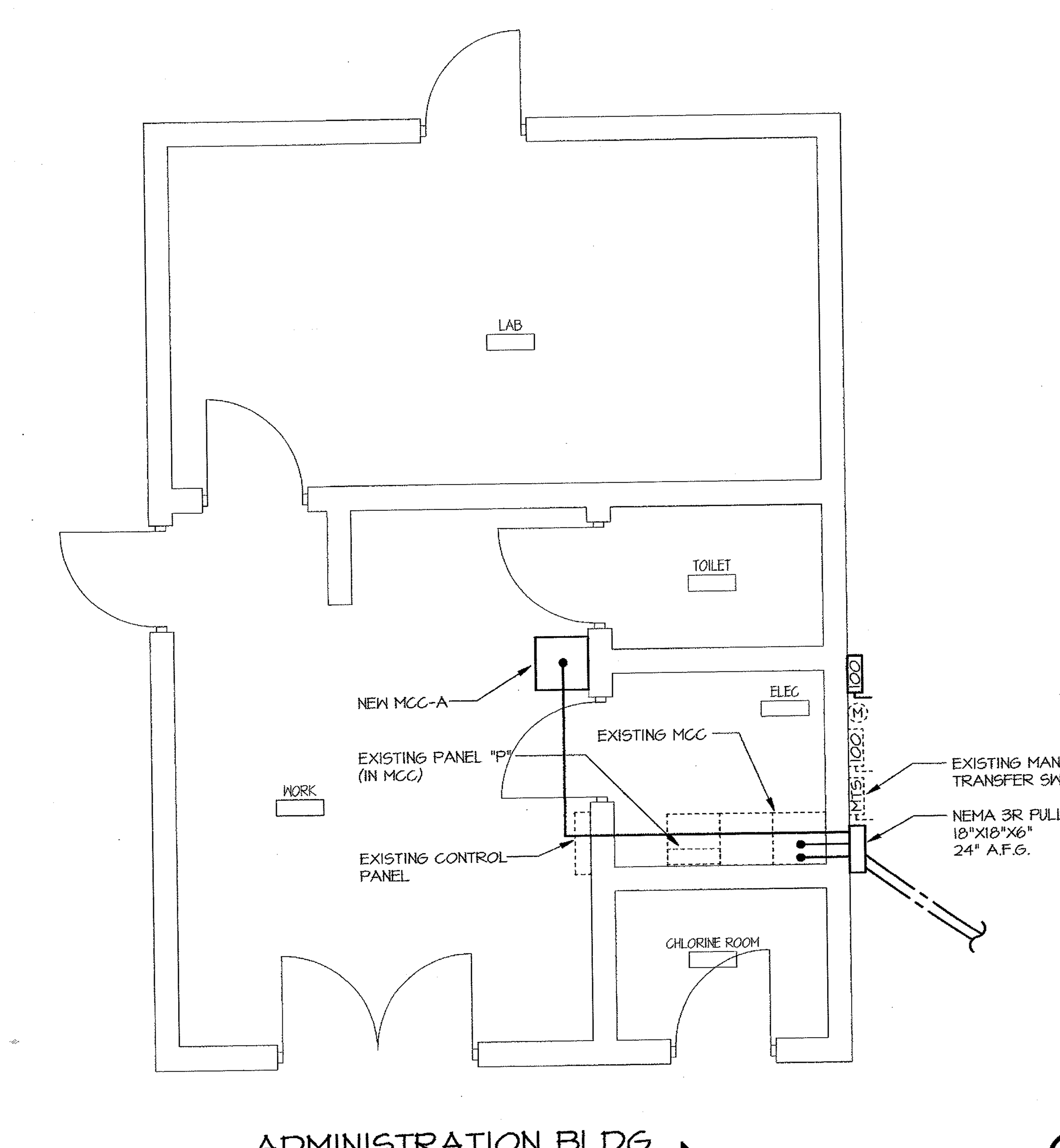


SLUDGE DEWATERING BLDG
LIGHTING & RECEPTACLE PLAN
SCALE: 1/4" = 1'-0"

(2) PANELBOARD SCHEDULE						
PANEL: RP-D	MOUNTING: SURFACE			MINI POWER CENTER		
MAINS: 30 AMP-SECONDARY M.C.B.						
SERVICE: 120/240 VOLTS 1 PHASE 3 WIRE S NEUTRAL						
LOAD	VA	AMPS	A B	AMPS	VA	LOAD
LTG/RECEPT	1240	20	1 2	20	700	EXHAUST FAN
SPARE	-	20	3 4	20	-	SPARE
SUM	1240				700	
TOTAL LOAD: 1940 VA 8 AMPS						

PLAN NOTES:

1. ALL RECEPTACLES MOUNTED AT 44 INCH A.F.F.
2. MINI POWER CENTER WITH 5KVA TRANSFORMER, WALL MOUNTED.
3. CORROSION RESISTANT SUSPENDED UNIT HEATER WITH INTEGRAL T-STAT. BERKO HUH-1548M OREQ.



ADMINISTRATION BLDG
ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"
(BUILDING SHOWN FOR REFERENCE ONLY, INTERIOR DIMENSIONS HAVE BEEN ESTIMATED)

STATE OF OHIO — MARTIN M. BRAUN — 45322 — REGISTERED PROFESSIONAL ENGINEER
3/15/2002

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WASTEWATER TREATMENT PLANT IMPROVEMENTS
VILLAGE OF GROVER HILL, OHIO

ELECTRICAL FLOOR PLANS

DRAWN BY	CHECKED BY
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REVISION

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