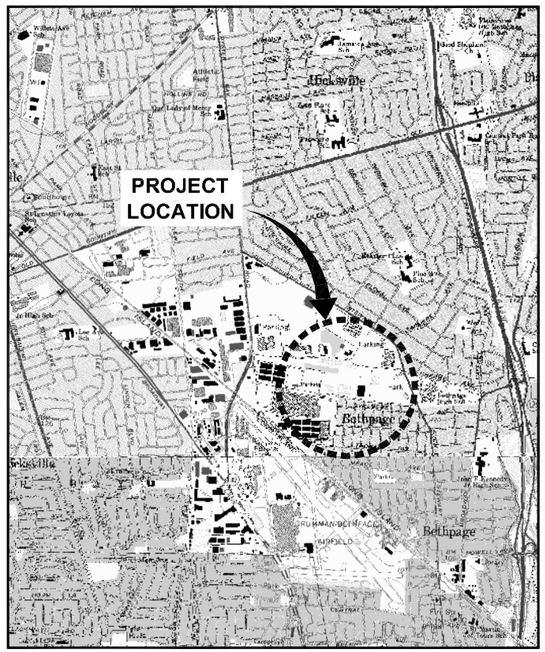
CONTRACT DRAWINGS

OPERABLE UNIT 3
GROUNDWATER INTERIM REMEDIAL MEASURE

FORMER GRUMMAN SETTLING PONDS



REFERENCE: BASE MAP USGS 7.5 MINUTE QUADRANGLE., AMITYVILLE, FREEPORT, N.Y. 1969, PHOTOREVISED 1979. HUNTINGTON, HICKSVILLE, N.Y., 1967, PHOTOREVISED 1979.

JULY 2008

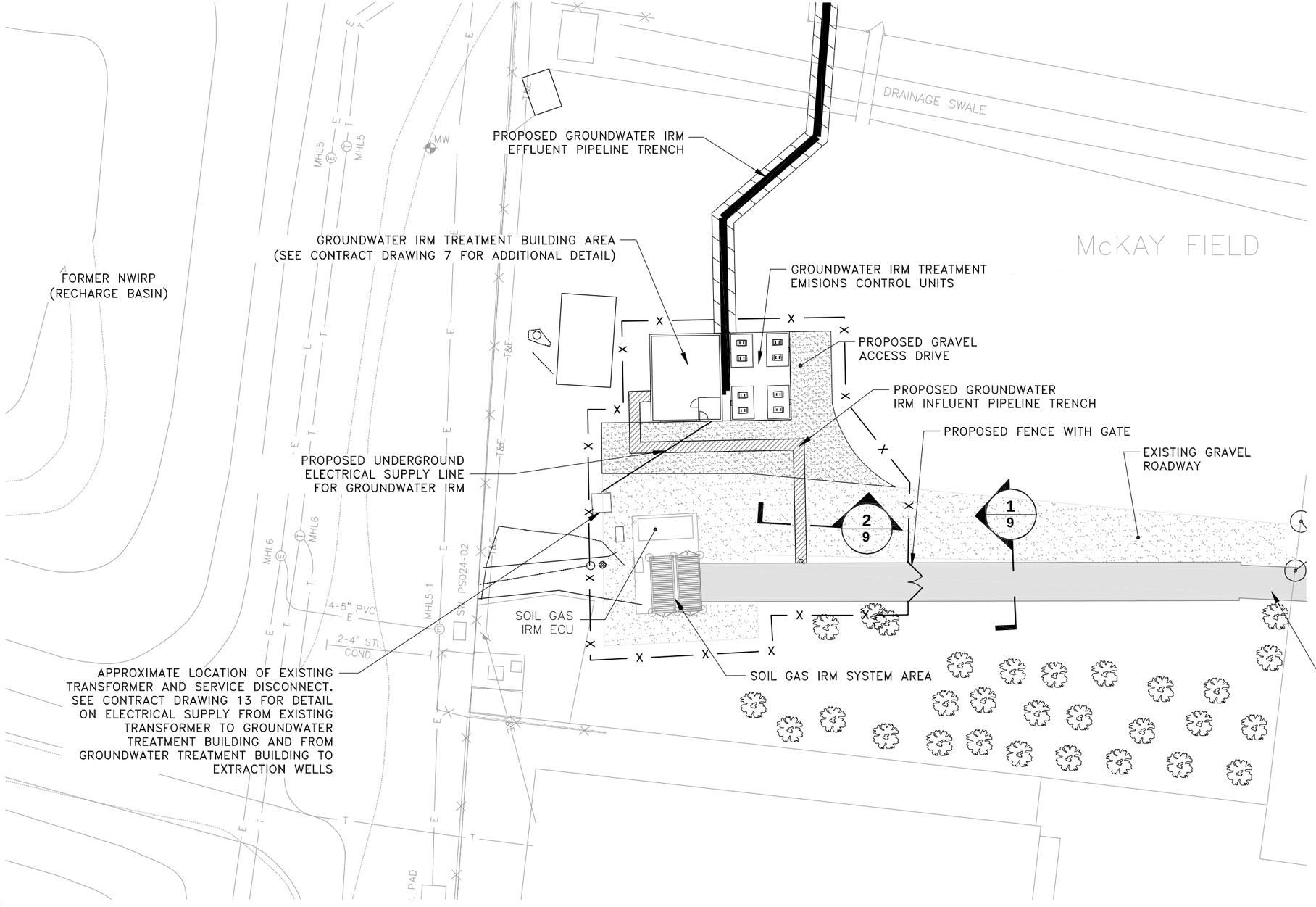
NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK

ARCADIS

ARCADIS U.S., INC.

INDEX TO DRAWINGS

DRAFT



LEGEND:

- X — EXISTING FENCE
- EXISTING GRAVEL ROADWAY
- EXISTING SOIL AND GROUNDWATER PIPELINE TRENCH
- PROPOSED GRAVEL ROADWAY
- PROPOSED GROUNDWATER IRM PIPELINE TRENCH
- IRM — INTERIM REMEDIAL MEASURE
- NWIRP — NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- ECU — EMISSION CONTROL UNIT

DRAFT

0 20' 40'
SCALE IN FEET

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **WILLIAM S. WITTEK**
Professional Engineer's No.: 080827
State: NY | Date Signed: | Project Mgr.: CSG
Designed by: CDL | Drawn by: BKD | Checked by: TEM

ARCADIS OF NEW YORK, INC.

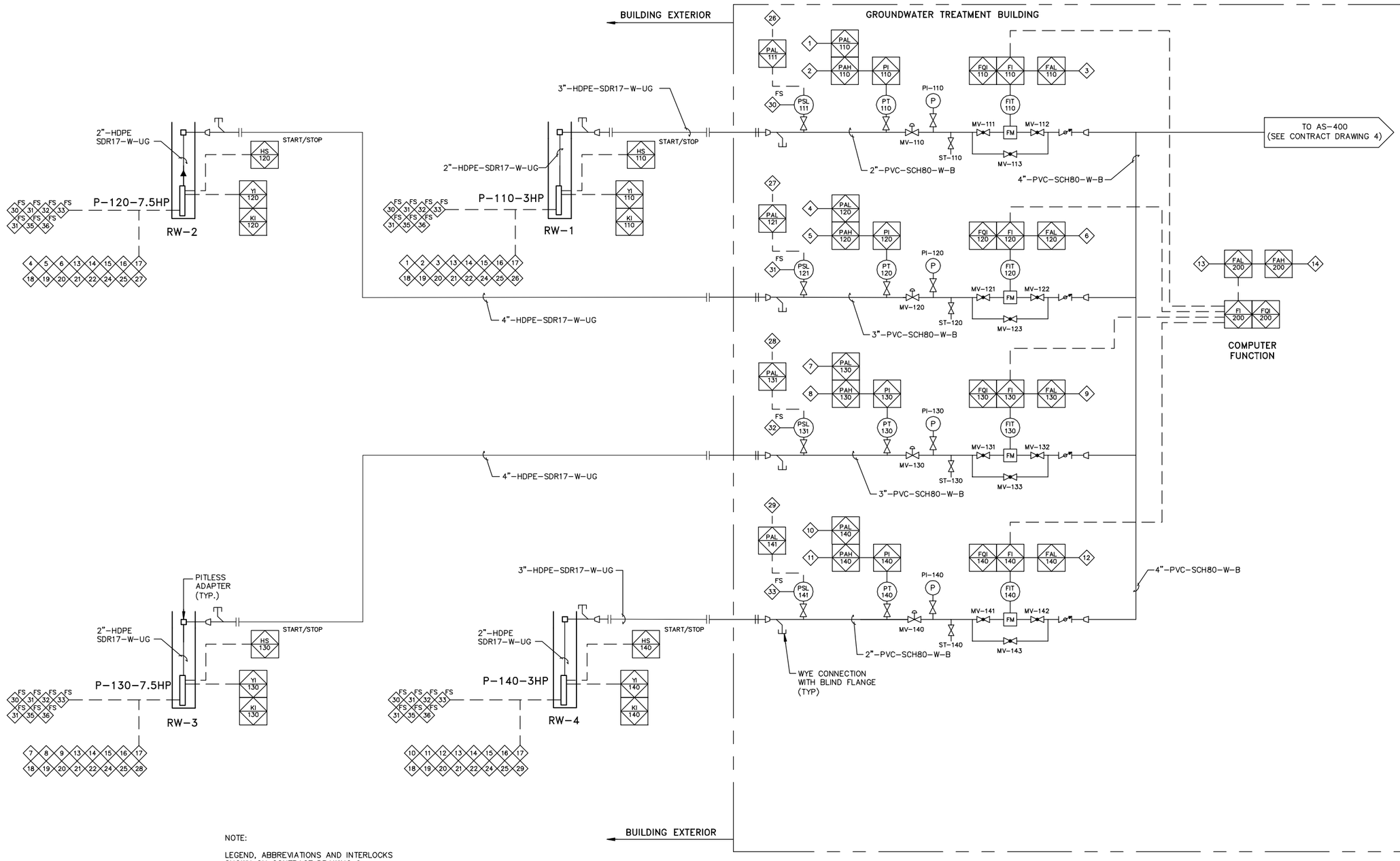
NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

TREATMENT BUILDING AREA PLAN

ARCADIS Project No.: NY001464.1807.00003
Date: JUNE 2008

ARCADIS
6723 Towpath Road
Box 66
Syracuse, NY 13214
Tel: 315-446-9120

2



NOTE:

LEGEND, ABBREVIATIONS AND INTERLOCKS SHOWN ON CONTRACT DRAWING 6.

DRAFT

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Professional Engineer's Name		
WILLIAM S. WITTEK		
Professional Engineer's No.		
080827		
State	Date Signed	Project Mgr.
NY		CSG
Designed by	Drawn by	Checked by
CDL	KLS	TEM

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK

OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

PIPING AND INSTRUMENTATION DIAGRAM #1

MECHANICAL

ARCADIS Project No.	NY001464.1807.00003
Date	JULY 2008
ARCADIS	6723 Towpath Road (P.O. Box 66) Syracuse, NY 13214 Tel: 315.446.9120

3

GROUNDWATER TREATMENT BUILDING

BUILDING EXTERIOR

TT 900 — TI 900 — TAL 900 — 25

LAL 300

LSL 300

T-300
SEQUESTRANT
STORAGE TOTE

P-300

1/2" POLYETHYLENE
X 1" SCH80-PVC

FROM BAG FILTER
EFFLUENT PIPING

NC

NC

FROM GROUNDWATER
EXTRACTION SYSTEM
(SEE CONTRACT DRAWING 3)

ST-300

4"-PVC-SCH80-W-B

ST-400

TO VAPOR PHASE TREATMENT
(SEE CONTRACT DRAWING 5)

16"-AL-10GA-A-B

22 — PAH 500 — PAL 500 — PI 500 — PT 500

21

TT 500 — TI 500

TAL 500

20

FAH 500 — FAL 500 — FI 500 — FIT 500

19 — 18

HS AS HOA

B-410-40HP

YI 410

13 14 18 19 20 21 22 23 24 30 31 38

TO AIR STRIPPER
INFLUENT PIPING

2"-PVC-SCH80-W-B

NC

37 — ZI 401 — FO — M — P — BF-401 — NO — ABV-401

BF-402

DRAIN

37 — ZI 402 — BF-403 — BF-404 — DRAIN

37 — PAH 700 — PAH 700 — 23

PI 700 — PT 700

NO

FI 700 — FQI 700 — FIT 700

MV-702

MV-701

MV-703

4"-PVC-SCH80-W-B

MV-405

TO NAVY BASIN

6"-HDPE-SDR17-W-UG

15 — PAH 400

FE AS — FI AS

FS 36

LAH 401

17

FS 34 — PAH AS — PSH AS — LSH AS — LAH AS

FS 35 — PAL AS — PSL AS

HS AS HOA

16 — PAL 400

LT AS — LIC AS — VFD AS

P

MV-900

1.5"-PVC-SCH80-W-B

ST-402

MV-401

P-400-7.5HP

MV-402

LOW-PROFILE AIR STRIPPER
AS-400

SKID MOUNTED
EQUIPMENT

YI 400

LI 400

LAL 400 — LAH 400 — LAHH 400

NC

MV-801

1.5"-PVC-SCH80-W-B

OVERFLOW
TO FLOOR

PI-800

LSH 900 — LAH 900 — 24

START/STOP

HS 900

P-900-1 HP

BUILDING SUMP

16"-AL-10GA-A-B

MV-802

MV-803

1"-PVC-SCH80-W-B

HOSE BIB (TYP.)

T-800-300 GALLONS

P-800-0.9KW

OUTSIDE
AMBIENT AIR

NOTE:

LEGEND, ABBREVIATIONS AND INTERLOCKS SHOWN ON CONTRACT DRAWING 6.

DRAFT

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **WILLIAM S. WITTEK**

Professional Engineer's No.: 080827

State	Date Signed	Project Mgr.
NY		CSG
Designed by: CDL	Drawn by: KLS	Checked by: TEM

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK

OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

PIPING AND INSTRUMENTATION DIAGRAM #2

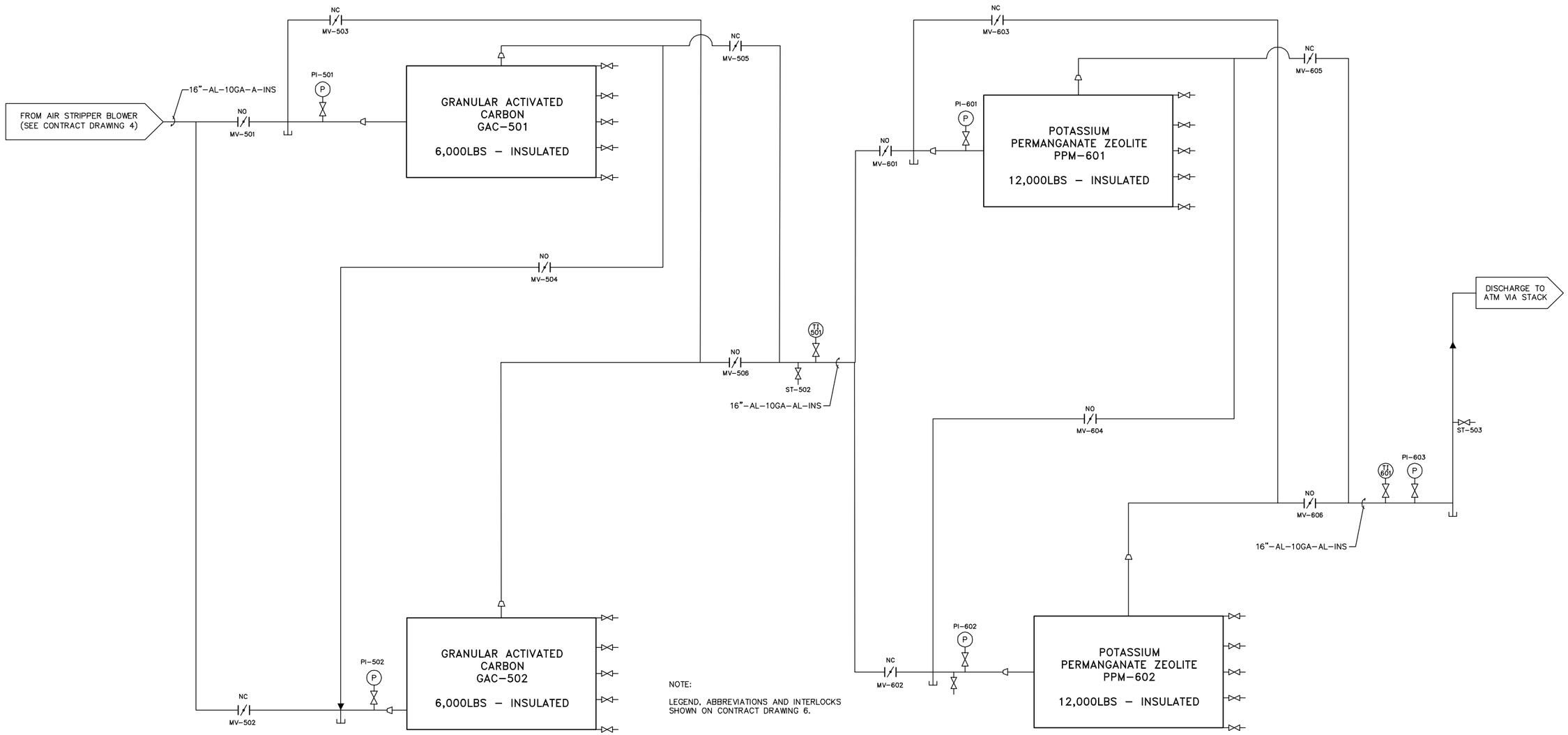
MECHANICAL

ARCADIS Project No.
NY001464.1807.00003

Date
JULY 2008

ARCADIS
6723 Towpath Road
(P.O. Box 66)
Syracuse, NY 13214
Tel: 315.446.9120

4



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DRAFT

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Professional Engineer's Name
WILLIAM S. WITTEK
Professional Engineer's No.
080827

State	Date Signed	Project Mgr.
NY		CSG
Designed by	Drawn by	Checked by
CDL	KLS	TEM

ARCADIS

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

PIPING AND INSTRUMENTATION DIAGRAM #3

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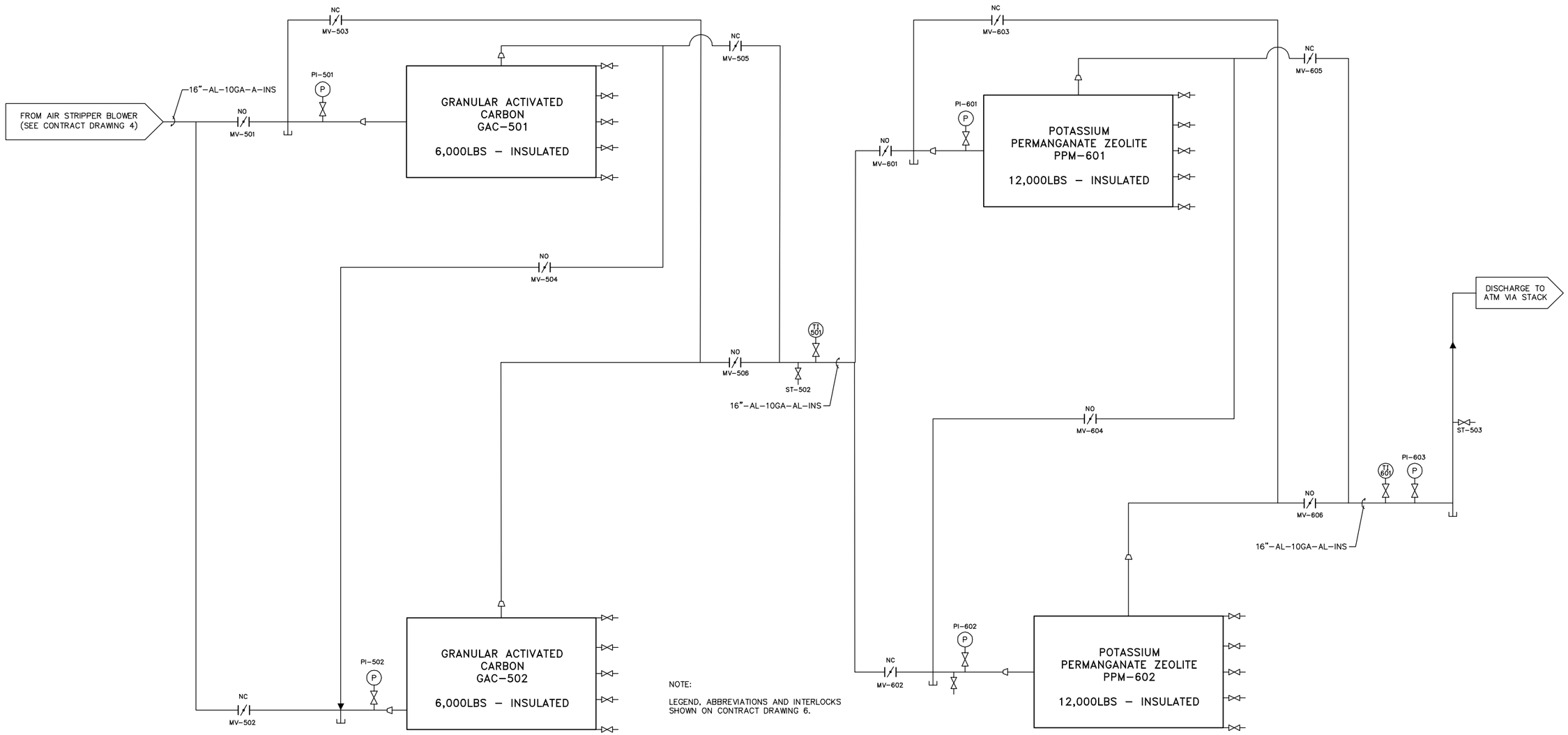

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OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

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EQUIPMENT LEGEND:

- PRIMARY PROCESS PIPING
- SECONDARY PROCESS PIPING
- EXISTING PROCESS PIPING
- INSTRUMENTATION SIGNAL
- SKID MOUNTED EQUIPMENT
- PLANT AIR
- SAMPLE TAP
- PRESSURE GAUGE
- GLOBE VALVE
- BALL VALVE
- CHECK VALVE
- AIR PRESSURE REGULATOR/FILTER
- COUPLER
- REDUCER
- SPOOL PIECE DAMPER
- WYE CONNECTION WITH BLIND FLANGE
- LOCAL, FIELD MOUNT
- LOCAL CONTROL PANEL (AIR STRIPPER) (LIC / AS)
- MAIN PLC CONTROLLER (LAH / 100)
- MAIN PLC INTERLOCK (1)
- SECONDARY FAIL-SAFE INTERLOCK (FS / 15)
- CENTRIFUGAL PUMP
- BLOWER
- METERING PUMP
- SUBMERSIBLE WELL PUMP
- HOSE BIB
- BOOSTER PUMP

ABBREVIATIONS:

A	AIR	LI	LEVEL INDICATOR
ABV	ACTIVATED BLOCK VALVE	LIC	LEVEL INDICATING CONTROLLER
AL	ALUMINUM	LSH	LEVEL SWITCH HIGH
AS	AIR STRIPPER	LSL	LEVEL SWITCH LOW
BF	BAG FILTER	LT	LEVEL TRANSMITTER
ø	DIAMETER	MV	MANUAL VALVE
FAH	FLOW ALARM HIGH	NC	NORMALLY CLOSED
FAL	FLOW ALARM LOW	NO	NORMALLY OPEN
FE	FLOW ELEMENT	PAH	PRESSURE ALARM HIGH
FI	FLOW INDICATOR	PAL	PRESSURE ALARM LOW
FIT	FLOW INDICATING TRANSMITTER	PT	PRESSURE TRANSMITTER
FM	FLOW METER	PI	PRESSURE INDICATOR
FO	FAIL OPEN	PLC	PROGRAMMABLE LOGIC CONTROLLER
FP	FLOOR PENETRATION	PPZ	POTASSIUM PERMANANATE ZEOLITE
FQI	TOTALIZED FLOW INDICATOR	PSL	PRESSURE SWITCH LOW
GAC	VAPOR-PHASE GRANULAR ACTIVATED CARBON	PSH	PRESSURE SWITCH HIGH
		PVC	POLYVINYL CHLORIDE
GA	GAUGE HIGH DENSITY	SCH	SCHEDULE
HDPE	POLYETHYLENE	SDR	STANDARD DIMENSION RATIO
HOA	HAND-OFF-AUTO	TAL	TEMPERATURE ALARM LOW
HP	HORSEPOWER	TI	TEMPERATURE INDICATOR
HS	HAND SWITCH	TT	TEMPERATURE INDICATING TRANSMITTER
INS	INSULATED	TYP	TYPICAL
KI	PUMP RUN TIME INDICATOR	RW	RECOVERY WELL
KW	KILOWATT	UG	UNDERGROUND
LAH	LEVEL ALARM HIGH	VFD	VARIABLE FREQUENCY DRIVE
LAHH	LEVEL ALARM HIGH-HIGH	W	WATER
LAL	LEVEL ALARM LOW	YI	RUN INDICATION
LALL	LEVEL ALARM LOW-LOW	ZI	POSITION INDICATOR
LE	LEVEL ELEMENT		

PLC INPUT/OUTPUT SCHEDULE:

ANALOG INPUTS:

1. PT-110
2. PT-120
3. PT-130
4. PT-140
5. FIT-110
6. FIT-120
7. FIT-130
8. FIT-140
9. LI-400
10. FIT-500
11. PT-500
12. TT-500
13. PT-700
14. FIT-700
15. TT-900

DISCRETE INPUTS:

1. YI-110
2. YI-120
3. YI-130
4. YI-140
5. KI-110
6. KI-120
7. KI-130
8. KI-140
9. PSL-111
10. PSL-121
11. PSL-131
12. PSL-141
13. PAH-400
14. PAL-400
15. LAH-400
16. YI-400
17. YI-410
18. LSH-900

DISCRETE OUTPUTS:

1. P-110 SHUTDOWN
2. P-120 SHUTDOWN
3. P-130 SHUTDOWN
4. P-140 SHUTDOWN
5. AIR STRIPPER SHUTDOWN
6. P-900 ON/OFF
7. AUTODIALER
8. AUTODIALER
9. AUTODIALER
10. AUTODIALER

PIPE IDENTIFICATION TAGS:

DIAMETER - SERVICE - SCHEDULE - MATERIAL - OTHER

DIAMETER: NOMINAL DIAMETER (INCHES)

SERVICE:
A = AIR
W = WATER

SCHEDULE = US STANDARD UNITS

MATERIAL:
AL = ALUMINUM
HDPE = HIGH DENSITY POLYETHYLENE
PVC = POLYVINYL CHLORIDE

OTHER:
B = BARE
INS = INSULATED
UG = UNDERGROUND

MAIN PLC INTERLOCK SCHEDULE:

1. LOW PRESSURE IN P-110 INFLUENT LINE (PAL-110), SHUT DOWN P-110, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
2. HIGH PRESSURE IN P-110 INFLUENT LINE (PAH-110), SHUT DOWN P-110, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
3. LOW FLOW IN P-110 INFLUENT LINE (FAL-110), SHUT DOWN P-110, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
4. LOW PRESSURE IN P-120 INFLUENT LINE (PAL-120), SHUT DOWN P-120, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
5. HIGH PRESSURE IN P-120 INFLUENT LINE (PAH-120), SHUT DOWN P-120, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
6. LOW FLOW IN P-120 INFLUENT LINE (FAL-120), SHUT DOWN P-120, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
7. LOW PRESSURE IN P-130 INFLUENT LINE (PAL-130), SHUT DOWN P-130, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
8. HIGH PRESSURE IN P-130 INFLUENT LINE (PAH-130), SHUT DOWN P-130, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
9. LOW FLOW IN P-130 INFLUENT LINE (FAL-130), SHUT DOWN P-130, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
10. LOW PRESSURE IN P-140 INFLUENT LINE (PAL-140), SHUT DOWN P-140, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
11. HIGH PRESSURE IN P-140 INFLUENT LINE (PAH-140), SHUT DOWN P-140, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
12. LOW FLOW IN P-140 INFLUENT LINE (FAL-140), SHUT DOWN P-140, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
13. LOW FLOW AT COMBINED AIR STRIPPER INFLUENT LINE (FAL-200), SHUT DOWN EXTRACTION WELL PUMPS, SHUT DOWN AIR STRIPPER SYSTEM (5 MINUTE DELAY) SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER
14. HIGH FLOW AT COMBINED AIR STRIPPER INFLUENT LINE (FAH-200), SHUT DOWN EXTRACTION WELL PUMPS, SHUT DOWN AIR STRIPPER SYSTEM (5 MINUTE DELAY) SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER SHUT DOWN DELAY WILL BE CONTROLLED BY AIR STRIPPER LOCAL CONTROL PANEL.
15. HIGH PRESSURE AT AIR STRIPPER (PAH-400), SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER WILL BE SHUT DOWN LOCALLY BY AIR STRIPPER CONTROL PANEL ON A 5 MINUTE DELAY.
16. LOW PRESSURE AT AIR STRIPPER (PAL-400), SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER WILL BE SHUT DOWN LOCALLY BY AIR STRIPPER CONTROL PANEL ON A 5 MINUTE DELAY.
17. HIGH SUMP LEVEL AT AIR STRIPPER (LAH-400), SHUT DOWN EXTRACTION WELL PUMPS, SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER WILL BE SHUT DOWN LOCALLY BY AIR STRIPPER CONTROL PANEL ON A 5 MINUTE DELAY.
18. LOW AIR FLOW AT AIR STRIPPER BLOWER DISCHARGE LINE (FAL-500), SHUT DOWN EXTRACTION WELL PUMPS, SHUT DOWN AIR STRIPPER SYSTEM (5 MINUTE DELAY), SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER SHUT DOWN DELAY WILL BE CONTROLLED BY AIR STRIPPER LOCAL CONTROL PANEL.
19. HIGH AIR FLOW AT AIR STRIPPER BLOWER DISCHARGE LINE (FAH-500), SHUT DOWN EXTRACTION WELL PUMPS, SHUT DOWN AIR STRIPPER SYSTEM (5 MINUTE DELAY) , SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER SHUT DOWN DELAY WILL BE CONTROLLED BY AIR STRIPPER LOCAL CONTROL PANEL.
20. LOW AIR TEMPERATURE AT AIR STRIPPER BLOWER DISCHARGE (TAL-500), SHUT DOWN EXTRACTION WELL PUMPS, SHUT DOWN AIR STRIPPER SYSTEM (5 MINUTE DELAY) , SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER SHUT DOWN DELAY WILL BE CONTROLLED BY AIR STRIPPER LOCAL CONTROL PANEL.
21. LOW AIR PRESSURE AT AIR STRIPPER BLOWER DISCHARGE LINE (PAL-500), SHUT DOWN EXTRACTION WELL PUMPS, SHUT DOWN AIR STRIPPER SYSTEM (5 MINUTE DELAY), SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER SHUT DOWN DELAY WILL BE CONTROLLED BY AIR STRIPPER LOCAL CONTROL PANEL.
22. HIGH AIR PRESSURE AT AIR STRIPPER BLOWER DISCHARGE LINE (PAH-500), SHUT DOWN EXTRACTION WELL PUMPS, SHUT DOWN AIR STRIPPER SYSTEM (5 MINUTE DELAY) , SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER SHUT DOWN DELAY WILL BE CONTROLLED BY AIR STRIPPER LOCAL CONTROL PANEL.
23. HIGH-HIGH PRESSURE AT AIR STRIPPER PUMP DISCHARGE LINE (PAHH-700), SHUT DOWN EXTRACTION WELL PUMPS, SHUT DOWN AIR STRIPPER SYSTEM (5 MINUTE DELAY) , SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER SHUT DOWN DELAY WILL BE CONTROLLED BY AIR STRIPPER LOCAL CONTROL PANEL.
24. HIGH LEVEL AT BUILDING SUMP (LAH-900), SHUT DOWN EXTRACTION WELL PUMPS, SHUT DOWN AIR STRIPPER SYSTEM (5 MINUTE DELAY) , SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER. AIR STRIPPER SHUT DOWN DELAY WILL BE CONTROLLED BY AIR STRIPPER LOCAL CONTROL PANEL.
25. LOW AIR TEMPERATURE AT BUILDING (TAH-900), SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER.
26. LOW PRESSURE IN P-110 INFLUENT LINE (PAL-111), SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER.
27. LOW PRESSURE IN P-120 INFLUENT LINE (PAL-121), SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER.
28. LOW PRESSURE IN P-130 INFLUENT LINE (PAL-131), SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER.
29. LOW PRESSURE IN P-140 INFLUENT LINE (PAL-141), SIGNAL ALARM AT PLC AND ACTIVATE AUTODIALER.
37. HIGH PRESSURE AT AIR STRIPPER PUMP DISCHARGE LINE (PAH-700), OPEN SECONDARY VALVE (MBV-402 OR MBV-401) AND CLOSE PRIMARY VALVE (MBV-401 OR MBV-402). PRIMARY AND SECONDARY VALVE DESIGNATION SHALL ALTERNATE AFTER OPERATOR ACKNOWLEDGES THAT PRIMARY BAG FILTERS HAVE BEEN CHANGED.
38. IN THE EVENT THAT ALL WELL PUMPS ARE SHUT DOWN BY PLC, AIR STRIPPER SYSTEM SHALL BE SHUT DOWN.

SECONDARY FAIL-SAFE INTERLOCK SCHEDULE:

30. LOW PRESSURE SWITCH (PSL-111) IN P-110 ACTIVATED (DE-ENERGIZED), SHUT DOWN WELL PUMPS.
31. LOW PRESSURE SWITCH (PSL-121) IN P-120 ACTIVATED (DE-ENERGIZED), SHUT DOWN WELL PUMPS.
32. LOW PRESSURE SWITCH (PSL-131) IN P-130 ACTIVATED (DE-ENERGIZED), SHUT DOWN WELL PUMPS.
33. LOW PRESSURE SWITCH (PSL-141) IN P-140 ACTIVATED (DE-ENERGIZED), SHUT DOWN WELL PUMPS.
34. HIGH PRESSURE SWITCH (PSH-AS) AT AIR STRIPPER ACTIVATED, SHUT DOWN WELL PUMPS.
35. LOW PRESSURE SWITCH (PSL-AS) AT AIR STRIPPER ACTIVATED, SHUT DOWN WELL PUMPS.
36. HIGH LEVEL SWITCH (LSH-AS) AT AIR STRIPPER ACTIVATED, SHUT DOWN WELL PUMPS.

AIR STRIPPER LOCAL CONTROL PANEL INTERLOCK SCHEDULE:

1. HIGH PRESSURE AT AIR STRIPPER (PSH-AS), SIGNAL DRY CONTACT FOR EXTERNAL SHUT DOWN/INDICATION, SIGNAL LOCAL PANEL ALARM LIGHT, AND SHUT DOWN AIR STRIPPER BLOWER (5 MINUTE DELAY).
2. LOW PRESSURE AT AIR STRIPPER (PSL-AS), SIGNAL DRY CONTACT FOR EXTERNAL SHUT DOWN/INDICATION, SIGNAL LOCAL PANEL ALARM LIGHT, AND SHUT DOWN AIR STRIPPER BLOWER (5 MINUTE DELAY).
3. HIGH SUMP LEVEL AT AIR STRIPPER (LSH-AS), SIGNAL DRY CONTACT FOR EXTERNAL SHUT DOWN/INDICATION, SIGNAL LOCAL PANEL ALARM LIGHT, AND SHUT DOWN AIR STRIPPER BLOWER (5 MINUTE DELAY).
4. AIR STRIPPER DISCHARGE PUMP SPEED WILL BE CONTROLLED BY VFD BASED ON AIR STRIPPER SUMP LEVEL SET POINT.

DRAFT

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NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

LEGEND, ABBREVIATIONS AND INTERLOCKS

MECHANICAL

ARCADIS Project No.: NY001464.1807.00003
Date: JULY 2008

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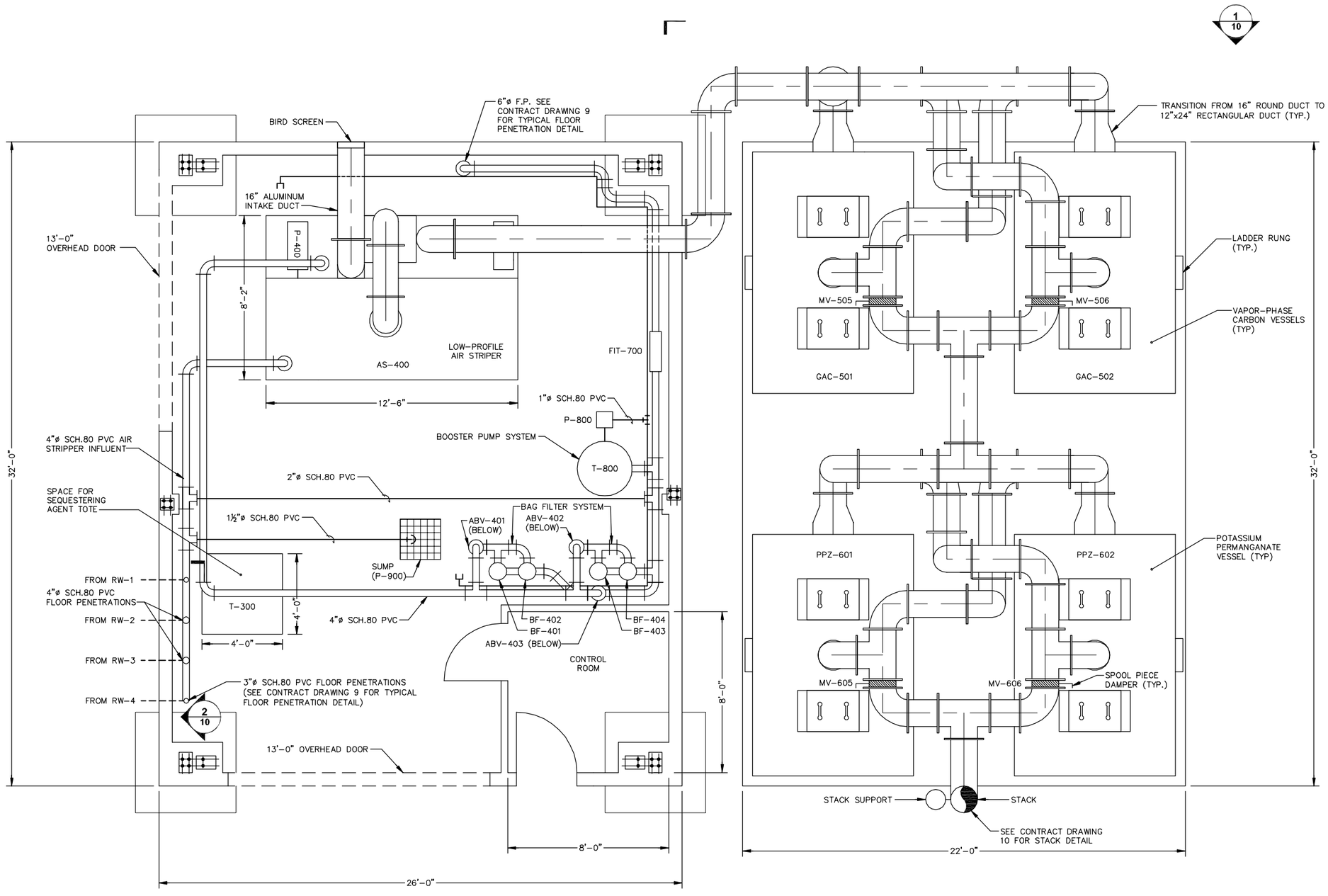

NOTES:

1. REFER TO CONTRACT DRAWINGS 9 AND 10 FOR MISCELLANEOUS SECTIONS AND DETAILS.
2. REFER TO CONTRACT DRAWING 15 FOR EQUIPMENT POWER, LIGHTING, HVAC AND GROUNDING PLAN.
3. REFER TO CONTRACT DRAWING 16 FOR INSTRUMENTATION PLAN.
4. REFER TO CONTRACT DRAWINGS 18 THROUGH 21 FOR FOUNDATION AND BUILDING DETAILS AND SPECIFICATIONS.
5. REFER TO CONTRACT DRAWINGS 3, 4, AND 5 FOR VALVE, SAMPLE TAP, PRESSURE GAUGE, AND TEMPERATURE GAUGE LOCATIONS.
6. REFER TO CONTRACT DRAWING 6 FOR LEGEND AND ABBREVIATIONS.
7. REFER TO CONTRACT DRAWING 11 FOR EQUIPMENT, INSTRUMENT, AND MECHANICAL SPECIFICATIONS.
8. ACTUAL LOCATION OF BAG FILTER SYSTEM UNITS AND ASSOCIATED PIPING SUBJECT TO CHANGE AS DETERMINED IN FIELD.

DRAFT

CITY:SYR-NY DIV/GROUP:141 DB:GHS KLS KEW LD:GHS PIC: PM: TM: LYR:ON=*;OFF=*REF* G:\CADD\ACTIVE\NY001464\180700003\DWG\001464G01.dwg LAYOUT: 7 SAVED: 7/24/2008 10:47 AM ACADVER: 17.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 7/24/2008 11:10 AM BY: SARTORI, KATHERINE
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3/8"=1'-0" (2' 0 3' 6')

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: WILLIAM S. WITTEK		
Professional Engineer's No.: 080827		
State: NY	Date Signed:	Project Mgr.: CSG
Designed by: CDL	Drawn by:	Checked by: TEM

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK

OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

EQUIPMENT LAYOUT

MECHANICAL

ARCADIS Project No.: NY001464.1807.00003

Date: JULY 2008

ARCADIS
6723 Towpath Road
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Syracuse, NY 13214
Tel: 315.446.9120

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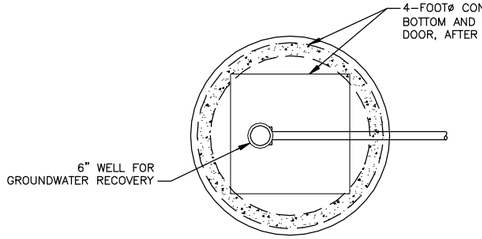

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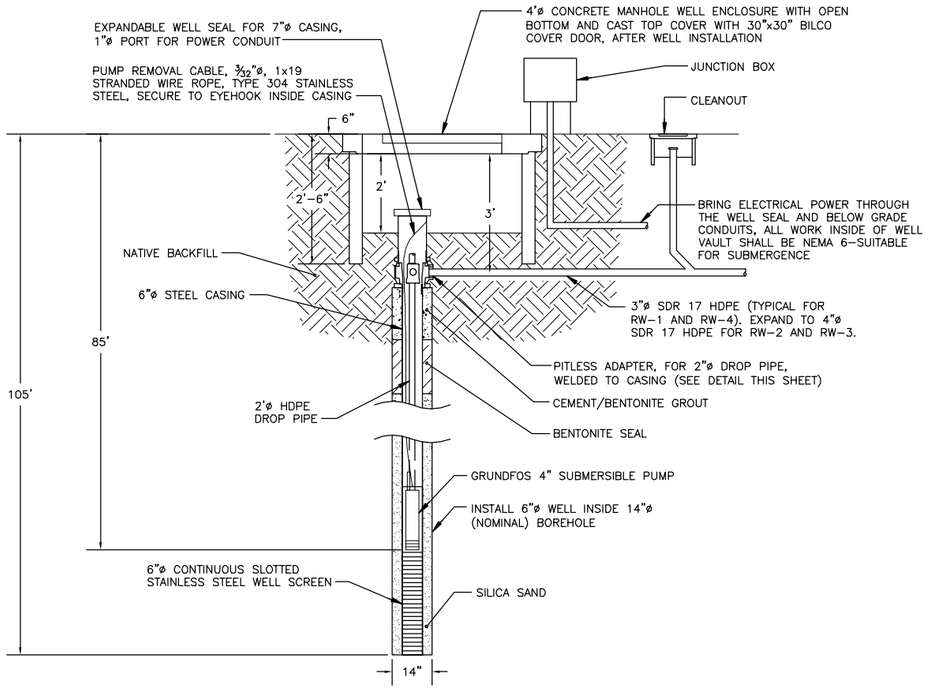

TYPICAL RECOVERY WELL DETAIL

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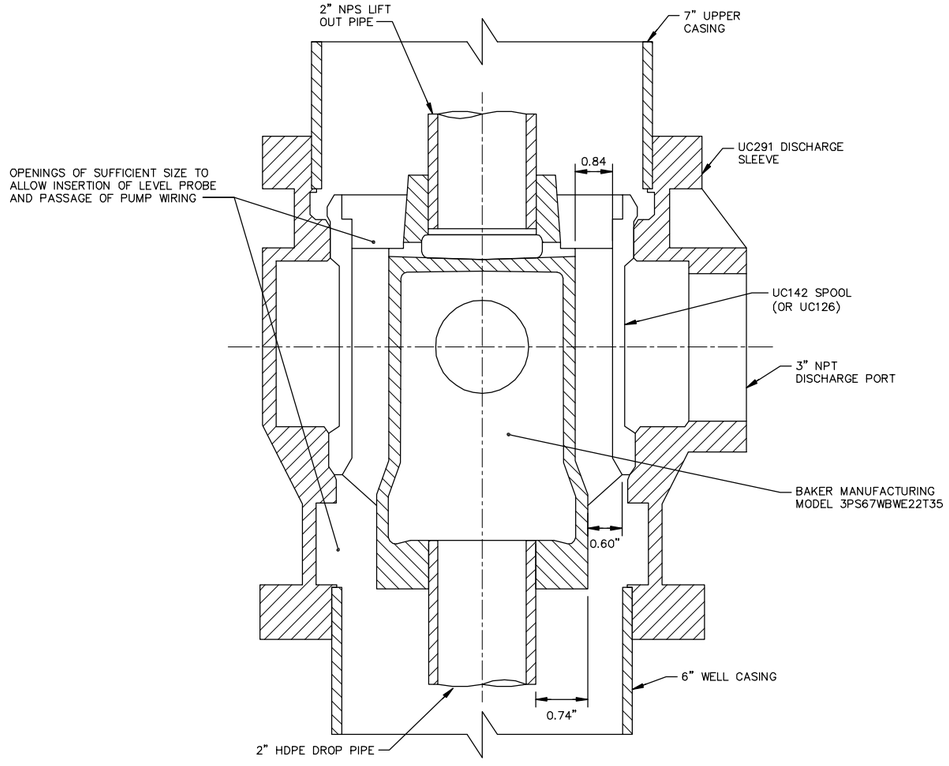

PITLESS ADAPTER

NOT TO SCALE

WELL INSTALLATION PROCEDURE:

1. EXCAVATE TO 4' AROUND WELL CASING TO PRODUCE A 6' x 6' x 4' DEEP AREA FOR SETTING CONCRETE MANHOLE WELL ENCLOSURE.
2. WELD PITLESS ADAPTER TO 6" WELL CASING PIPE.
3. WELD 7"Ø x 18" LONG UPPER CASING ON PITLESS ADAPTER.
4. CONNECT EXISTING 3"Ø (OR 4"Ø) HDPE PIPE TO PITLESS ADAPTER USING 3"Ø HDPE PIPE WITH 3"Ø MALE NPT END.
5. BACKFILL EXCAVATION TO DEPTH OF 2½' BELOW GRADE (BED HDPE PIPE IN SAND OR PEA GRAVEL PRIOR TO BACKFILL).
6. SET 4'Ø CONCRETE MANHOLE WELL ENCLOSURE.
7. INSTALL CONDUIT TO INSIDE OF MANHOLE ENCLOSURE AND ATTACH JUNCTION BOX TO MANHOLE INTERIOR.
8. PULL PUMP POWER WIRING TO MANHOLE VIA NEW CONDUIT.
9. PREPARE PUMP BY ATTACHING THE APPROPRIATE LENGTH OF 2"Ø HDPE PIPE (OUT FITTED WITH THE INTERNAL COMPONENT OF THE PITLESS ADAPTER) THE APPROPRIATE LENGTH OF 3/32" Ø SUPPORT CABLE AND THE APPROPRIATE LENGTH OF ELECTRICAL POWER CABLES.
10. TEMPORARILY CONNECT POWER TO PUMP AND BUMP PUMP TO CHECK FOR PROPER ROTATION. MARK WIRES TO NOTE PROPER CONNECTIONS, AND THEN DISCONNECT TEMPORARY ELECTRICAL CONNECTION TO THE PUMP.
11. INSTALL THE WELL PUMP TO THE APPROPRIATE DEPTH
12. SECURE 3/32" SUPPORT CABLE TO EYE HOOK INSTALLED IN THE UPPER WELL CASING ABOVE THE PITLESS ADAPTER.
13. THREAD PUMP POWER CABLES THROUGH WELL SEAL AND INSTALL WELL SEAL.
14. MAKE ELECTRICAL CONNECTIONS TO PROVIDE POWER TO PUMP.
15. PLACE COVER ON MANHOLE WELL ENCLOSURE.
16. BACKFILL AND COMPACT AREA AROUND MANHOLE WELL ENCLOSURE.
17. RESTORE ANY DISTURBED SURFACES TO ORIGINAL CONDITION.

DRAFT

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **WILLIAM S. WITTEK**
Professional Engineer's No.: 080827

State	Date Signed	Project Mgr.
NY		CSG
Designed by: CDL	Drawn by:	Checked by: TEM

ARCADIS

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK

OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

WELL DETAIL

MECHANICAL

ARCADIS Project No.: NY001464.1807.00003

Date: JULY 2008

ARCADIS
6723 Towpath Road
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Tel: 315.446.9120

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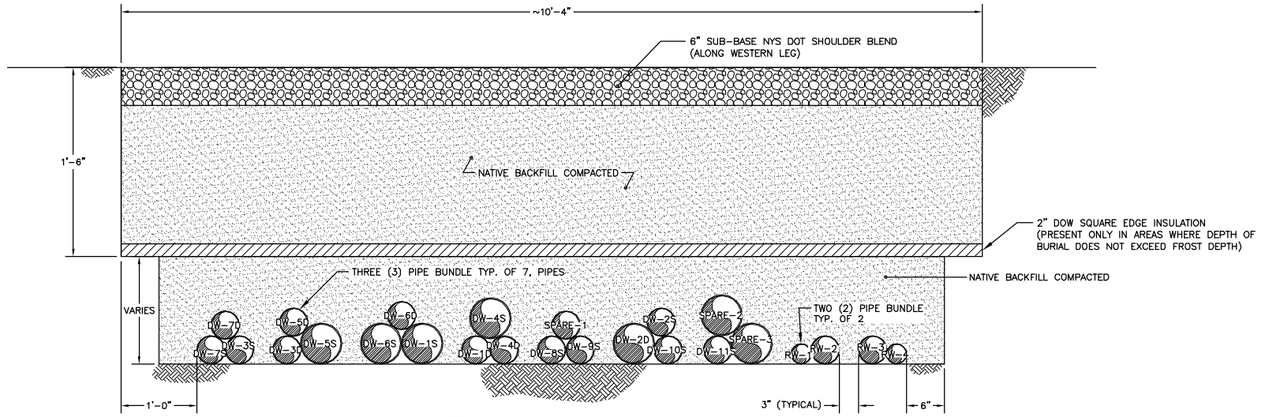
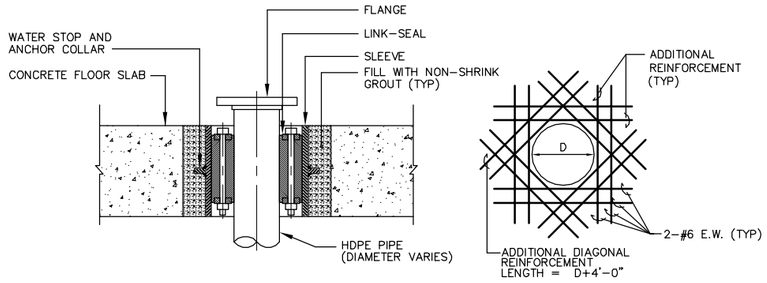


NOTE:

DEPTH OF TRENCH VARIES FROM 2'-6" TO 5'-0".

EXISTING TRENCH DETAIL 1

NOT TO SCALE

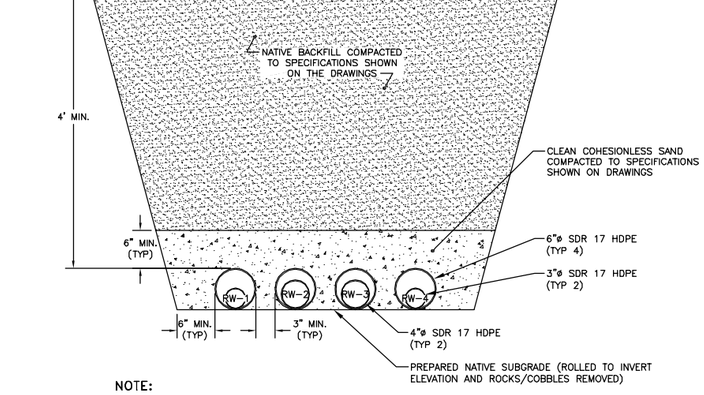


NOTE:

EXTEND REINFORCEMENT A MINIMUM OF 48 BAR DIAMETERS BEYOND THE FACE OF THE OPENING

TYPICAL FLOOR SLAB PENETRATION 3

NOT TO SCALE

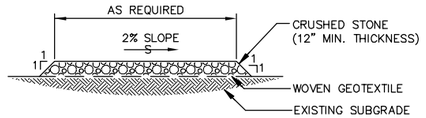


NOTE:

1. GRAVEL ROADWAY TO BE RESTORED TO ORIGINAL CONDITIONS.

TRENCH DETAIL AT GRAVEL ROADWAY CROSSING 2

NOT TO SCALE



TYPICAL GRAVEL ACCESS ROAD DETAIL 4

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Professional Engineer's Name: WILLIAM S. WITTEK
Professional Engineer's No.: 080827

State	Date Signed	Project Mgr.
NY		CSG
Designed by: CDL	Drawn by:	Checked by: TEM

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

MISCELLANEOUS SECTIONS AND DETAILS

ARCADIS Project No.: NY001464.1807.00003
Date: JULY 2008

ARCADIS
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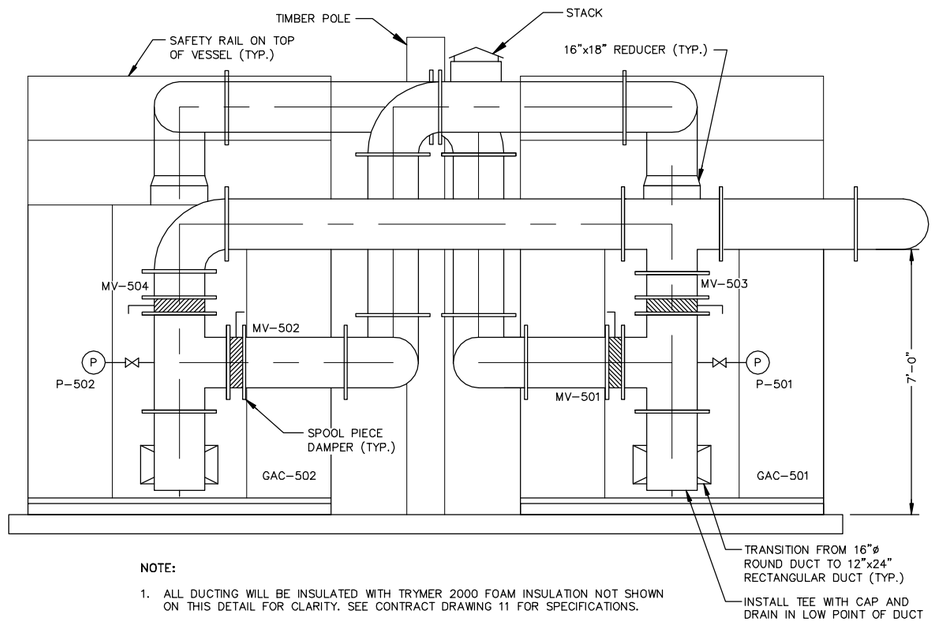
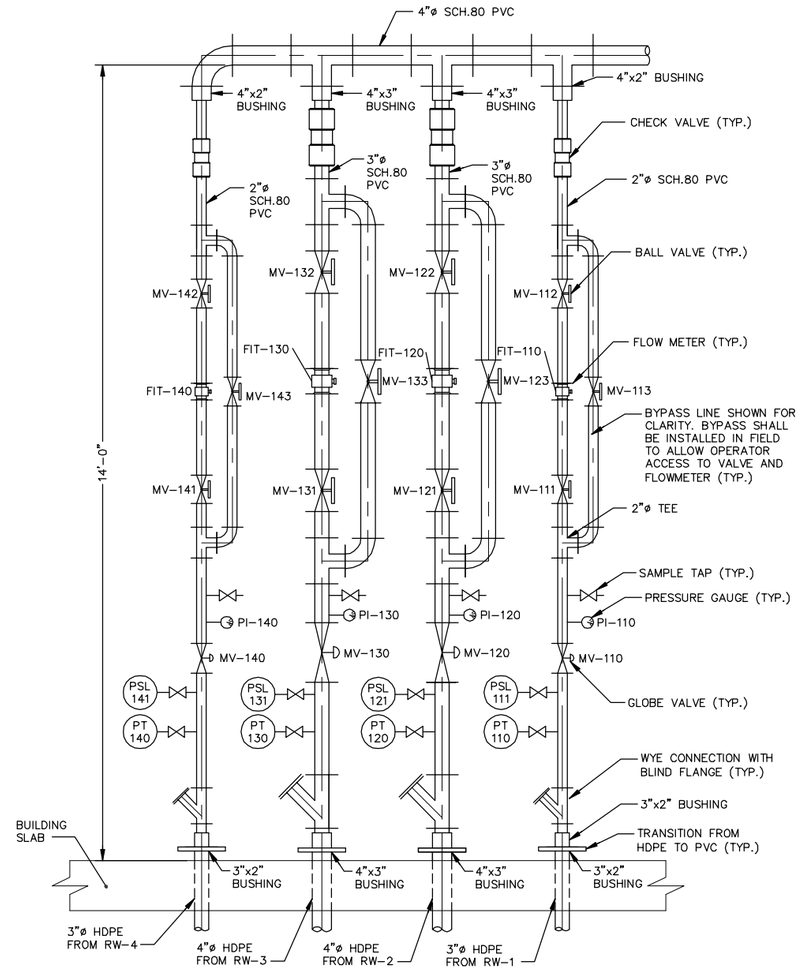


NOTE:

1. ALL DUCTING WILL BE INSULATED WITH TRYMER 2000 FOAM INSULATION NOT SHOWN ON THIS DETAIL FOR CLARITY. SEE CONTRACT DRAWING 11 FOR SPECIFICATIONS.
2. ECU'S SHALL BE INSULATED.

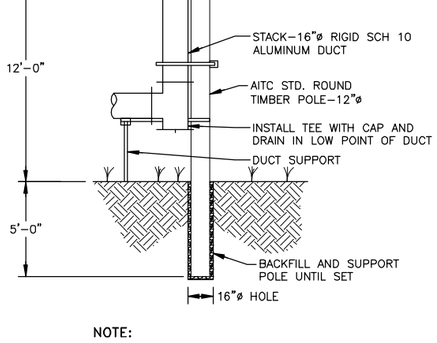
DUCT PROFILE 1

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



INFLUENT PIPE PROFILE 2

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



NOTE:

1. OTHER OPTIONS TO SUPPORT STACK WILL BE DETERMINED IN THE FIELD.

STACK DETAIL 5

NOT TO SCALE

DRAFT

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SCALE(S) AS INDICATED

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Professional Engineer's Name: WILLIAM S. WITTEK
Professional Engineer's No.: 080827
State: NY | Date Signed: | Project Mgr.: CSG
Designed by: CDL | Drawn by: BKD | Checked by: TEM

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

MISCELLANEOUS SECTIONS AND DETAILS

MECHANICAL

ARCADIS Project No.: NY001464.1807.00003
Date: JULY 2008

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Tel: 315.446.9120

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INSTRUMENT SPECIFICATIONS:

1. FLOWMETERS SHALL BE 2-INCH (FIT-110, -140), 3-INCH (FIT-120, -130) or 4-INCH (FIT-700) MAGNETOFLOW BADGER MAGNETIC WAFER-STYLE FLOWMETERS OR EQUAL WITH LINER SUITABLE FOR WATER SERVICE, 316 SS ELECTRODES, GROUNDING RINGS, AND INTEGRAL MOUNT ELECTRONICS WITH LOCAL RATE AND TOTAL DISPLAY.

2. LIQUID PRESSURE TRANSMITTERS (PT-110, -120, -130, -140, -700) SHALL BE FOXBORO MODEL IGP10-T22D1F-M1L1 GAUGE PRESSURE TRANSMITTER OR EQUAL WITH LOCAL DISPLAY, 10-300 PSI RANGE, STAINLESS STEEL WETTED MATERIAL, 4-20 MA OUTPUT, LOOP POWERED.

3. AIR PRESSURE TRANSMITTER (PT-500) SHALL BE FOXBORO MODEL IGP20-T22B21F-M1L1 GAUGE PRESSURE TRANSMITTER OR EQUAL WITH LOCAL DISPLAY, 3.5-200 INCHES H20 RANGE, STAINLESS STEEL WETTED MATERIAL, 4-20 MA OUTPUT, LOOP POWERED.

4. TEMPERATURE TRANSMITTERS (TT-500 - TT-900) SHALL BE FOXBORO MODEL RTT15-T1WCQNAF-L1 INSERTION-STYLE TEMPERATURE TRANSMITTER OR EQUAL WITH LOCAL DISPLAY, NEMA RATED ENCLOSURE, 3-INCH RTD WITH NO WELL, 4-20 MA OUTPUT, LOOP POWERED.

5. AIR FLOW METER (FIT-500) SHALL BE SIERRA MODEL 620S-L06M1EN2V4DD0 INSERTION-STYLE THERMA MASS METER OR EQUAL FOR AIR FLOW, 18-30 VDC, 3/8-INCH DIAMETER PROBE, 4-20 MA OUTPUT WITH DISPLAY.

6. TEMPERATURE INDICATORS (TI-501, -601) SHALL BE WIKA MODEL 232 OR EQUAL 3-INCH INSERTION-STYLE BIMETAL THERMOMETER WITH 4-INCH STEM, LOWER MOUNT, 316 SS WELL WITH U OF 2.5 INCHES, 0-140°F RANGE.

7. LIQUID PRESSURE GAUGES (PI-110, -120, -130, -140, -800) SHALL BE WIKA MODEL 232 OR EQUAL 4.5-INCH PROCESS GAUGE WITH LOWER MOUNT, 316 SS CONNECTION, 0-30 PSI RANGE.

8. AIR PRESSURE GAUGES (PI-501, -502, -601, -602, -603) SHALL BE WIKA MODEL 232 OR EQUAL 4.5-INCH LOW PRESSURE PROCESS GAUGE WITH LOWER MOUNT, 316 SS CONNECTION, 0-20 INCHES H20 RANGE.

9. LEVEL SWITCH (LSL-300) SHALL BE GEMS MODEL MBLU40T OR EQUAL FLOAT SWITCH, NORMALLY OPEN OUTPUT WITH 40' CABLE.

10. PRESSURE SWITCH (PSL-111, -121, -131, -141) SHALL BE ASHCROFT TYPE 400 B SERIES WITH WATER TIGHT ENCLOSURE AND DUAL SPDT SWITCHES. 15 PSI MAXIMUM RANGE.

CONTROL SYSTEM SPECIFICATIONS

1. CONTROL SYSTEM SHALL BE AN ALLEN-BRADLEY PLC CONTROL SYSTEM WITH THE FOLLOWING FEATURES:

   SLOT RACK
   SLC 5/04 CONTROLLER
   ETHERNET MODULE
   POWER SUPPLY
   ANALOG INPUT MODULES
   ANALOG OUTPUT MODULES
   DC INPUT MODULES
   DC OUTPUT MODULES
   UPS AND POWER-LOSS SENSOR

2. CONTROL SYSTEM USER INTERFACE SHALL BE AN ARISTA ARP-1715BP-RB103H-T PC WITH THE FOLLOWING FEATURES:

   STANDARD POWER COATED ALUMINUM
   15" ELO RESISTIVE TOUCH DISPLAY
   P4 2.8GHZ CPU
   RAM 1 GB
   HARD DRIVE 40 GB
   CD ROM
   OPERATING SYSTEM XP PROFESSIONAL
   AC POWER SUPPLY
   INCREASED CONTROL PANEL DEPTH
   ADDITIONAL PROGRAM AND TEST TIME ADDED

3. SYSTEM AUTODIALER SHALL BE A SENSAPHONE WITH TELULAR CELLULAR MODEM CELL MODEM SHALL INCLUDE AN EXTERNAL ANTENNA WITH 15' OF WHIP

MAJOR EQUIPMENT SPECIFICATIONS

1. WELL PUMPS (P-110, -140) SHALL BE GRUNDFOS MODEL 40S30-9 OR EQUAL SUBMERSIBLE WELL PUMPS WITH 3 HP, 460 V, 3 PHASE MOTORS CAPABLE OF 40 GPM AT 200 FEET TDH.

2. WELL PUMPS (P-120, -130) SHALL BE GRUNDFOS MODEL 75S75-9 OR EQUAL SUBMERSIBLE WELL PUMPS WITH 7.5 HP, 460 V, 3 PHASE MOTORS CAPABLE OF 85 GPM AT 220 FEET TDH.

3. AIR STRIPPER (AS-400) SHALL BE BISCO ENVIRONMENTAL/NEEP SYSTEMS MODEL 31261 SHALLOW TRAY SYSTEM OR EQUAL WITH 6 TRAYS, 316 SS CONSTRUCTION, WITH A MAXIMUM FLOW RATE OF 425 GPM, AND THE FOLLOWING COMPONENTS MOUNTED ON THE EQUIPMENT SKID:

   INDUCED-DRAFT BLOWER (B-400) WITH A 40 HP, 460V, 3 PHASE MOTOR CAPABLE OF 1800 CFM AT A PRESSURE OF 45" W.C.

   DISCHARGE PUMP (P-400) WITH A 7.5 HP, 460 V, 3 PHASE MOTOR CAPABLE OF 250 GPM AT 75 FEET TDH CONTROLLED BY A VARIABLE FREQUENCY DRIVE BASED ON LIQUID LEVEL IN THE STRIPPER SUMP.

   INSTRUMENTATION AS SHOWN ON CONTRACT DRAWING 4.

   LOCAL CONTROL PANEL WITH FAIL SAFE CIRCUITRY DRY CONTACTS OUTPUTS TO MAIN TREATMENT SYSTEM PLC; SEE CONTRACT DRAWING 6 FOR INTERLOCK REQUIREMENTS.

4. BAG FILTER VESSELS (BF-401, -402, -403, -404) SHALL BE FILTRATION SYSTEMS MODEL NC-223-V OR EQUAL BAG FILTER HOUSING OF CARBON STEEL CONSTRUCTION RATED AT 150 PSIG.

5. GRANULAR ACTIVATED CARBON VESSELS (C-501, -502) SHALL BE TIGG MODEL NB-8 VAPOR-PHASE CARBON ADSORBER OR EQUAL OF CARBON STEEL CONSTRUCTION CONTAINING 6,000 LBS. OF GAC PER VESSEL.

6. POTASSIUM PERMANGANATE VESSELS (PM-601, -602) SHALL BE TIGG MODEL NB-8 VAPOR-PHASE ADSORBER OR EQUAL OF CARBON STEEL CONSTRUCTION CONTAINING 12,000 LBS. OF POTASSIUM PERMANGANATE PER VESSEL.

7. BOOSTER PUMP (P-800) SHALL BE DAVEY MODEL HS12-40HT1 OR EQUAL WITH 304 SS CASING AND SHAFT, EPOXY-COATED STEEL PRESSURE TANK, AND 120 V, SINGLE PHASE, 0.9 KW MOTOR CAPABLE OF 12 GPM AT 40 PSI TDH.

8. EFFLUENT HOLDING TANK (T-800) SHALL BE CHEMTAINER MODEL TA35771A OR EQUAL WITH 300-GALLON CAPACITY AND LINEAR HIGH DENSITY POLYETHYLENE CONSTRUCTION.

9. SUMP PUMP (P-900) SHALL BE HYDROMATIC MODEL OSP50M1 OR EQUAL MANUALLY CONTROLLED SUMP PUMP WITH A ½ HP, 115 V, SINGLE PHASE MOTOR CAPABLE OF 30 GPM AT 20 FEET TDH.

10. PITLESS ADAPTER SHALL BE BAKER MANUFACTURING MODEL 3PS67WBWE22T3S 6-INCH STANDARD INDUSTRIAL PITLESS UNIT OR EQUAL WITH 3-INCH OUTLET, 2-INCH DROP PIPE AND 6-INCH LOWER AND 7-INCH UPPER WELDED CASING CONNECTIONS.

MECHANICAL SPECIFICATIONS

1. ALL ABOVE-GROUND PIPING SHALL BE PVC SCHEDULE 80.

2. ALL PVC PIPE JOINTS SHALL BE SOLVENT WELDED.

3. ALL UNDERGROUND HDPE PIPE SHALL BE HDPE SDR 17, UNLESS OTHERWISE SPECIFIED.

4. ALL HDPE PIPES SHALL BE BUTT-FUSED.

5. ALL PIPE SHALL BE INSTALLED AND PRESSURE TESTED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. ZERO LEAKAGE IS ALLOWED FOR ALL JOINTS.

6. ALL PIPE SHALL BE SUPPORTED AT 7'-0" O.C. (MAX.) AND LOCATED 2'-0" FROM ALL JOINT LOCATIONS. PIPING SHALL BE SUPPORTED PRIMARILY BY THE BUILDING FLOOR SLAB.

7. BALL VALVES SHALL BE PVC TRUE UNION BALL VALVES WITH VITON O-RING SEAL, TEFLON SELF-LUBRICATING SEATS, TIGHT SHUTOFF IN EITHER DIRECTION, FULL PORT DESIGN, SOLVENT WELDED SOCKET ENDS AND OPERATING HANDLE. MANUFACTURER: HAYWARD, NIBCO, PLASTO-MATIC, OR EQUAL.

8. GLOBE VALVES SHALL BE ASAHI MANUAL CONTROL VALVES OF PVC CONSTRUCTION WITH EPDM SEALS, AND SOCKET CONNECTIONS.

9. MOTORIZED BLOCK VALVES (MBV-501, -502) SHALL CONSIST OF A BALL VALVE WITH HAYWARD SERIES EJM ELECTRIC ACTUATOR, 115VAC EQUIPPED WITH POSITION INDICATOR.

10. CHECK VALVES SHALL BE SWING CHECK TYPE WITH VITON SEATS. MANUFACTURER: HAYWARD, NIBCO, PLASTO-MATIC, OR EQUAL.

11. SAMPLE TAPS AND DRAIN VALVES SHALL CONSIST OF A ½" DIAMETER PVC PIPE EXTENSION, BALL VALVE AND NIPPLE. SAMPLE TAPS AND DRAIN VALVES SHALL BE LOCATED AT LOCATIONS SHOWN ON THE DRAWINGS AND AT ALL LOW ELEVATIONS IN THE PROCESS PIPING.

12. ALL FLOW METERS SHALL HAVE STRAIGHT PIPE AT A MINIMUM OF 10 PIPE DIAMETERS PRECEDING AND 5 PIPE DIAMETERS FOLLOWING, OR AS SPECIFIED BY THE MANUFACTURER.

13. SPOOL PIECES SHALL BE 16"ø STAINLESS STEEL HEAVY DUTY AIR ISOLATION/CONTROL DAMPER WITH MANUAL ACTUATOR, AMERICAN HEATING & VENTILATION MODEL VC-56, MODIFIED FOR LOWER LEAK RATES AT HIGHER PRESSURE.

14. WELL VAULT ACCESS COVER SHALL BE BILCO MODEL J-2ALH20 OR EQUAL WITH ¼" ALUMINUM DIAMOND PATTERN PLATE COVER, ½" ALUMINUM CHANNEL FRAME WITH RECESSED ANCHORS, CONTINUOUS EPDM DEBRIS GASKET, RATED FOR H20 LOADING.

15. DUCT SHALL BE 16"ø SCH. 10 ALUMINUM DUCT WITH TRYMER 2000 FOAM INSULATION WITH WHITE PVC/POLYESTER COVER. COMBINED WEIGHT 9.25 POUNDS/ LINEAR FOOT WITH ¼" THICK FLANGES, STAINLESS STEEL BOLTING, AND ⅛" NEOPRENE GASKETS.

16. ALL DUCT SHALL BE SUPPORTED AT 10'-0" C.C. (MAX.) AND LOCATED 2'-0" FROM ALL JOINT LOCATIONS. SUPPORTS SHALL BE ANCHORED TO THE EQUIPMENT SLAB AND PROTECTIVE SLEEVES SHALL BE USED FOR ALL INSULATED DUCT.

17. ECU'S SHALL BE INSULATED WITH 2-INCH RIGID STYROFOAM BOARDS FINISHED WITH STUCCO-EMBOSSED ALUMINUM JACKETING.

DRAFT

CITY:SYR-NY DIV/GROUP:141 DB&LS LD:GHS PIC: PM: TM: LYR:ON=*;OFF=*REF*
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ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

SPECIFICATIONS

MECHANICAL

ARCADIS Project No. NY001464.1807.00003
Date JULY 2008

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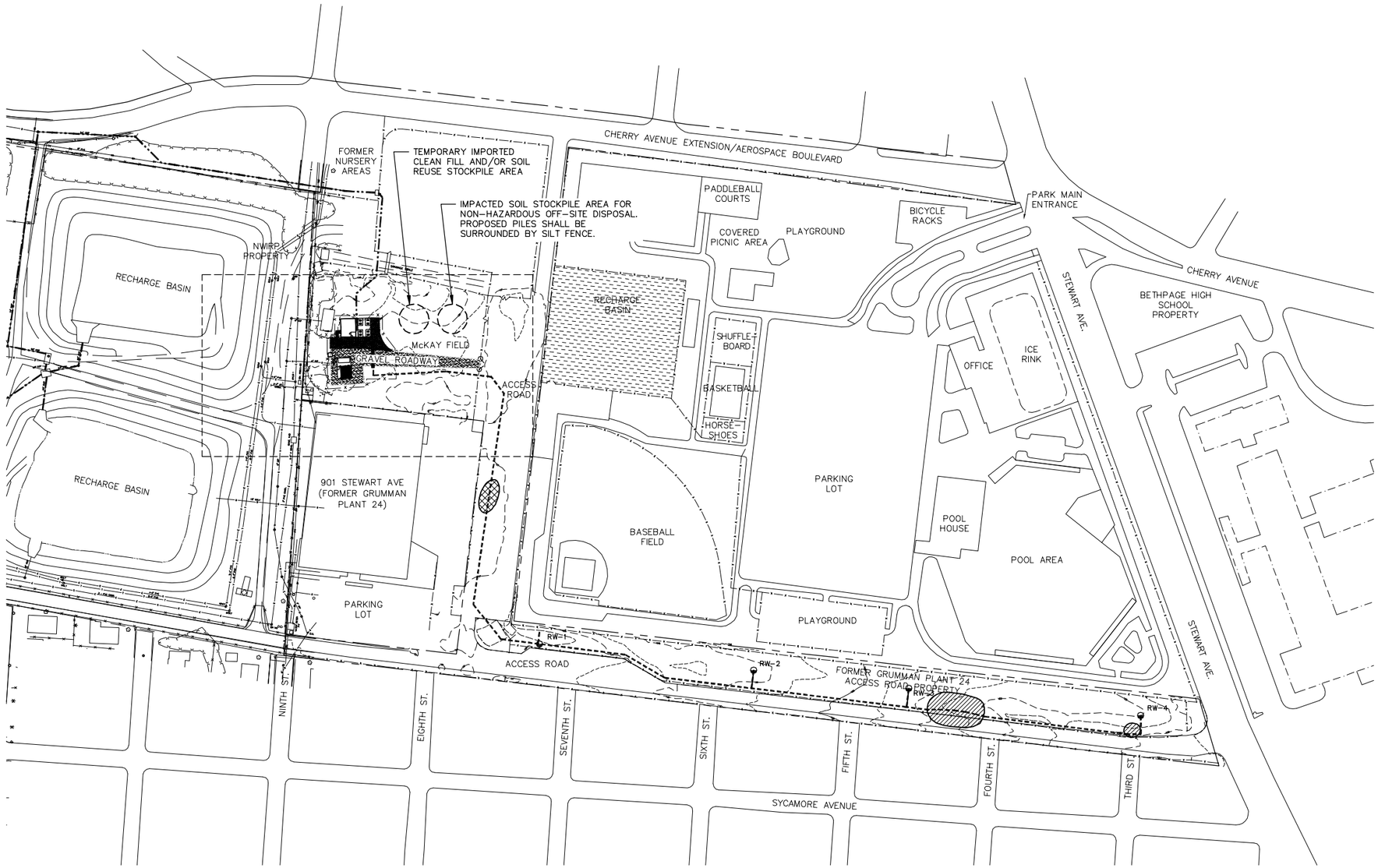

LEGEND:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- LIMITS OF BETHPAGE HIGH SCHOOL MAIN BUILDING
- ELECTRIC LINE
- GROUNDWATER IRM INFLUENT PIPELINES
- GROUNDWATER IRM EFFLUENT PIPELINE
- NWIRP NAVY BASIN
- RW-2 APPROXIMATE LOCATION OF GROUNDWATER RECOVERY WELL
- IRM INTERIM REMEDIAL MEASURE
- NWIRP NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- KNOWN PCB-IMPACTED AREA
- KNOWN VOC-IMPACTED AREA
- USEPA UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NOTES:

1. PRE-INVESTIGATION BORINGS SHALL TAKE PLACE FOR EVERY 100 LINEAR FEET OF DISCHARGE TRENCH. ONE SOIL SAMPLE SHALL BE TAKEN FOR EACH BORING.
2. ONE SOIL SAMPLE SHALL BE TAKEN AT EVERY LOCATION THAT THE NEW ELECTRICAL TRENCH DEVIATES FROM WITHIN THE LIMITS OF THE EXISTING OU3 SOIL GAS IRM TRENCH. IF THE NEW TRENCH DEVIATES BEYOND THE LIMITS OF THE EXISTING TRENCH FOR AN EXTENDED DISTANCE, ONE SOIL SAMPLE SHALL BE COLLECTED FOR EVERY 100 LINEAR FEET OF UTILITY TRENCH THAT FALLS OUTSIDE THE LIMITS OF THE EXISTING TRENCH.
3. NO SAMPLES WILL BE COLLECTED FROM EXCAVATIONS WITHIN THE LIMITS OF THE EXISTING OU3 SOIL GAS IRM TRENCH.
4. PRE-INVESTIGATION BORINGS SHALL TAKE PLACE IN THE VICINITY OF EACH BUILDING COLUMN FOOTER. ONE SOIL SAMPLE SHALL BE TAKEN FOR EACH BORING.
5. ONE SOIL SAMPLE SHALL BE COLLECTED FOR EVERY 500 CUBIC YARDS EXCAVATED DURING CONSTRUCTION OF THE GROUNDWATER IRM BUILDING AND ECU PAD.
6. ALL SOIL SAMPLES WILL BE ANALYZED FOR VOCS, SVOCS, TOTAL CHROMIUM AND PCBS USING USEPA METHODS 8260, 8270, 6010, AND 8082, RESPECTIVELY.
7. EXCAVATED SOILS THAT CONTAIN ANY CONSTITUENT AT LEVELS ABOVE INDUSTRIAL SOIL CLEANUP STANDARDS (6NYCRR PART 375) BUT ARE NOT CHARACTERISTICALLY HAZARDOUS, MAY NOT BE USED AS BACKFILL AND SHALL BE TRANSPORTED AS NON-HAZARDOUS WASTE FOR OFFSITE DISPOSAL.
8. EXCAVATED SOILS THAT ARE CHARACTERISTICALLY HAZARDOUS FOR ANY CONSTITUENT WILL BE MANAGED IN ACCORDANCE WITH THE HAZARDOUS WASTE GENERATOR REQUIREMENTS CONTAINED IN 6NYCRR PART 372.2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND NORTHROP GRUMMAN'S ESH&M DEPARTMENT AT (516) 575-4680 WHEN A HAZARDOUS WASTE IS DISCOVERED OR, WHEN POSSIBLE, PRIOR TO GENERATION TO A HAZARDOUS WASTE. THE CONTRACTOR SHALL PROVIDE A HAZARDOUS WASTE PROFILE TO ESH&M AND FOLLOW ESH&M DIRECTION REGARDING LOCATION OF HAZARDOUS WASTE ACCUMULATION AREAS, INSTALLATION OF SECONDARY CONTAINMENT, CONTAINERS TO BE USED FOR HAZARDOUS WASTE ACCUMULATION, MARKING, LABELING, AND DATING OF HAZARDOUS CONTAINERS, ETC. HAZARDOUS WASTE ACCUMULATION CONTAINERS MUST BE IN GOOD CONDITION, I.E., FREE FROM LEAKS OR MAJOR DENTING.
9. EXCAVATED SOIL WITH A PCB CONCENTRATION GREATER THAN 1 MG/KG MAY NOT BE USED AS BACKFILL WITHIN 2 FEET OF SURROUNDING GRADE.
10. ALL EXCAVATED SOILS DETERMINED TO BE ACCEPTABLE FOR BACKFILL SHALL BE STOCKPILED ONSITE TO BE USED AS BACKFILL DURING THE GROUNDWATER IRM CONSTRUCTION ACTIVITIES OR FOR FUTURE USE.
11. DUST EMISSIONS SHALL BE CONTROLLED BY MISTING WORK AREAS WITH WATER DURING SOIL INTRUSIVE SITE ACTIVITIES.
12. COMMUNITY AIR MONITORING PLAN SHALL BE IMPLEMENTED DURING ALL INTRUSIVE SITE ACTIVITIES.

0 100' 200'
GRAPHIC SCALE

DRAFT

' EMISSIONS SHALL BE CONTROLLED BY MISTING
NG SOIL INTRUSIVE SITE ACTIVITIES.

/UNITY AIR MONITORING PLAN SHALL BE IMPLEMI
)SIVE SITE ACTIVITIES.

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **WILLIAM S. WITTEK**
Professional Engineer's No.: 080827
State: NY | Date Signed: | Project Mgr.: CSG
Designed by: CDL | Drawn by: BKD | Checked by: TEM

ARCADIS
ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

SOIL MANAGEMENT PLAN

ARCADIS Project No.: NY001464.1807.00003
Date: JULY 2008
ARCADIS
6723 Towpath Road
(P.O. Box 66)
Syracuse, NY 13214
Tel: 315.446.9120

12

CITY:SYR-NY DIV/GROUP:85 DB:SHS KFS LD:SHS PIC: PM: TM: LYRON-DOFF-REF*
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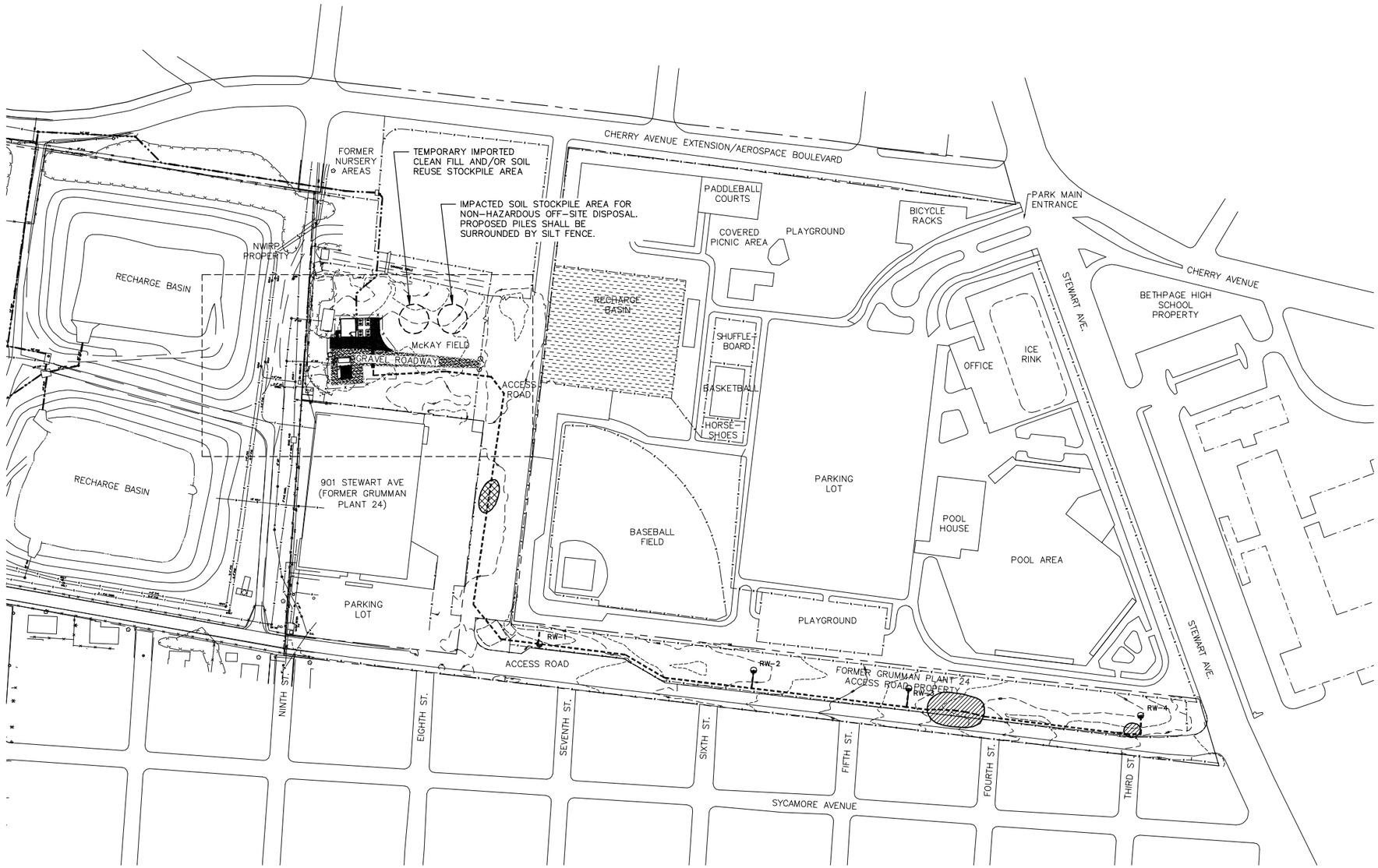

LEGEND:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- LIMITS OF BETHPAGE HIGH SCHOOL MAIN BUILDING
- ELECTRIC LINE
- GROUNDWATER IRM INFLUENT PIPELINES
- GROUNDWATER IRM EFFLUENT PIPELINE
- NWIRP NAVY BASIN
- RW-2 APPROXIMATE LOCATION OF GROUNDWATER RECOVERY WELL
- IRM INTERIM REMEDIAL MEASURE
- NWIRP NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- KNOWN PCB-IMPACTED AREA
- KNOWN VOC-IMPACTED AREA
- USEPA UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NOTES:

1. PRE-INVESTIGATION BORINGS SHALL TAKE PLACE FOR EVERY 100 LINEAR FEET OF DISCHARGE TRENCH. ONE SOIL SAMPLE SHALL BE TAKEN FOR EACH BORING.
2. ONE SOIL SAMPLE SHALL BE TAKEN AT EVERY LOCATION THAT THE NEW ELECTRICAL TRENCH DEVIATES FROM WITHIN THE LIMITS OF THE EXISTING OU3 SOIL GAS IRM TRENCH. IF THE NEW TRENCH DEVIATES BEYOND THE LIMITS OF THE EXISTING TRENCH FOR AN EXTENDED DISTANCE, ONE SOIL SAMPLE SHALL BE COLLECTED FOR EVERY 100 LINEAR FEET OF UTILITY TRENCH THAT FALLS OUTSIDE THE LIMITS OF THE EXISTING TRENCH.
3. NO SAMPLES WILL BE COLLECTED FROM EXCAVATIONS WITHIN THE LIMITS OF THE EXISTING OU3 SOIL GAS IRM TRENCH.
4. PRE-INVESTIGATION BORINGS SHALL TAKE PLACE IN THE VICINITY OF EACH BUILDING COLUMN FOOTER. ONE SOIL SAMPLE SHALL BE TAKEN FOR EACH BORING.
5. ONE SOIL SAMPLE SHALL BE COLLECTED FOR EVERY 500 CUBIC YARDS EXCAVATED DURING CONSTRUCTION OF THE GROUNDWATER IRM BUILDING AND ECU PAD.
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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **WILLIAM S. WITTEK**
Professional Engineer's No.: 080827
State: NY | Date Signed: | Project Mgr.: CSG
Designed by: CDL | Drawn by: BKD | Checked by: TEM

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SOIL MANAGEMENT PLAN

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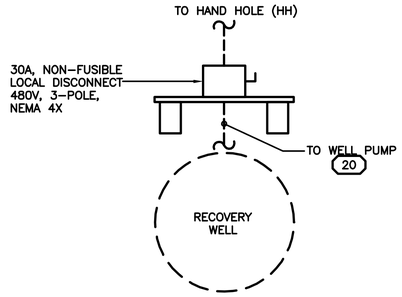


TYPICAL LOCAL DISCONNECT PLAN
NO SCALE

CONDUCTOR SCHEDULE

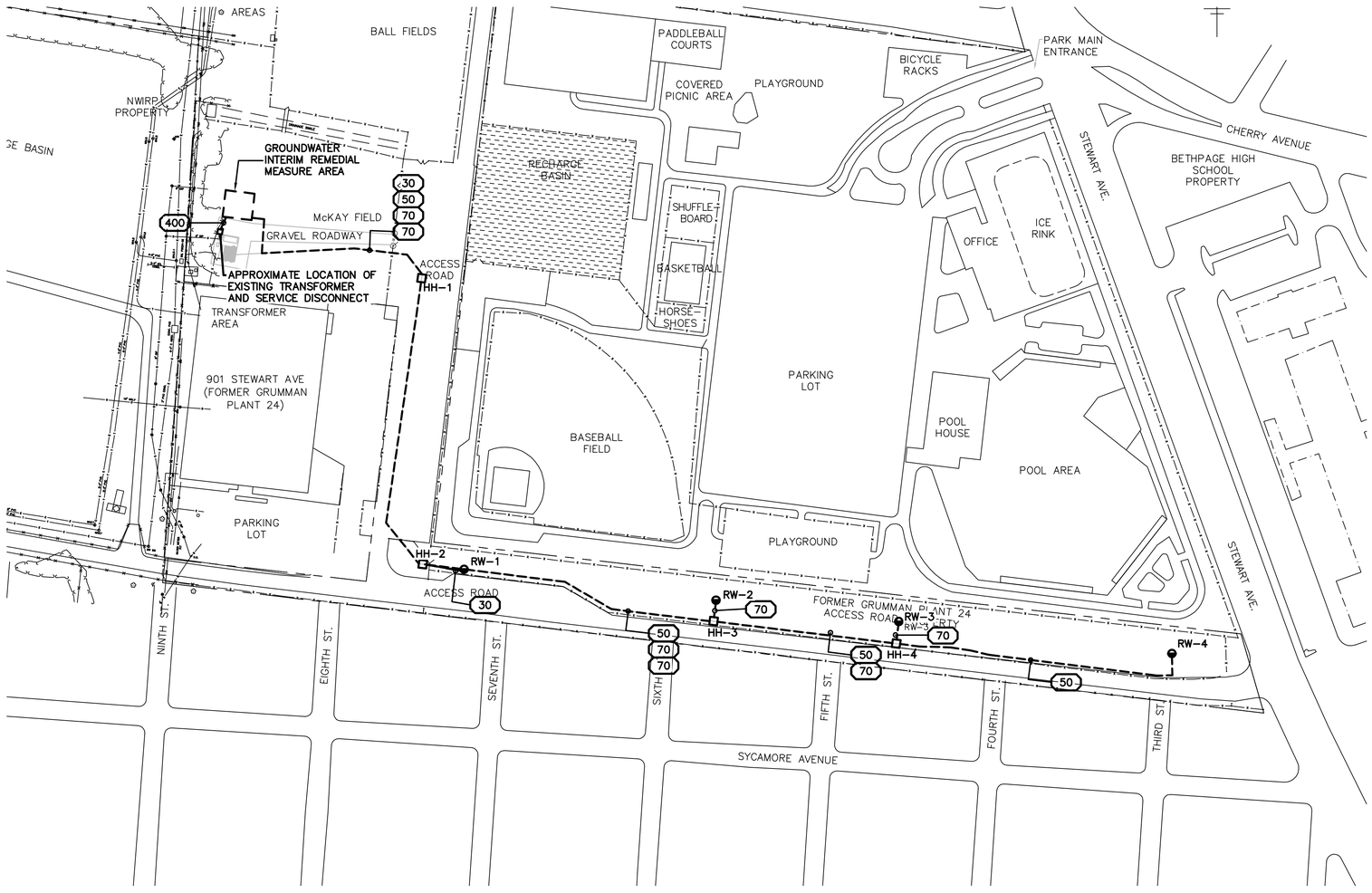
SYMBOL	WIRE QUANTITY	WIRE SIZE	GROUND	CONDUIT	COMMENTS
20	3	#12	1 #12	3/4"	
30	3	#10	1 #10	1"	
50	3	#6	1 #8	1"	
70	3	#4	1 #8	1 1/2"	
400	(2 SETS) 4	#3/0	1 #1/0	(2) 2 1/2"	PROVIDE TYPE "USE-2" OR "XHHW-2"

NOTES:

1. SEE CONTRACT DRAWING 14 FOR ONE-LINE DIAGRAM.
2. SEE CONTRACT DRAWING 17 FOR ELECTRIC HANDHOLE AND TRENCHING DETAILS.
3. CONDUIT TRENCH TO BE INSTALLED WITHIN LIMITS OF EXISTING OU3 SG PIPE TRENCH WHERE POSSIBLE.

LEGEND

(#)	CONDUCTOR SYMBOL – REFER TO SCHEDULE
□ HH–#	ELECTRIC HANDHOLE
⊖ RW–#	RECOVERY WELL
— — —	ELECTRIC CONDUCTOR



ELECTRICAL SPECIFICATIONS:

GENERAL

1. ALL ELECTTRICAL EQUIPMENT SHALL BE U.L. LISTED AND LABELED.
2. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF NFPA–70 NEC.

RIGID METAL CONDUIT (RGS)

1. GALVANIZED STEEL, HOT–DIPPED ZINC, ANSI STANDARD C80.1 AND C80.4.
2. MANUFACTURER SHALL BE ALLIED TUBE & CONDUIT CORPORATION, TRIANGLE WIRE AND CABLE INC., OR EQUAL.

NONMETALLIC (PVC) CONDUIT

1. NONMETALLIC RIGID CONDUIT AND FITTINGS SHALL BE SCHEDULE 40, POLYVINYL CHLORIDE AND SHALL BE RESISTANT TO CORROSION.
2. CONDUIT AND FITTINGS SHALL BE IN ACCORDANCE WITH NEMA STANDARD TC–2 AND TC–3, LATEST REVISION.
3. MANUFACTURER SHALL BE CARLON ELECTRIC CONDUIT CO., TRIANGLE PWC CO., OR EQUAL.

JUNCTION BOXES

JUNCTION BOXES AND FITTINGS SHALL BE OF GALVANIZED STEEL OR COPPER FREE ALUMINUM.

WIRES AND CABLES

1. GENERAL
   A. ALL CONDUCTORS, UNLESS OTHERWISE NOTED, SHALL BE STRANDED COPPER, CONSTRUCTED OF SOFT DRAWN OR ANNEALED COPPER.
   B. CONDUCTORS INSULATION SHALL BE COLOR CODED, WITH COLOR OF INSULATION ONE COLOR THROUGHOUT THE ENTIRE RUN.
   C. 120/240 VAC, SINGLE PHASE, 3 WIRE
      CONDUCTOR 1 – BLACK
      CONDUCTOR 2 – RED
      NEUTRAL – WHITE
      GROUND – GREEN
2. LOW VOLTAGE CONDUCTORS
   A. ALL CONDUCTORS FOR POWER, LIGHTING AND 120 VAC CONTROL SHALL BE RATED A MINIMUM 600 VAC.
   B. CONDUCTORS SHALL BE CONSTRUCTED OF UNCOATED CLASS C COPPER CONCENTRIC–LAY–STRANDED WIRES.
   C. POWER AND LIGHTING CONDUCTORS SHALL BE TYPE THHN–90C/THWN–2–90C WITH PVC INSULATION AND NYLON JACKET.
3. INSTRUMENTATION CABLES
   TWISTED PAIR OF NO. 18 AWG TINNED COATED CLASS C COPPER CONCENTRIC LAY STRANDED WIRES WITH AN ALUMINUM POLYESTER SHIELD AND COPPER DRAIN. RATED FOR 600V AND COLOR COATED PVC OUTER JACKET.
4. CONNECTORS
   A. PIGTAIL SPLICING #10 AND SMALLER, USE TAPERED SPRING WIRE NUTS. MANUFACTURER SHALL BE IDEAL WING NUT, BUCHANAN B–CAP, T&B PIGGIES, OR EQUAL.
   B. FOR TERMINATION OF #14 CONTROL WIRES TO TERMINALS, USE INSULATED COMPRESSION SPADE TYPE CONNECTORS. MANUFACTURER SHALL BE BURNDY HYDENT, T&B STA–KON, OR EQUAL.
   C. SPLICES AND TERMINALS FOR #8 AND LARGER SHALL BE COPPER COMPRESSION TYPE. MANUFACTURER SHALL BE BURNDY HYDENT OR HYLUG, T&B, STA–CON, OR EQUAL.
   D. FIXTURE CONNECTIONS MANUFACTURER SHALL BE T&B STA–KON SERIES PT–66M, IDEAL CRIMP SLEEVE NO. 410 WITH LONG BARREL, OR EQUAL.

GROUNDING

1. GROUNDING OF ELECTRICAL SYSTEMS AND EQUIPMENT SHALL, AT A MINIMUM, MEET THE REQUIREMENTS OF THE NEC ARTICLE 250 OR SHALL EXCEED ARTICLE 250 AS HEREIN SPECIFIED.
2. ALL CONDUITS SHALL HAVE AN INTERNAL GROUND CONDUCTOR. THIS GROUND CONDUCTOR SHALL BE PROVIDED ALTHOUGH IT MAY NOT BE SHOWN OR SCHEDULED ON THE PLANS.
3. GROUNDING ELECTRODE CONDUCTORS SHALL BE A MINIMUM OF NO. 6 AWG BARE STRANDED COPPER.
4. GROUND RODS SHALL BE 3/4" DIAMETER, 10 FEET LONG, STEEL CORE WITH COPPER MOLTEN WELDED OR ELECTROLYTICALLY BONDED TO EXTERIOR.
5. ALL CONNECTIONS SHALL BE MADE WITH COMPRESSION OR CADWELD CONNECTORS.

ENCLOSURE

1. ENCLOSURES SHALL BE NEMA RATED FOR LOCATION UNLESS OTHERWISE NOTED.
2. WET LOCATIONS OR OUTDOORS, ENCLOSURES SHALL BE NEMA TYPE 4, STAINLESS STEEL.
3. ENCLOSURES SHALL HAVE NAMEPLATE ON THE EXTERIOR IDENTIFYING THE APPLICATION FUNCTION OF THE EQUIPMENT ENCLOSED.

WIRING DEVICES

1. RECEPTACLES MARKED AS GFCI SHALL BE OF THE GROUND FAULT CIRCUIT INTERRPUTER TYPE. MANUIFACTURER SHALL BE GE TYPE TGTR 20, OR EQUAL.
2. SWITCHES
   A. LIGHTING SWITCHES SHALL BE RATED 20 AMPERES AT 277 VAC, TOGGLE OPERATED, PLASTIC ENCLOSED, SINGLE POLE, THREE–WAY OR FOUR–WAY AS SHOWN OR REQUIRED. MANUFACTURER SHALL BE P&S SERIES 20AC1 SEPCIFICATION GRADE, OR EQUAL.
   B. SWITCHES SHALL HAVE SILVER ALLOY CONTACTS AND PROVISIONS FOR SIDE AND BACK WIRING.
   C. EACH SWITCH SHALL BE SUITED FOR FULL–RATED CAPACITY ON TUNGSTEN FILAMENT AND FLOURSCENT LAMP LOADS.
3. FACEPLATE AND COVERS
   A. FINISHED AREAS SHALL HAVE STAINLESS STEEL TYPE 302 ALLOY COVERS.
   B. WET AND CORROSIVE AREAS SHALL BE WEATHERPROOF COVERS WITH GASKETS.

DRAFT
NOT FOR CONSTRUCTION

0 100' 200' 300'
1"=100'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: THOMAS P. ARMSTRONG Jr.
Professional Engineer's No.: 085236
State: NY | Date Signed: | Project Mgr.: CSG
Designed by: TPA | Drawn by: EPK | Checked by: TPA

ARCADIS
ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

ELECTRICAL SITE PLAN

ELECTRICAL

ARCADIS Project No. NY001464.1807.00003
Date JULY 2008

ARCADIS
6723 Towpath Road
Box 66
Syracuse, NY 13214
Tel: 315-446-9120

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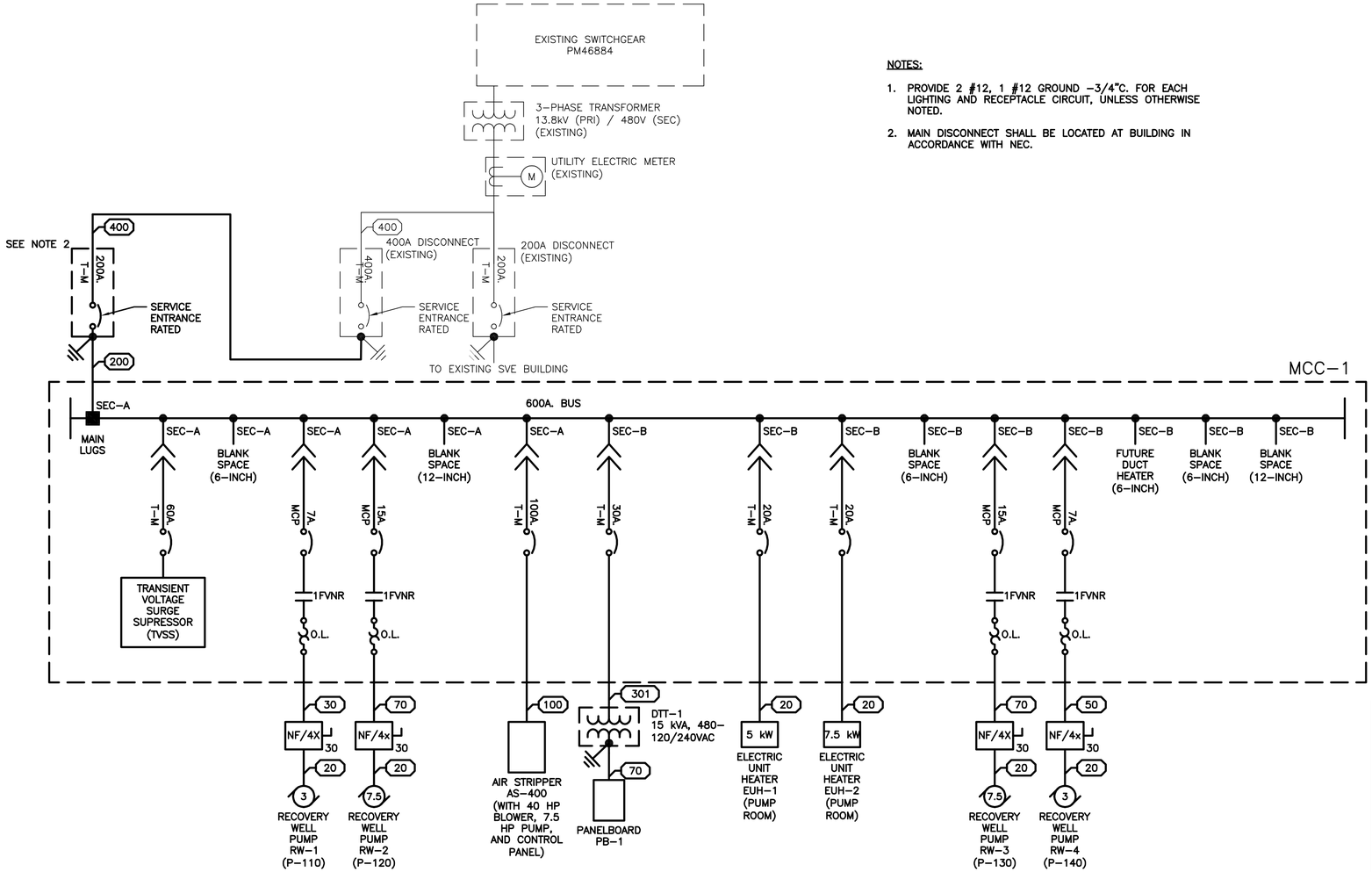

NOTES:

1. PROVIDE 2 #12, 1 #12 GROUND -3/4"C. FOR EACH LIGHTING AND RECEPTACLE CIRCUIT, UNLESS OTHERWISE NOTED.
2. MAIN DISCONNECT SHALL BE LOCATED AT BUILDING IN ACCORDANCE WITH NEC.

ABBREVIATIONS

1FVNR	FULL VOLTAGE, NON-REVERSING (SIZE 1) STARTER
A.F.F.	ABOVE FINISHED FLOOR
A	AMPERES
DTT	DRY TYPE TRANSFORMER
EF	EXHAUST FAN
EUH	ELECTRIC UNIT HEATER
HP	HORSEPOWER
kVA	KILOVOLT-AMPS
kW	KILOWATT
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR CIRCUIT BREAKER
O.L.	OVERLOAD
PB	PANELBOARD
T-M	THERMAL MAGNETIC CIRCUIT BREAKER
V	VOLTS
VAC	VOLTS AC

LEGEND

- ENCLOSURE LIMITS
- MOTOR STARTER, FVNR-TYPE EQUIPPED WITH THERMAL OVERLOADS (FULL VOLTAGE, NON-REVERSING)
- MOTOR, # DENOTES H.P.
- EARTH GROUND
- TRANSFORMER, POWER
- MOLDED CASE CIRCUIT BREAKER
- ELECTRIC UTILITY METER CABINET
- ENCLOSED SWITCH (NF/XX ZZ)
  - NF = NON-FUSIBLE
  - XX = NEMA RATING
  - ZZ = AMPACITY RATING
- (#) CONDUCTOR SYMBOL

CONDUCTOR SCHEDULE

SYMBOL	WIRE QUANTITY	WIRE SIZE	GROUND	CONDUIT	COMMENTS
20	3	#12	1 #12	3/4"	
30	3	#10	1 #10	1"	
50	3	#6	1 #8	1"	
70	3	#4	1 #8	1 1/2"	
100	3	#2	1#6	1 1/4"	
200	4	#3/0	1 #4	2 1/2"	PROVIDE TYPE "USE-2" OR "XHHW-2"
400	(2 SETS) 4	#3/0	1 #1/0	(2) 2 1/2"	PROVIDE TYPE "USE-2" OR "XHHW-2"

PANEL PB-1 ENCLOSURE: NEMA TYPE 1, CABINET MOUNTING: SURFACE

VOLTS: 120 / 240, PHASE: 1, WIRE: 3W, 10,000 AIC, 60A. C/B, FEED: TOP

LOAD SERVED	LOAD (KVA) A	LOAD (KVA) B	BREAKER AMP	BREAKER POLE	CKT	PH	CKT	BREAKER POLE	BREAKER AMP	LOAD (KVA) A	LOAD (KVA) B	LOAD SERVED
LIGHTS - CONTROL ROOM	0.1		20	1	1	A	2	1	20	0.6		RECEPTACLES - A
LIGHTS - PUMP ROOM		0.6	20	1	3	B	4	1	20		0.4	RECEPTACLES - B
LIGHTS - OUTDOOR	0.4		20	1	5	A	6	1	20	0.4		RECEPTACLES - OUTDOOR
MAIN CONTROL PANEL		1.0	20	1	7	B	8	1	20		0.1	EXIT LIGHTS
SUMP PUMP (P-900)	0.7		20	1	9	A	10	1	20	0.6		6 FLOW METERS (FIT)
EUH-3 (CONTROL ROOM)		1.3	20	2	11	B	12	1	20		1.1	BOOSTER PUMP (P-800)
	1.3				13	A	14	1	20	0.4		EF-1 / L1
SFSI-CP		0.2	20	1	15	B	16	1	20		0.4	EF-2 / L2
SPARE			20	1	17	A	18	1	20			SPARE
BLANK				1	19	B	20	1				BLANK
BLANK				1	21	A	22	1				BLANK
BLANK				1	23	B	24	1				BLANK
BLANK				1	25	A	26	1				BLANK
BLANK				1	27	B	28	1				BLANK
BLANK				1	29	A	30	1				BLANK
TOTAL	2.5	3.1								2.0	2.0	
TOTAL CONNECTED KVA:									A:	4.4		
									B:	5.1		
									TOTAL:	9.5		

MAIN LUGS (200A.)	TRANS. PRIMARY	EUH-1
6" BLANK SPACE		
TVSS	EUH-2	6" BLANK SPACE
RW-1	RW-3	
RW-2	RW-4	
12" BLANK SPACE	FUTURE DUCT HEATER	6" BLANK SPACE
AIR STRIPPER	12" BLANK SPACE	

ELEVATION MCC-1

DRAFT
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CITY:SYR-NY DIV/GROUP:85 DB:GHS LD:GHS PIC: PM: TM: LYR:ON=*;OFF=*REF* G:\Project\NY001464.1407\ElectDrawings - Recovery Well\AutoCAD Drawings\6-13-08\14 One-line.dwg LAYOUT: 14SAVED: 7/21/2008 10:25 AMACADVER: 17.1S (LMS TECH)PAGESETUP: ----PLOTSTYLETABLE: PLTCONT1.CTBPLOTTED: 7/24/2008 1:21 PMBY: KNERR, EVAN
XREFS: 01464X00 IMAGES: PROJECTNAME: ----

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: THOMAS P. ARMSTRONG Jr.
Professional Engineer's No.: 085236

State	Date Signed	Project Mgr.
NY		CSG
Designed by: TPA	Drawn by: EPK	Checked by: TPA

ARCADIS OF NEW YORK, INC.

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OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

ONE-LINE DIAGRAM

ELECTRICAL

ARCADIS Project No. NY001464.1807.00003
Date JULY 2008

ARCADIS
6723 Towpath Road
Box 66
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Tel: 315-446-9120

HVAC AND LIGHTING SCHEDULE

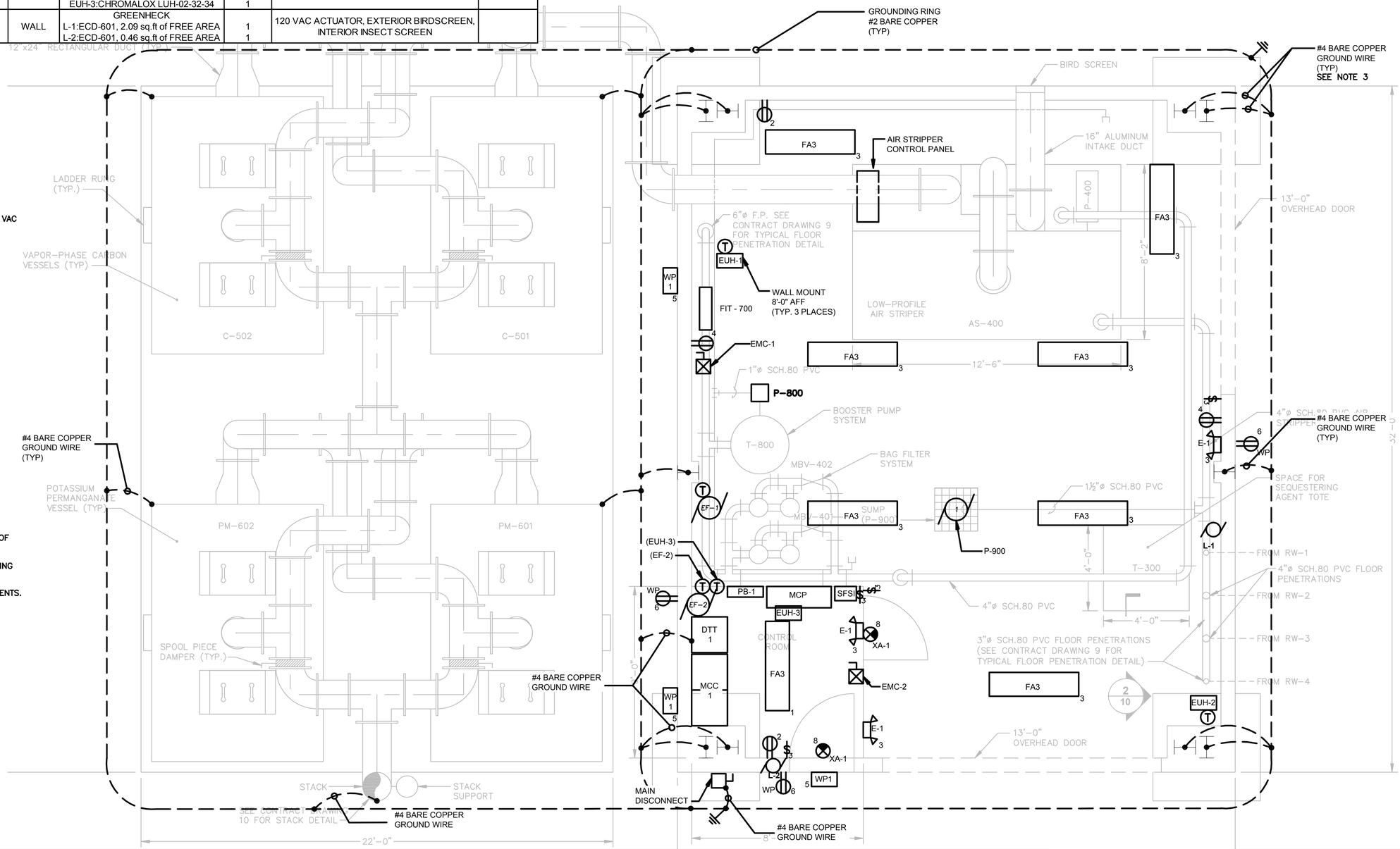
SYMBOL	DESCRIPTION	MOUNTING	MANUFACTURER & PART NUMBER	QUANTITY	REMARKS	MISC.
FA3	LIGHTING FIXTURE 3-LAMP FLOURESCENT, OPEN-TYPE	PENDANT	DAY-BRITE CAT #: 1F332PP120	8	120 VAC, 59-INCH T8 LAMPS, PENDANT MOUNT FROM CEILING AT 9'-0" AFF.	
WP1	LIGHTING FIXTURE , WALL PACK, HPS	WALL	DAY-BRITE CAT #: NWP070S12	3	120 VAC, 70 WATT HPS LAMPS, MOUNT 9'-6" ABOVE GRADE.	
XA-1	EXIT SIGN, ILLUMINATED	WALL	DAY-BRITE CAT #: VERW	2	SINGLE-FACE, RED LED LETTERS MOUNT 7'-2" AFF	
EF-X	EXHAUST FAN WALL-MOUNTED	WALL	EF-1: GREENHECK SBE-1H20-4 EF-2: GREENHECK SE1-8-440-D-1	1 1	120 VAC, WITH THERMOSTAT	
E-1	EMERGENCY LIGHTS	WALL	DAY-BRITE CAT #: VU6	3	MOUNT 8'-0" AFF.	
EUH-X	UNIT HEATER, FORCED AIR, RESISTIVE	CEILING	EUH-1:CHROMALOX LUH-05-43-32 EUH-2:CHROMALOX LUH-07-43-32 EUH-3:CHROMALOX LUH-02-32-34	1 1 1	w/REMOTE THERMOSTAT	ALL w/EDS-1
L-X	LOUVER	WALL	GREENHECK L-1:ECD-601, 2.09 sq.ft of FREE AREA L-2:ECD-601, 0.46 sq.ft of FREE AREA	1 1	120 VAC ACTUATOR, EXTERIOR BIRDSCREEN, INTERIOR INSECT SCREEN	

LEGEND

- MOTOR, # DENOTES H.P.
- EARTH GROUND
- DUPLEX RECEPTACLE, 120 VAC
- SINGLE POLE LIGHT SWITCH, 120 VAC
- ENCLOSED SWITCH (NF/XX ZZ)
  - NF = NON-FUSIBLE
  - XX = NEMA RATING
  - ZZ = AMPACITY RATING
- ENCLOSED MOTOR CONTROLLER (XX)
  - XX = NEMA RATING
- FA3 — FLOURESCENT LIGHTS
- EXIT LIGHTS
- EMERGENCY LIGHTS
- THERMOSTAT
- WP1 — WALL PACK LIGHTS

NOTES:

1. ALL RECEPTACLES SHALL BE GFCI PROTECTED.
2. ALL OUTDOOR RECEPTACLES SHALL HAVE WEATHERPROOF (WP) COVER.
3. STRUCTURAL COLUMNS SHALL BE BONDED TO GROUNDING SYSTEM IN ACCORDANCE WITH NEC.
4. REFER SHEET 14 FOR CONDUIT AND WIRING REQUIREMENTS.



DRAFT
NOT FOR CONSTRUCTION

CITY:SYR-NY DIV/GROUP:85 DB:GHS LD:GHS PIC: PM: TM: LYR:ON=*;OFF=*REF*
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3/8"=1'-0" (2' 0 3' 6')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: THOMAS P. ARMSTRONG Jr.
Professional Engineer's No.: 085236
State: NY | Date Signed: | Project Mgr.: CSG
Designed by: TPA | Drawn by: EPK | Checked by: TPA

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

EQUIPMENT LAYOUT - ELECTRICAL

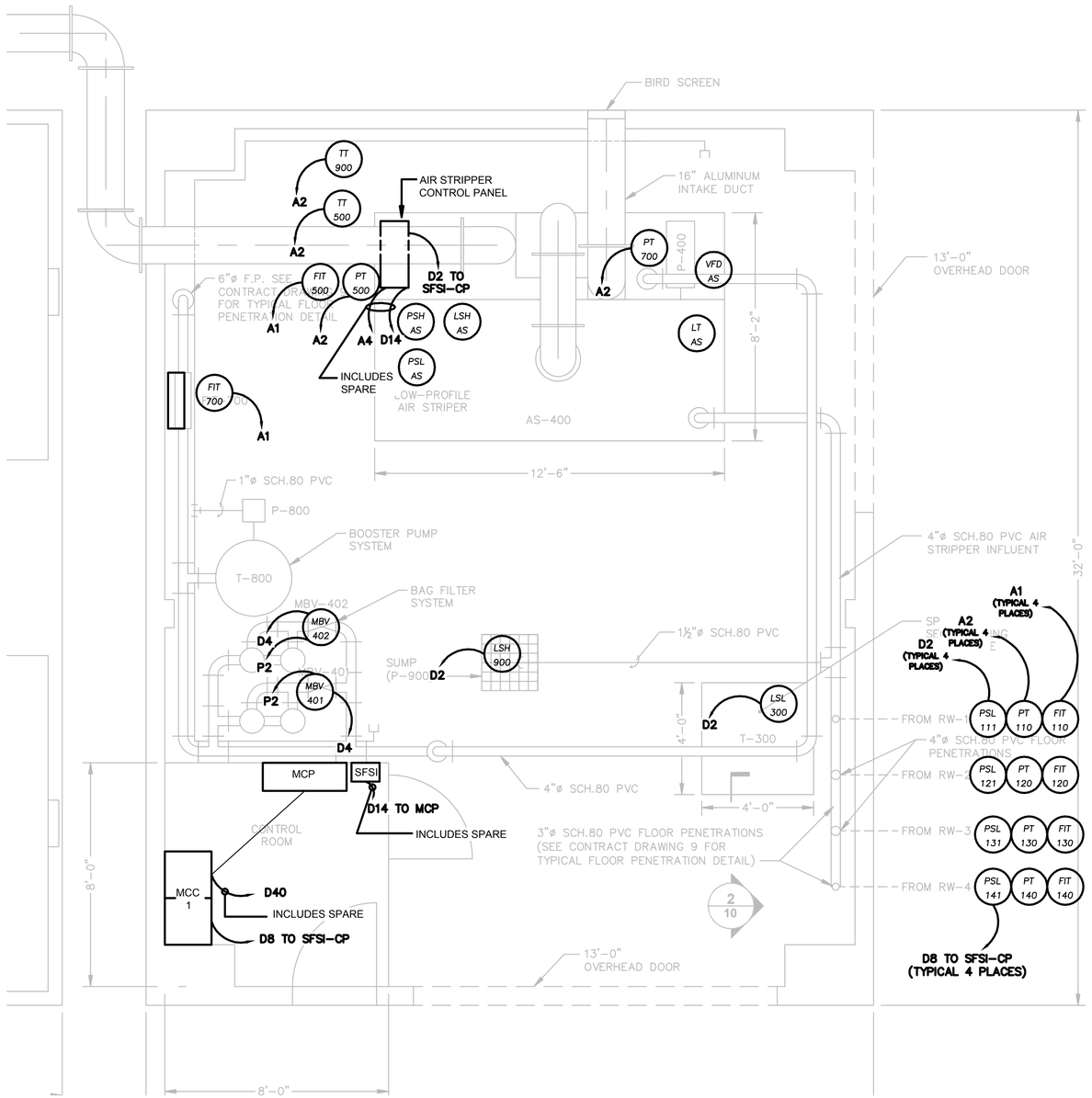
MECHANICAL

ARCADIS Project No.
NY001464.1807.00003
Date
JULY 2008

ARCADIS
6723 Towpath Road
Box 66
Syracuse, NY 13214
Tel: 315-446-9120

15

CONDUCTOR WIRE			
SYMBOL	CONTROL WIRE	GROUND	CONDUIT
D2	2#14	1#14	3/4"
D4	4#14	1#14	3/4"
D8	8#14	1#14	3/4"
D14	14#14	1#14	3/4"
D40	40#14	1#14	1 1/4"
A1	(1) PR #18	1#14	3/4"
A2	(2) PR #18	1#14	3/4"
A4	(4) PR #18	1#14	3/4"
P2	2 #12	1#12	3/4"



NOTES

1. ALL CONTROL WIRE HOMERUNS SHALL TERMINATE IN MAIN CONTROL PANEL (MCP), UNLESS OTHERWISE NOTED.
2. REFER TO SHEET 14 FOR POWER CIRCUITING AND CONDUCTOR REQUIREMENTS.
3. SFSI-CP SHALL BE LOCATED ADJACENT TO MCP.
4. DISCRETE HOMERUNS MAY BE COMBINED IN ONE CONDUIT PROVIDED CONDUIT IS NO MORE THAN 40% FULL.
5. ANALOG HOMERUNS MAY BE COMBINED IN ONE CONDUIT PROVIDED CONDUIT IS NO MORE THAN 40% FULL.

DESIGN ASSUMPTIONS

1. AUTODIALER IS INCLUDED IN MAIN CONTROL PANEL (MCP). THEREFORE, HARDWIRING TO AUTODIALER IS NOT SHOWN ON THESE DRAWINGS.
2. PLC ALARM INDICATION LIGHTS ARE INCLUDED WITHIN THE MCP. THEREFORE, HARDWIRING TO INDICATION LIGHTS ARE NOT SHOWN ON THESE DRAWINGS.
3. AIR STRIPPER INSTRUMENTATION WIRING BETWEEN DEVICES AND AIR STRIPPER CONTROL PANEL ARE PROVIDED BY AIR STRIPPER EQUIPMENT MANUFACTURER. THEREFORE, HARDWIRING FOR THESE DEVICES TO AIR STRIPPER CONTROL PANEL IS NOT SHOWN.

DRAFT
NOT FOR CONSTRUCTION

3/8"=1'-0" (2' 0 3' 6')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: THOMAS P. ARMSTRONG Jr.
Professional Engineer's No.: 085236

State	Date Signed	Project Mgr.
NY		CSG
Designed by	Drawn by	Checked by
TPA	EPK	TPA

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

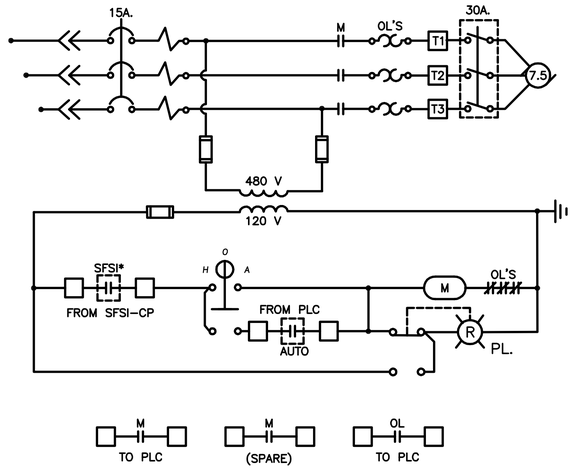
EQUIPMENT LAYOUT - INSTRUMENTATION

MECHANICAL

ARCADIS Project No. NY001464.1807.00003
Date JULY 2008

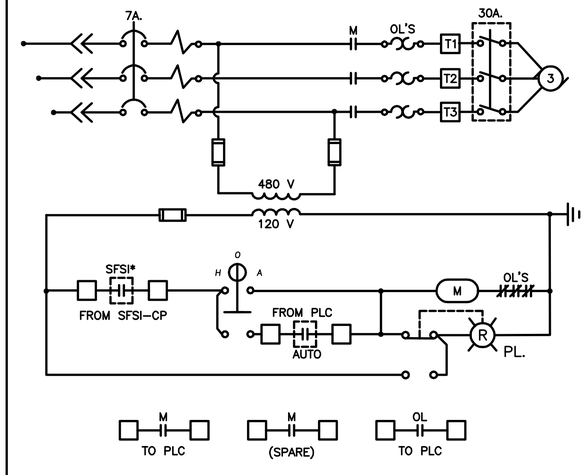
ARCADIS
6723 Towpath Road
Box 66
Syracuse, NY 13214
Tel: 315-446-9120

16



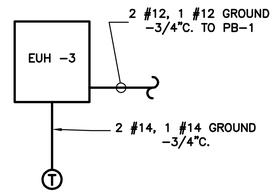
*SFSI = SECONDARY FAIL-SAFE INTERLOCK

SCHEMATIC RECOVERY WELL PUMP
(P-120 AND P-130 ARE SIMILAR)

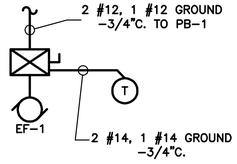


*SFSI = SECONDARY FAIL-SAFE INTERLOCK

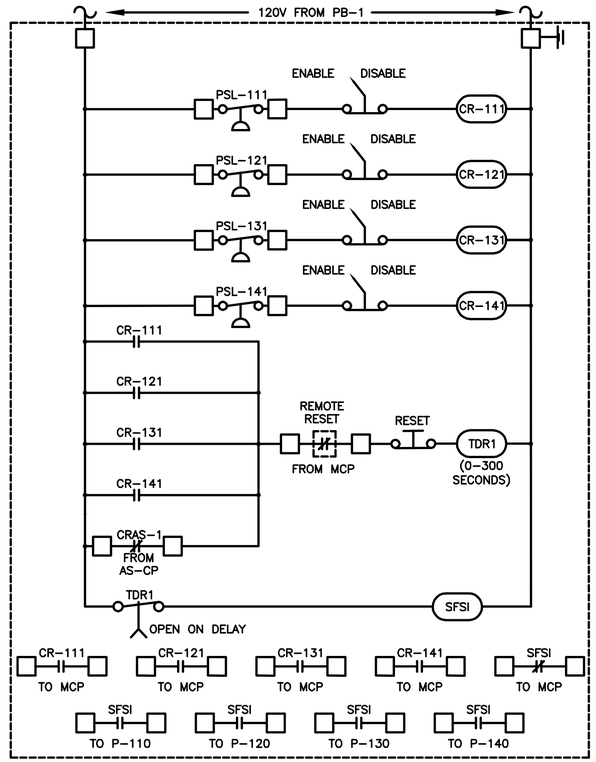
SCHEMATIC RECOVERY WELL PUMP
(P-110 AND P-140 ARE SIMILAR)



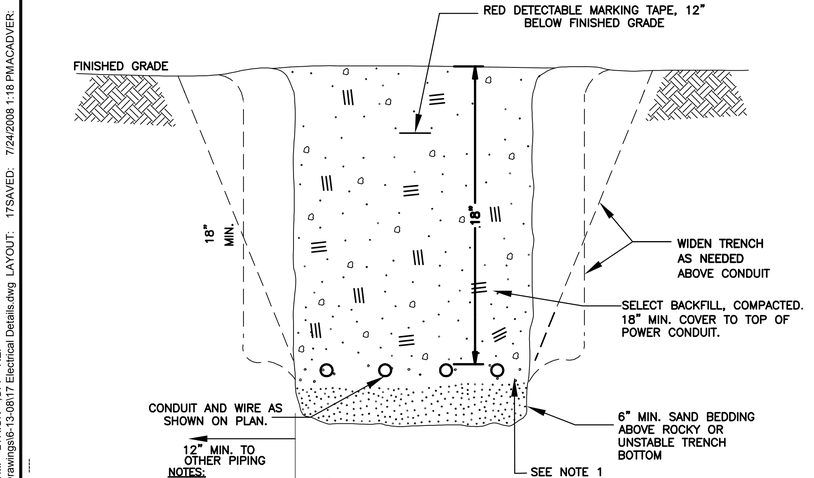
ELECTRIC UNIT HEATER (EUH-3) RISER DIAGRAM



RISER EF-1
(EF-2 IS SIMILAR)

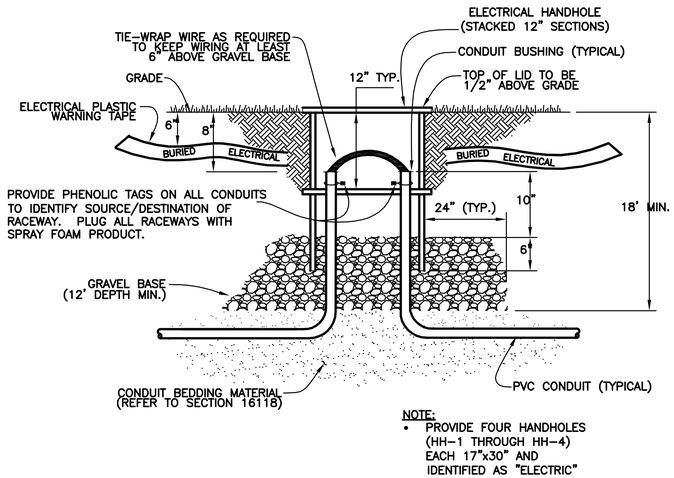


SECONDARY FAIL-SAFE INTERLOCK CONTROL PANEL (SFSI-CP)



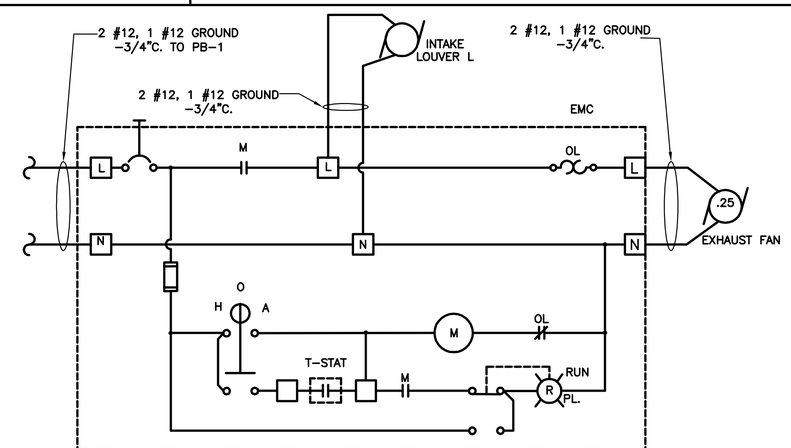
NOTES:
1. SPACING SHALL BE 6" MIN. FROM CONDUIT TO TRENCH WALL.
2. WHERE MORE THAN ONE CONDUIT IS INCLUDED IN TRENCH, PROVIDE THE FOLLOWING SPACING:
   - 3" MIN. BETWEEN POWER CONDUITS
   - 3" MIN. BETWEEN CONTROL CONDUITS
   - 6" MIN. BETWEEN POWER AND CONTROL CONDUITS
3. CONDUIT SHALL BE BURIED A MINIMUM OF 24" BELOW ROAD CROSSINGS IN ACCRODANCE WITH NEC 300.5

ELECTRIC - TRENCH DETAIL
NO SCALE



NOTE:
- PROVIDE FOUR HANDHOLES (HH-1 THROUGH HH-4) EACH 17"x30" AND IDENTIFIED AS "ELECTRIC"

SECTION
ELECTRICAL HANDHOLE DETAIL
NO SCALE



EXHAUST FAN SCHEMATIC
(EF-1 AND EF-2 ARE SIMILAR)

DRAFT
NOT FOR CONSTRUCTION

NO SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **THOMAS P. ARMSTRONG Jr.**
Professional Engineer's No.: 085236

State	Date Signed	Project Mgr.
NY		CSG
Designed by	Drawn by	Checked by
TPA	EPK	TPA

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

EQUIPMENT DETAILS AND SCHEMATICS

MECHANICAL

ARCADIS Project No.: NY001464.1807.00003
Date: JULY 2008

ARCADIS
6723 Towpath Road
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Tel: 315-446-9120

17

CITY:SYR-NY DIV/GROUP:85 DB:GHS LD:GHS PIC: PM: TM: LYR:ON=*;OFF=*REF*
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XREFS: IMAGES: PROJECTNAME: ---
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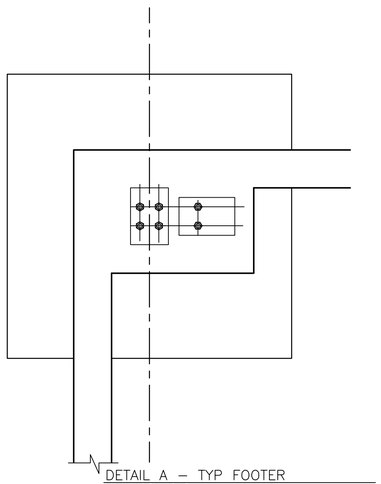
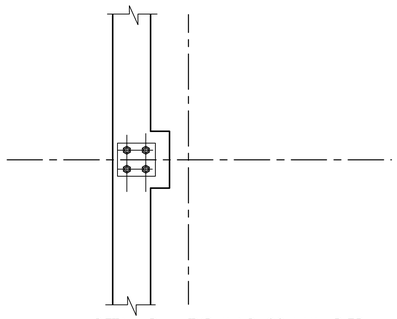
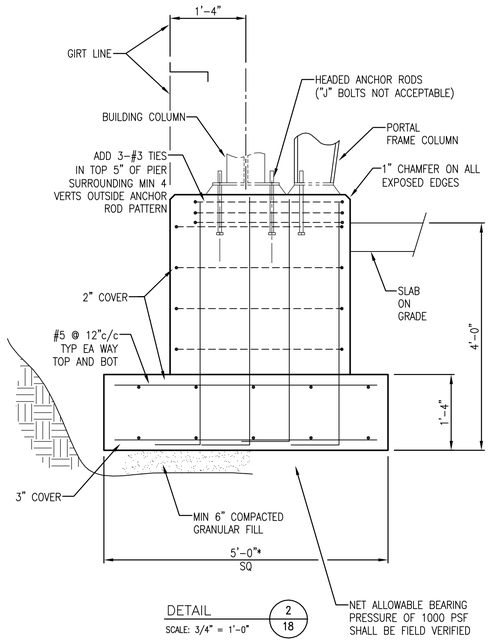


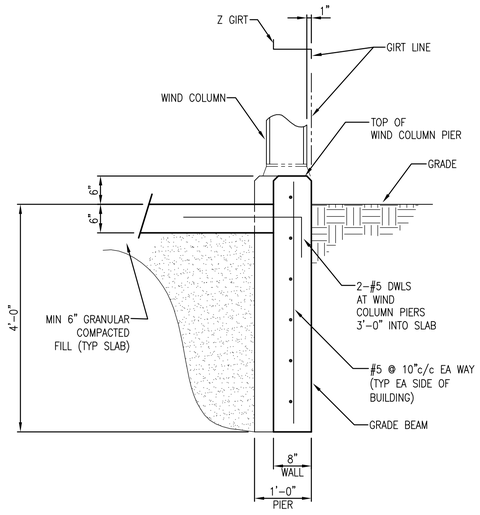
DETAIL A – TYP FOOTER
SCALE: 3/4" = 1'-0"



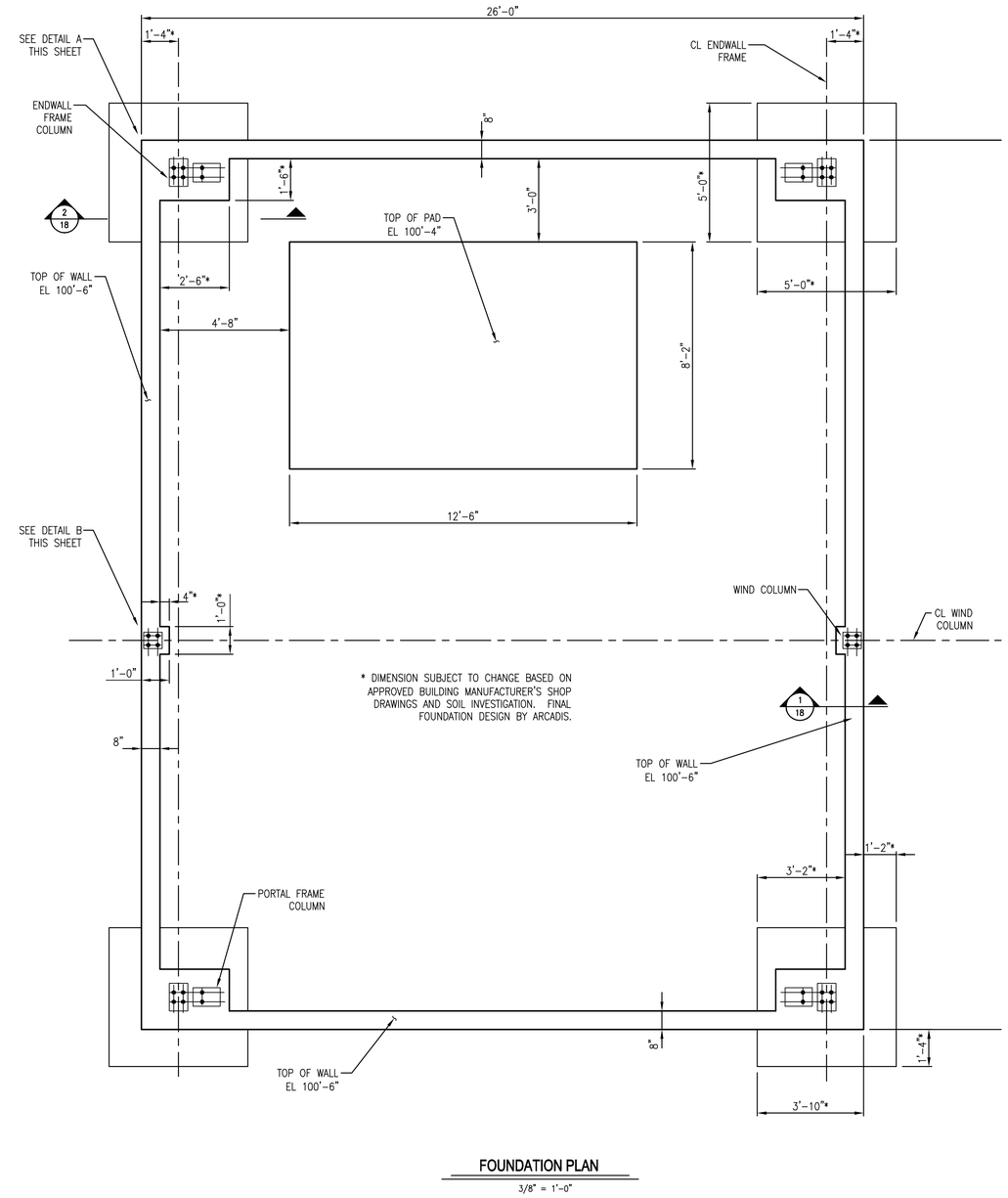
DETAIL B – TYP WIND COLUMN PIER
SCALE: 3/4" = 1'-0"



DETAIL 2/18
SCALE: 3/4" = 1'-0"



DETAIL 1/18
SCALE: 3/4" = 1'-0"



* DIMENSION SUBJECT TO CHANGE BASED ON APPROVED BUILDING MANUFACTURER'S SHOP DRAWINGS AND SOIL INVESTIGATION. FINAL FOUNDATION DESIGN BY ARCADIS.

FOUNDATION PLAN
3/8" = 1'-0"

DRAFT

CITY:SYR-NY DIV/GROUP:85 DB:GHS LD:GHS PIC: PM: TM: LYR:ON=*;OFF=*REF*
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XREFS: IMAGES: PROJECTNAME: ----
01464X00-AAH PE
Xref Equipment Layout
01464X00

3/4"=1'-0" 2' 1' 0 1' 2'
3/8"=1'-0" 2' 0 3' 6'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name
AARON A HUNT
Professional Engineer's No.
083766

State	Date Signed	Project Mgr.
NY		CSG
Designed by	Drawn by	Checked by
AAH	AAH	TEM/WSW

ARCADIS
ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

FOUNDATION PLAN VIEW AND DETAILS

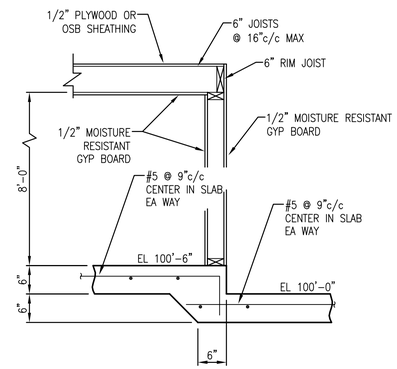
STRUCTURAL

ARCADIS Project No.
NY001464.1807.00003

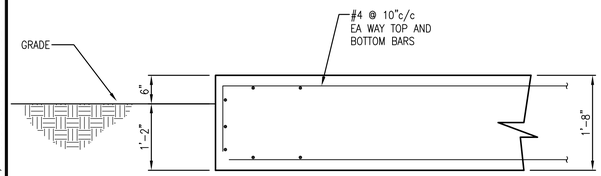
Date
JULY 2008

ARCADIS
6723 Towpath Road
Box 66
Syracuse, NY 13214
Tel: 315-446-9120

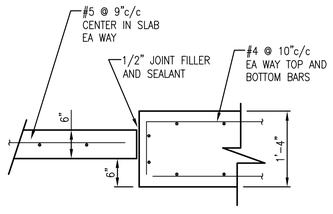
18



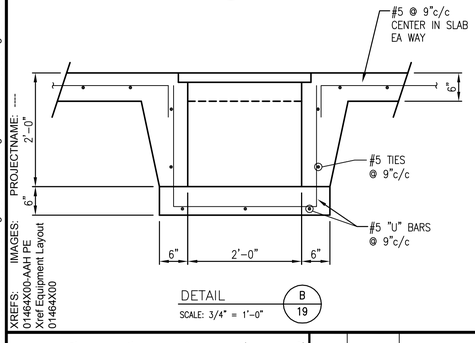
DETAIL C / 19
SCALE: 3/4" = 1'-0"



DETAIL E / 19
SCALE: 3/4" = 1'-0"



DETAIL A / 19
SCALE: 3/4" = 1'-0"



DETAIL B / 19
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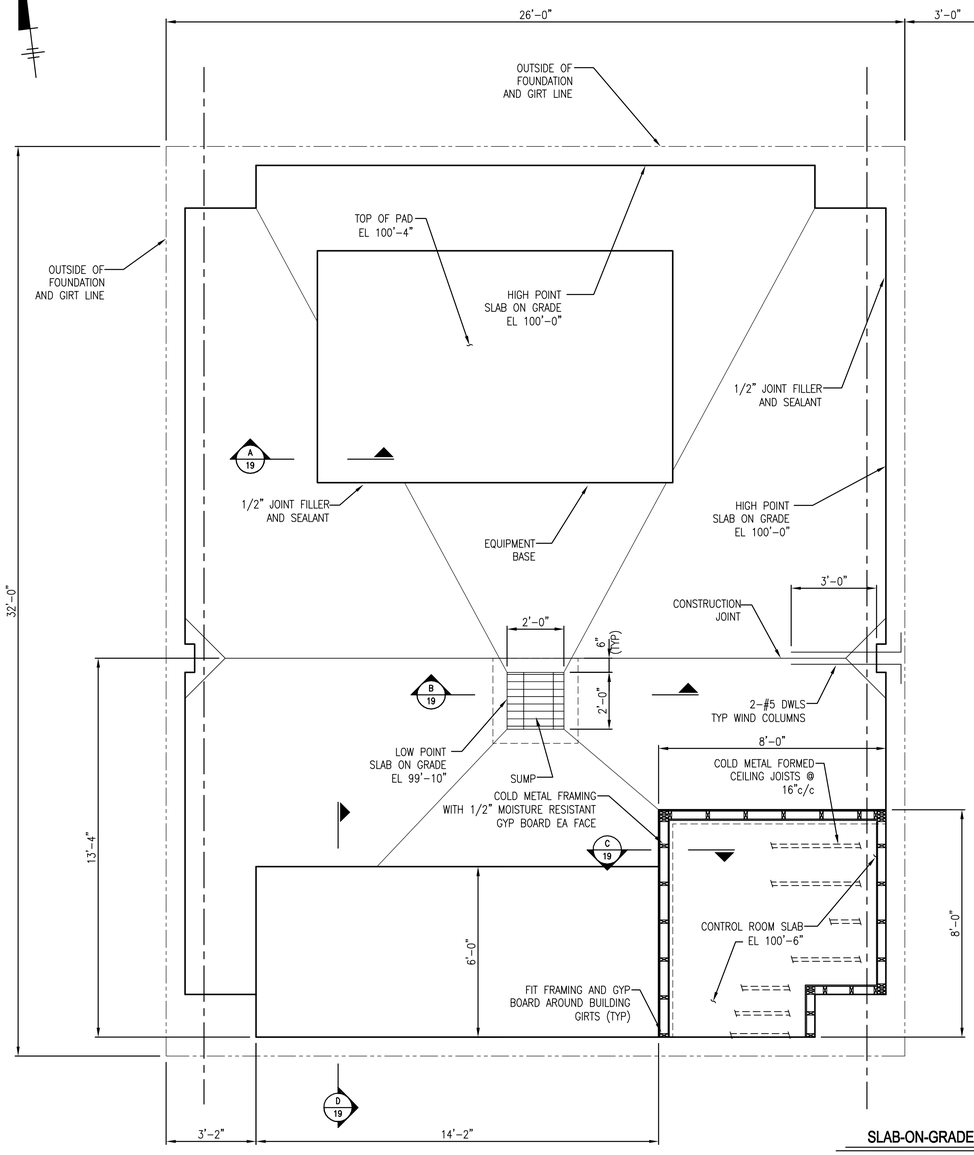
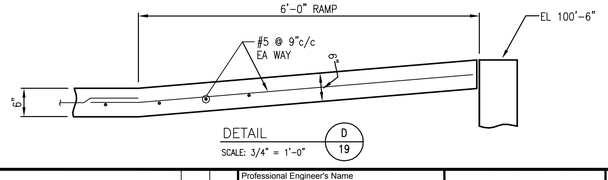
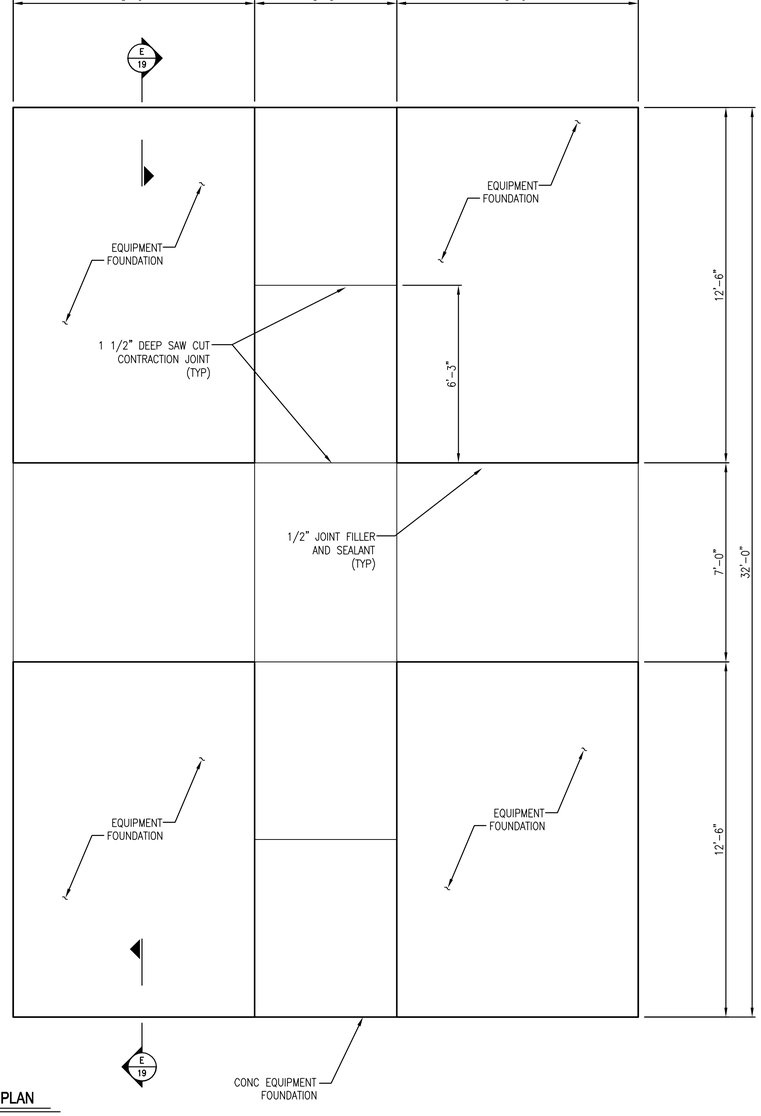


SLAB-ON-GRADE PLAN
3/8" = 1'-0"



DETAIL D / 19
SCALE: 3/4" = 1'-0"



DRAFT

3/4"=1'-0" 2' 1' 0 1' 2'
3/8"=1'-0" 2' 0 3' 6'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: AARON A HUNT		
Professional Engineer's No.: 083766		
State: NY	Date Signed:	Project Mgr.: CSG
Designed by: AAH	Drawn by: AAH	Checked by: TEM/WSW

ARCADIS

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK

OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

SLAB ON GRADE PLAN VIEW AND DETAILS

STRUCTURAL

ARCADIS Project No.
NY001464.1807.00003

Date
JULY 2008

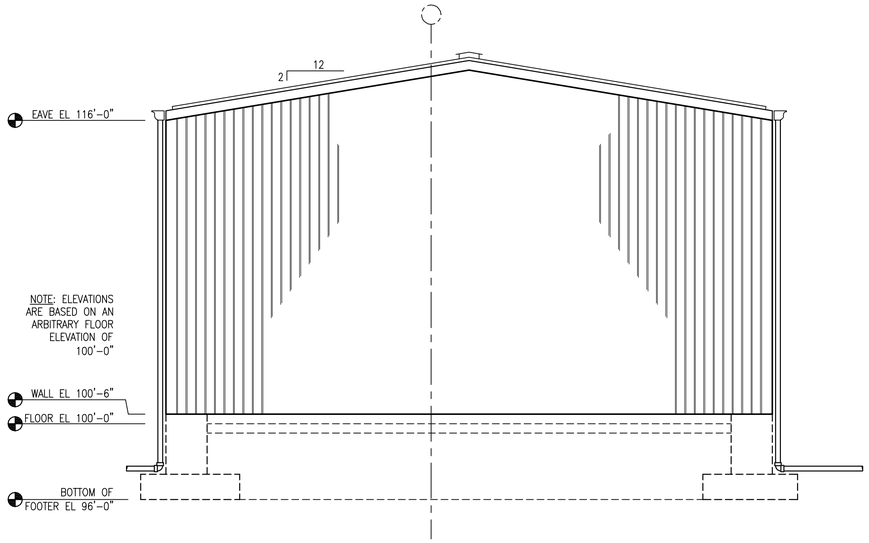
ARCADIS
6723 Towpath Road
Box 66
Syracuse, NY 13214
Tel: 315-446-9120

19

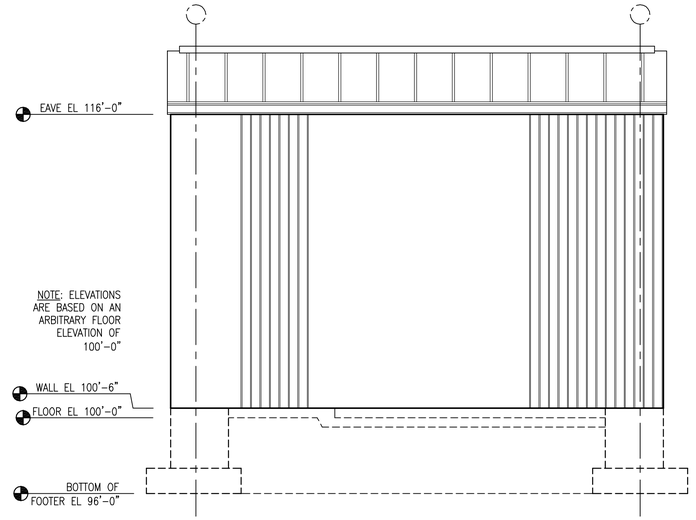
NOTE: THE PRE-ENGINEERED METAL BUILDING SHALL BE INCLUSIVE OF TWO 16" ROUND DUCT PENETRATION POINTS. PLEASE SEE APPROXIMATE LOCATION OF DUCT PENETRATION POINTS ON CONTRACT DRAWING 7. WALL PENETRATION KITS WILL BE PROVIDED BY THE BUILDING MANUFACTURER AND SHALL BE INSTALLED AS DIRECTED BY THE INSTALLATION INSTRUCTIONS ALSO PROVIDED BY THE BUILDING MANUFACTURER

DESIGN INFORMATION (NYSBC 2007)

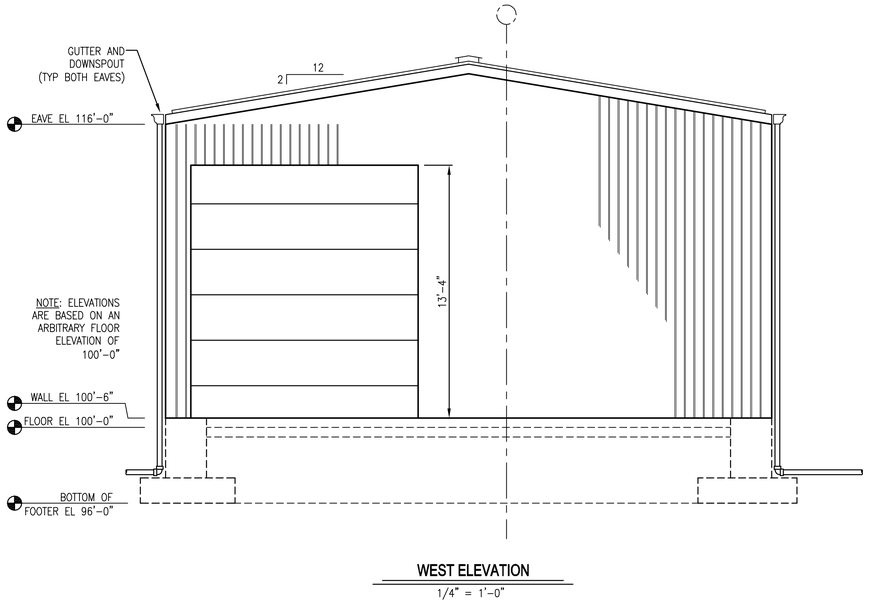
DESIGN ROOF LIVE LOAD	20 psf
DESIGN ROOF COLLATERAL LOAD (APPLY PURLINS AND FRAMES)	10 psf
NET ALLOWABLE DESIGN SOIL BEARING PRESSURE (PRESUMED BEARING PRESSURE)	1000 psf MIN (VERIFY DURING CONSTRUCTION)
DESIGN SNOW LOAD	
NYSBC 2007 SECTION 1608	
GROUND SNOW LOAD	20 PSF
SNOW EXPOSURE FACTOR, Ce	0.9
SNOW LOAD IMPORTANCE FACTOR, Is	1.1
THERMAL FACTOR, Ct	1.0
FLAT ROOF SNOW LOAD, Pf	13.9 psf
SLOPED ROOF SNOW LOAD, Ps	13.9 psf
DESIGN WIND LOAD	
NYSBC 2007 SECTION 1609	
BASIC WIND SPEED 110 MPH	
WIND LOAD IMPORTANCE FACTOR = 1.15	
BUILDING CATEGORY III	
WIND EXPOSURE B	
INTERNAL PRESSURE COEFFICENT 0.18	
COMPONENTS AND CLADDING LOADS	
ROOF: ZONE 2 +10.2 PSF, -42 PSF	
WALLS: ZONE 4 +25 PSF, -27.1 PSF	
DESIGN SEISMIC LOADS	
NYSBC 2007 SECTION 1613	
SEISMIC LOAD IMPORTANCE FACTOR = 1.25	
MAPPED SPECTRAL RESPONSE ACCELERATIONS	
Ss 0.30	
S1 0.07	
SITE CLASS D	
SPECTRAL RESPONSE COEFFICIENTS	
Sds 0.312	
Sd1 0.112	
SEISMIC DESIGN CATAGORY B	
BASIC SEISMIC FORCE RESISTING SYSTEM ORDINARY STEEL MOMENT FRAMES	
DESIGN BASE SHEAR	
STEEL "BUILDING" BASE SHEAR 5 KIPS	
SEISMIC RESPONSE COEFFICIENT Cs	
Cs STEEL 0.111 (MOMENT FRAMES)	
RESPONSE MODIFICATION FACTOR	
R STEEL MOMENT FRAME 3.5	
ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE PROCEDURE	



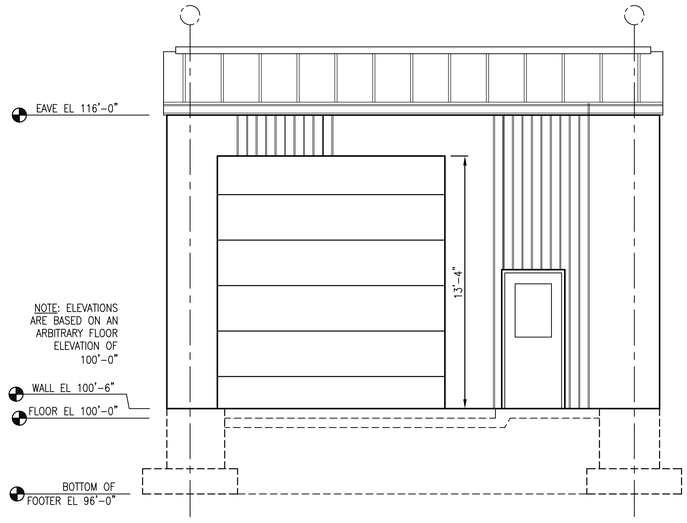
EAST ELEVATION
1/4" = 1'-0"



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



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



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

DRAFT

1/4"=1'-0" (4' 0 4' 8')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **AARON A HUNT**
Professional Engineer's No.: 083766

State	Date Signed	Project Mgr.
NY		CSG
Designed by: AAH	Drawn by: AAH	Checked by: TEM/WSW

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

BUILDING ELEVATIONS

STRUCTURAL

ARCADIS Project No.
NY001464.1807.00003

Date
JULY 2008

ARCADIS
6723 Towpath Road
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Syracuse, NY 13214
Tel: 315-446-9120

20

GENERAL

1. QUALITY OF CONSTRUCTION REQUIRED, PERFORMANCE LEVELS OF WORKMANSHIP, MANUFACTURING AND INDUSTRY STANDARDS, STRENGTH AND PHYSICAL REQUIREMENTS OF MATERIALS, CONFORMANCE TO CODES AND REGULATIONS, GUARANTEES AND OTHER PROJECT REQUIREMENTS ARE SPECIFIED IN THE PROJECT MANUAL.
2. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED, OR NOTED SHALL BE PROVIDED.
3. PERFORM ALL WORK IN COORDINATION WITH ALL DRAWINGS AND INFORMATION RELATED TO STRUCTURAL WORK. ANY CHANGES TO THE EQUIPMENT REQUIRING CHANGES TO THE STRUCTURAL SYSTEMS SHALL BE REDESIGNED BY A PROFESSIONAL ENGINEER AT NO COST TO THE OWNER AND SUBMITTED TO THE ENGINEER. SUBMITTAL SHALL BE ACKNOWLEDGED IN WRITING BEFORE BEGINNING CONSTRUCTION.
4. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.
5. FACILITIES HAVE BEEN DESIGNED FOR DESIGN LOADS SHOWN OR SPECIFIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FACILITIES SUBJECT TO CONSTRUCTION LOADS EXCEEDING THE DESIGN LOADS AND SHALL NOTIFY THE ENGINEER OF ANY SUCH ADDITIONAL LOADS.
6. ALL DIMENSIONS AND ELEVATIONS NOTED THUS (*) ON STRUCTURES SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD OR WITH THE EQUIPMENT MANUFACTURER AND SHALL CONFORM TO THOSE SHOWN ON OTHER DRAWINGS.
7. DESIGN LOADS: BASED ON NEW YORK STATE 2007 BUILDING CODE. SEE ELEVATION VIEW FOR LOAD VALUES.

FOUNDATIONS

1. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE SURVEY AND THE SUBSURFACE INVESTIGATION REPORT BEFORE BEGINNING CONSTRUCTION.
2. NOTIFY THE ENGINEER AS SOON AS POSSIBLE OF ANY UNUSUAL SOIL CONDITIONS OR SOIL CONDITIONS IN VARIANCE WITH TEST BORINGS, SUCH AS UNEXPECTED SPRING OR SEEPAGE WATER, MATERIAL DIFFERING FROM TEST BORINGS, OR SOIL OF QUESTIONABLE BEARING CAPACITY.
3. SET FOUNDATIONS AT ELEVATIONS SHOWN. THE CONTRACTOR SHALL VERIFY WITH THE ENGINEER THAT EACH FOOTING PLACED IS BEARING ON DESIGN MATERIAL.
6. CONCRETE GENERAL NOTES APPLY TO FOUNDATIONS.
7. FOOTINGS SHALL REST ON UNDISTURBED SOIL OR COMPACTED SELECT OR CONCRETE FILL OR ROCK.
8. LEVELS OF BACKFILL AGAINST CONCRETE WALLS SHALL NOT DIFFER BY MORE THAN 2'-0" ON EITHER SIDE OF WALLS UNLESS ADEQUATELY BRACED.
9. PROTECT EXCAVATION FROM FLOODING UNTIL ALL WALLS AND FLOOR FRAMING UP TO AND INCLUDING GRADE LEVEL FLOORS ARE IN PLACE AND BACKFILLING HAS BEGUN. WATER LEVEL SHALL BE MAINTAINED BELOW EXCAVATION AT ALL TIMES.

CAST-IN-PLACE CONCRETE

1. CONCRETE SHALL HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS: 4,000 POUNDS PER SQUARE INCH (PSI) WITH ENTRAINED AIR FOR ALL CONCRETE UNLESS SPECIFICALLY NOTED OTHERWISE IN SPECIFICATIONS OR ON CONTRACT DRAWINGS.
2. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH "THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318. TOLERANCES SHALL BE IN ACCORDANCE WITH ACI 347, SECTION 3.3.1, TOLERANCES FOR REINFORCED CONCRETE BUILDINGS.
3. ALL REINFORCING STEEL SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO ASTM A-615 GRADE 60.
4. ALL REINFORCING DETAILS SHALL CONFORM TO "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", ACI 315, UNLESS DETAILED OTHERWISE ON THE STRUCTURAL DRAWINGS.
5. CONTRACTOR SHALL REVIEW ALL DRAWINGS FOR SIZE AND LOCATION OF EMBEDDED ITEMS, SLEEVES, SLAB DEPRESSIONS, REQUIRED. THESE ITEMS SHALL BE FURNISHED AND INSTALLED PRIOR TO PLACEMENT OF CONCRETE.
6. WHERE BAR LENGTHS ARE GIVEN ON THE DRAWINGS, THE LENGTH OF ANCHOR HOOK, IF REQUIRED, IS NOT INCLUDED.
7. FOUNDATION WALLS AND SLABS SHALL BE CAST MONOLITHICALLY, EXCEPT FOR REQUIRED CONSTRUCTION JOINTS. CONTRACTOR SHALL SUBMIT ANY AND ALL ALTERNATE AND ADDITIONAL CONSTRUCTION JOINT LOCATIONS AND DETAILS.
8. CONSTRUCTION JOINTS REQUIRED BY THE ENGINEER ARE SHOWN ON THE DRAWINGS. REINFORCEMENT SHALL BE CONTINUOUS ACROSS CONSTRUCTION JOINTS. SUBMIT ALL CONSTRUCTION JOINT LOCATIONS WITH REINFORCING STEEL SHOP DRAWINGS.
9. CLEARANCES FOR REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING:
   TYPICAL REINFORCING BAR CLEARANCE TABLE CONCRETE CAST AGAINST EARTH 3"
   SURFACES EXPOSED TO EARTH OR WEATHER 2"
   SURFACES NOT EXPOSED EARTH OR WEATHER 1-1/2"
10. WELDING OF REINFORCING STEEL IS NOT PERMITTED.
11. CALCIUM CHLORIDE SHALL NOT BE PERMITTED NOR SHALL ANY ADMIXTURE CONTAINING CALCIUM CHLORIDE BE PERMITTED THAT RESULTS IN A TOTAL CONCRETE MIX IN WHICH THE PRESENCE OF CHLORIDE IONS EXCEED 0.15 PERCENT BY WEIGHT OF CEMENT.
12. ALUMINUM PIPE SHALL NOT BE USED WITH CONCRETE PUMPS.
13. CONCRETE SHALL BE DISCHARGED AT THE SITE WITHIN 75 MINUTES AFTER WATER HAS BEEN ADDED TO THE CEMENT AND AGGREGATES. ADDITION OF WATER TO THE MIX AT THE PROJECT SITE WILL NOT BE ALLOWED. ALL WATER MUST BE ADDED AT THE BATCH PLANT.
14. REINFORCING BARS REQUIRED FOR PROPER SUPPORT OF PRINCIPAL REINFORCING SHALL BE DETAILED AND SUPPLIED BY THE CONTRACTOR WHETHER OR NOT THEY ARE INDICATED ON THE DRAWINGS.
15. REINFORCING BAR LAP SPLICES, EMBEDMENT, AND HOOK LENGTHS SHALL CONFORM WITH "REINFORCEMENT LAP SPLICE, EMBEDMENT, AND STANDARD HOOKS TABLE".
16. BOND BREAKER MATERIAL SHALL BE 15 POUNDS FELT PAPER, UNLESS NOTED OTHERWISE.
17. JOINT FILLER: ASTM D1752; PRE-MOLDED SPONGE RUBBER FULLY COMPRESSIBLE WITH RECOVERY RATE OF MINIMUM 95 PERCENT; W.R. MEADOWS SPONGE RUBBER, OR AS APPROVED.
18. PROVIDE 1" CHAMFER ON ALL EXPOSED EDGES.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL CONFORM TO THE AISC "SPECIFICATIONS FOR DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" LATEST EDITION.
2. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE THE AMERICAN WELDING SOCIETY, AWS D1.
3. BOLTS AND BOLTED CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS" AS APPROVED BY THE COUNCIL ON RIVETED AND BOLTED JOINTS.
4. ANCHOR RODS: ASTM F1554 GRADE 36 KSI, EMBEDMENT, DIAMETER, AND QUANTITY TO BE DETERMINED BASED ON BUILDING MANUFACTURER APPROVED SHOP DRAWINGS.
5. STRUCTURAL STEEL:
   ROLLED STEEL PLATES, SHAPES (EXCEPT WIDE FLANGE SECTIONS), BARS & RODS; ASTM A36
   WIDE FLANGE SECTIONS; ASTM A992
   STEEL PIPE OR STRUCTURAL TUBING; ASTM A53; TYPE E OR S, GRADE B OR A 501.
6. WELDING ELECTRODES SHALL BE E-70XX. FOR WELDING SYMBOLS WITH NO LENGTH DIMENSION GIVEN, THE WELDING SHALL BE CONTINUOUS BETWEEN ABRUPT CHANGES IN DIRECTION. NO INTERMITTENT WELDS SHALL BE PERMITTED, UNLESS OTHERWISE NOTED.

REINFORCEMENT LAP SPLICE, EMBEDMENT LENGTH AND STANDARD HOOKS

BAR SIZE	MIN. LAP LENGTHS FOR BEAMS * CLASS B		MIN. LAP LENGTHS FOR SLABS AND WALLS ** CLASS B		MIN. LAP LENGTHS FOR COLUMNS	MIN. EMBEDMENT LENGTHS STRAIGHT BARS*		WITH STANDARD HOOKS	MIN. STD. HOOKS 90°		MIN. STD. HOOKS 135°	
	TOP***	OTHERS	TOP***	OTHERS		TOP***	OTHERS		A OR G		A OR G	H
#3	25	19	16	16	12	19	15	5	6		4	2.5
#4	33	25	20	16	15	25	19	7	8		4.5	3
#5	41	31	25	19	19	31	24	9	10		5.5	3.75
#6	49	37	29	23	23	37	29	10	12		8	4.5
#7	71	54	43	33	27	54	42	12	14		9	5.25
#8	81	62	49	37	30	62	48	14	16		10.5	6
#9	91	70	60	46	34	70	54	15	19		–	–
#10	102	79	74	57	39	79	61	17	22		–	–
#11	114	87	89	69	43	87	67	19	24		–	–

REINFORCEMENT LAP SPLICE, EMBEDMENT LENGTH AND STANDARD HOOKS TABLE IS BASED ON A MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4000 PSI AND 60000 PSI REINFORCEMENT (WITH NO EPOXY COATING).

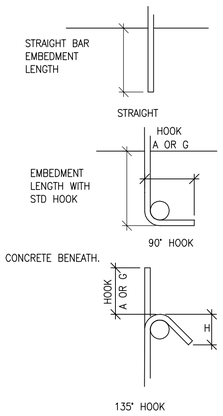
ALL LAPS SPLICES SHALL BE CLASS B SPLICES.

* THE MINIMUM LAP LENGTH FOR BEAMS AND STRAIGHT EMBEDMENTS ARE BASED ON A 3 BAR DIAMETER MINIMUM CENTER TO CENTER BAR SPACING AND A 2 INCH BAR COVER. IF THE SPLICE AND/OR EMBEDMENT DOES NOT CONFORM TO THESE REQUIREMENTS, THEN CONTRACTOR SHALL APPLY APPROPRIATE FACTORS IN COMPLIANCE WITH ACI 318 WITH APPROVAL BY ENGINEER.

** THE MINIMUM LAP LENGTH FOR SLABS AND WALLS IS BASED ON A 6 INCH BAR SPACING AND A 2 INCH BAR COVER. IF THE LAP CONDITION DOES NOT CONFORM TO THESE REQUIREMENTS, THEN USE BEAM LAP LENGTHS; OR COMPLY WITH LAP REQUIREMENTS OF ACI 318 WITH APPROVAL BY ENGINEER.

*** TOP BARS ARE DEFINED AS ALL WALL, BEAM, OR SLAB HORIZONTAL BARS WITH 12" OR MORE FRESH CONCRETE BENEATH.

WHERE SPLICES ARE INDICATED BETWEEN BARS OF DIFFERENT SIZES, THE SPLICE LENGTH SHALL BE BASED ON THE SMALLER BAR SIZE.



SYMBOLS

GRATING
EARTH
STEEL
GROUT
NEW BRICK
EXISTING BRICK
NEW BLOCK
EXISTING BLOCK
NEW CONCRETE
EXISTING CONCRETE
COMPACT FILL
GRAVEL BASE
ROCK

ABBREVIATIONS

AB	– ANCHOR BOLT	DWG.	– DRAWING	LLV	– LONG LEG VERTICAL	STD.	– STANDARD
AC	– ACRE	DWL.	– DOWEL	LONG.	– LONGITUDINAL	STL.	– STEEL
ADD'L.	– ADDITIONAL	EA.	– EACH	LP	– LOW POINT	STR.	– STRUCTURAL
ADJ.	– ADJUSTABLE	EE	– EACH END	LW	– LIGHT WEIGHT	SUP.	– SUPPORT
ALT.	– ALTERNATE	EF	– EACH FACE	MACH.	– MACHINED	SYM.	– SYMMETRICAL
ALUM.	– ALUMINUM	EJ	– EXPANSION JOINT	MAS.	– MASONRY	T.	– TREAD
ANCH.	– ANCHOR	EL.	– ELEVATION	MAX.	– MAXIMUM	T/	– TOP OF
&	– AND	E.	– EAST	MFG.	– MANUFACTURER	T&B	– TOP AND BOTTOM
ARCH.	– ARCHITECT OR ARCHITECTURAL	EMBD.	– EMBEDDED	MID.	– MIDDLE	TEMP.	– TEMPORARY
ASTM	– AMERICAN SOCIETY FOR TESTING MATERIALS	EW	– EACH WAY	MIN.	– MINIMUM	THK.	– THICK
@	– AT	EQ.	– EQUAL	MK.	– MARK	TOM	– TOP OF MASONRY
BSMT.	– BASEMENT	EXIST.	– EXISTING	MO	– MASONRY OPENING	TOS	– TOP OF STEEL
BITUM.	– BITUMINOUS	EXP.	– EXPANSION	NA	– NOT APPLICABLE	TYP.	– TYPICAL
B/	– BOTTOM OF	EXT.	– EXTERIOR	N.	– NORTH	UON	– UNLESS OTHERWISE NOTED
B/W	– BETWEEN	FDN.	– FOUNDATION	NF	– NEAR FACE	VERT.	– VERTICAL
BOT.	– BOTTOM	FE	– FIRE EXTINGUISER	NTS	– NOT TO SCALE	W/	– WITH
BOS	– BOTTOM OF STEEL	FIN.	– FINISH	OC	– ON CENTER	W.	– WEST
℄	– BUILDING LINE	FL	– FINISH LINE	OD	– OUTSIDE DIAMETER	W/O	– WITHOUT
BLDG.	– BUILDING	FLR.	– FLOOR	OH.	– OVERHEAD	WP	– WORK POINT
BLK.	– BLOCK	FRP	– FIBERGLASS REINFORCED PLASTIC	OPNG.	– OPENING	WS.	– WATER STOP
BM	– BEAM	FF	– FAR FACE	OPP.	– OPPOSITE	WT	– WEIGHT
B PL	– BASE PLATE	FTG.	– FOOTING	PL	– PLATE		
BRG.	– BEARING	FT.	– FOOT	PC	– PRECAST		
BT PL.	– BENT PLATE	GA.	– GAGE	PSF	– POUNDS PER SQUARE FOOT		
C/C	– CENTER TO CENTER	GALV.	– GALVANIZED	PPAWS	– PREFORMED PLASTIC ADHESIVE WATERSTOP		
CJ	– CONSTRUCTION JOINT	GR.	– GRADE	RAD.	– RADIUS		
℄	– CENTERLINE	GRD.	– GROUND	R.	– RISER		
CHKD.	– CHECKERED	GYP BD	– GYPSUM BOARD	REINF.	– REINFORCING		
CLR.	– CLEAR	HORIZ.	– HORIZONTAL	REQ'D.	– REQUIRED		
CMU	– CONCRETE MASONRY UNIT	HP	– HIGH POINT	REQ'MTS.	– REQUIREMENTS		
COL.	– COLUMN	HHP	– HIGH HIGH POINT	RM.	– ROOM		
CONC.	– CONCRETE	HR.	– HANDRAIL	RO	– ROUGH OPENING		
CONST.	– CONSTRUCTION	HT.	– HEIGHT	S.	– SOUTH		
CONT.	– CONTINUOUS	HS.	– HIGH STRENGTH	SCHED.	– SCHEDULE		
CONTL.	– CONTROL	ID	– INSIDE DIAMETER	SECT.	– SECTION		
CTR.	– CENTER	IF	– INSIDE FACE	SF	– SQUARE FEET		
CTSK	– COUNTERSUNK	INT.	– INTERIOR	SHT.	– SHEET		
DEPR.	– DEPRESSION	INV.	– INVERT	SIM.	– SIMILAR		
DET.	– DETAIL	INSUL.	– INSULATION	SJ	– STEEL JOIST		
DI	– DUCTILE IRON	JT.	– JOINT	SLBB	– SHORT LEG BACK-TO-BACK		
DIA.	– DIAMETER	K.	– KIP (1000 POUNDS)	SLV	– SHORT LEG VERTICAL		
DIM.	– DIMENSION	LB.	– POUNDS	SPA.	– SPACES OR SPACING		
DL	– DEAD LOAD	LFT.	– LINEAR FEET	SPRD.	– SPREAD		
DIST.	– DISTANCE	LL	– LIVE LOAD	SS	– STAINLESS STEEL		
D.S.	– DROP SHAFT	LLBB	– LONG LEG BACK-TO-BACK	SQ. FT.	– SQUARE FEET		
		LG.	– LONG	STA.	– STATION		
		LLH	– LONG LEG HORIZONTAL				

DRAFT

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **AARON A HUNT**
Professional Engineer's No.: 083766

State	Date Signed	Project Mgr.
NY		CSG
Designed by	Drawn by	Checked by
AAH	AAH	TEM/WSW

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

STRUCTURAL NOTES AND SYMBOLS #1

STRUCTURAL

ARCADIS Project No.
NY001464.1807.00003

Date
JULY 2008

ARCADIS
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Tel: 315-446-9120

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PRE-ENGINEERED BUILDING

1.1 DESIGN REQUIREMENTS
- A. APPLICABLE BUILDING CODE: NEW YORK STATE BUILDING CODE 2007.
- B. DESIGN WALL AND ROOF PANEL SYSTEM TO WITHSTAND SPECIFIED LOADS WITH DEFLECTION OF 1/240TH OF SPAN, MAXIMUM.
- C. ANCHOR RODS: FURNISH DESIGN CRITERIA FOR ANCHOR BOLTS FURNISHED BY OTHERS, TO RESIST THE LOADS INDUCED BY THE DESIGN LOADS ON THE STRUCTURE.

1.2 SUBMITTALS
- A. DESIGN DATA: PROVIDE DETAILED DESIGN CRITERIA AND CALCULATIONS.
- B. CERTIFICATION: MANUFACTURER CERTIFICATION THAT THE BUILDING CONFORMS TO THE CONTRACT DOCUMENTS AND MANUFACTURER'S STANDARD DESIGN PROCEDURES.
- C. SHOP DRAWINGS: SHOW BUILDING LAYOUT, PRIMARY AND SECONDARY FRAMING MEMBER SIZES AND LOCATIONS, CROSS-SECTIONS, AND PRODUCT AND CONNECTION DETAILS.
- D. PRODUCT DATA: INFORMATION ON MANUFACTURED PRODUCTS TO BE INCORPORATED INTO THE PROJECT.
- E. COLOR CHARTS: FOR SELECTION OF COLORS.
- F. ANCHOR ROD INSTALLATION DRAWINGS: LAYOUTS WITH BOLT DIAMETERS.
- G. REACTIONS: SUBMIT REACTIONS FOR DESIGN OF FOUNDATION.
- H. SPECIMEN WARRANTY.

1.3 QUALITY ASSURANCE
- A. DESIGN STRUCTURAL COMPONENTS, DEVELOP SHOP DRAWINGS, AND PERFORM SHOP AND SITE WORK UNDER DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER EXPERIENCED IN DESIGN OF THIS WORK AND LICENSED IN THE STATE OF NEW YORK.
- B. DESIGN DATA AND SHOP DRAWINGS SUBMITTED FOR REVIEW SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK.
- C. QUALIFICATIONS:
  1. MANUFACTURER: COMPANY SPECIALIZING IN MANUFACTURING PRODUCTS SPECIFIED IN THIS SECTION WITH MINIMUM 5 YEARS DOCUMENTED EXPERIENCE.
  2. ERECTOR: COMPANY SPECIALIZING IN PERFORMING WORK OF THIS SECTION WITH MINIMUM 5 YEARS DOCUMENTED EXPERIENCE AND APPROVED BY MANUFACTURER.

1.4 WARRANTY
- A. PROVIDE MANUFACTURER'S STANDARD WARRANTY FOR:
  1. PANEL FINISH: 20 YEARS.
  2. WEATHER-TIGHTNESS: 20 YEARS

PART 2 PRODUCTS

2.1 MANUFACTURERS
- A. NUCOR BUILDING SYSTEMS.
- B. OR AS APPROVED.

2.2 METAL MATERIALS
- A. STRUCTURAL STEEL PLATE, BAR, SHEET, AND STRIP FOR USE IN BOLTED AND WELDED CONSTRUCTIONS: ASTM A572, A570, A529, OR A36, WITH MINIMUM YIELD STRENGTH OF 50,000 PSI.
- B. STRUCTURAL STEEL MATERIAL FOR USE IN ROLL FORMED OR PRESS BROKEN SECONDARY STRUCTURAL MEMBERS: ASTM A570, OR A607 WITH MINIMUM YIELD STRENGTH OF 55,000 PSI.
- C. GALVANIZED STEEL SHEET FOR ROLL-FORMED OR PRESS BROKEN ROOF AND WALL COVERINGS, TRIM AND FLASHING: ASTM A653, WITH MINIMUM YIELD STRENGTH OF 50,000 PSI.
- D. HOT-ROLLED STEEL SHAPES: W, M AND S SHAPES, ANGLES, RODS, CHANNELS AND OTHER SHAPES; ASTM A992 OR ASTM A36 AS APPLICABLE; WITH MINIMUM YIELD STRENGTHS REQUIRED FOR THE DESIGN.
- E. STRUCTURAL BOLTS AND NUTS USED WITH PRIMARY FRAMING: HIGH STRENGTH, ASTM A325.
- F. BOLTS AND NUTS USED WITH SECONDARY FRAMING MEMBERS: ASTM A307.

2.3 FRAMING COMPONENTS
- A. PRIMARY FRAMING: RIGID FRAME SOLID WEB FRAMING CONSISTING OF TAPERED OR UNIFORM DEPTH RAFTERS RIGIDLY CONNECTED TO TAPERED OR UNIFORM DEPTH COLUMNS. PROVIDE A CLEAR SPAN THAT SUPPORTS THE LOADS AT BAY SPACINGS INDICATED.
- B. ENDWALL FRAMING: PORTAL FRAME FRAMING.
- C. PURLINS: Z-SHAPED; DEPTH AS REQUIRED; WITH MINIMUM YIELD STRENGTH OF 55,000 PSI; SIMPLE SPAN OR CONTINUOUS SPAN AS REQUIRED FOR DESIGN.
- D. GIRTS: Z- OR C-SHAPED; DEPTH AS REQUIRED, WITH MINIMUM YIELD STRENGTH OF 55,000 PSI; SIMPLE SPAN OR CONTINUOUS SPAN AS REQUIRED FOR DESIGN.
- E. WIND BRACING: PORTAL, TORSIONAL, DIAGONAL BRACING OR DIAPHRAGM IN ACCORDANCE WITH MANUFACTURER'S STANDARD DESIGN PRACTICES; UTILIZING RODS, ANGLES, AND OTHER MEMBERS, WITH MINIMUM YIELD STRENGTHS AS REQUIRED FOR DESIGN.
- F. PRIMARY FRAME FLANGE BRACING: ATTACHED FROM PURLINS OR GIRTS TO THE PRIMARY FRAMING, MINIMUM YIELD STRENGTH AS REQUIRED FOR DESIGN.
- G. BASE ANGLES: 2 INCH BY 3 INCH BY 0.059 INCH STEEL ANGLES, WITH MINIMUM YIELD STRENGTH OF 55,000 PSI.
- H. DOOR HEADERS AND JAMBS: Z- OR C-SHAPED; DEPTH AS REQUIRED; WITH MINIMUM YIELD STRENGTH OF 55,000 PSI.
- I. SAG ANGLES AND BRIDGING: STEEL ANGLES WITH MINIMUM YIELD STRENGTH OF 36,000 PSI.
- J. FABRICATION: FABRICATE ACCORDING TO MANUFACTURER'S STANDARD PRACTICE.
  1. FABRICATE STRUCTURAL MEMBERS MADE OF WELDED PLATE SECTIONS BY JOINTING THE FLANGES AND WEBS BY CONTINUOUS AUTOMATIC SUBMERGED ARC WELDING PROCESS.
  2. ALL WELDING OPERATORS AND PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY "STRUCTURAL WELDING CODE", AWS D1.1.
  3. FIELD CONNECTIONS. PREPARE MEMBERS FOR BOLTED FIELD CONNECTIONS BY MAKING PUNCHED, DRILLED, OR REAMED HOLES IN THE SHOP.
- K. SHOP COATING: FINISH ALL STRUCTURAL STEEL MEMBERS USING ONE COAT OF MANUFACTURER'S STANDARD SHOP COAT, AFTER CLEANING OF OIL, DIRT, LOOSE SCALE AND FOREIGN MATTER.

2.4 ROOF AND WALL PANEL COMPONENTS
- A. ROOF PANELS: 36 INCH WIDE NET COVERAGE WITH 1-1/4 INCH HIGH MAJOR RIBS AT 12 INCHES ON CENTER WITH MINOR RIBS SPACED BETWEEN THE MAJOR RIBS.
  1. MATERIAL: GALVANIZED STEEL WITH G90 COATING.
  2. THICKNESS: 26 GAGE.
  3. SIDE LAPS: AT LEAST ONE FULL MAJOR RIB, WITH A SUPPORTING MEMBER BEARING EDGE ON THE LOWER PANEL AND AN ANTI-CAPILLARY GROOVE ON THE UPPER PANEL.
  4. LENGTH: CONTINUOUS FROM EAVE TO RIDGE.
  5. ENDLAPS WHERE REQUIRED: 6 INCHES WIDE, LOCATED AT A SUPPORT MEMBER.
  6. FINISH: KYNAR 500 PRE-PAINTED FINISH ON EXTERIOR SURFACE, WASH COAT ON INTERIOR SURFACE. COLOR SELECTED BY OWNER FROM MANUFACTURER'S FULL LINE.
  7. THE ROOF SHALL BE TESTED AND CERTIFIED TO MEET UNDERWRITERS LABORATORIES, INC., UPLIFT RATING: UL 90.
- B. WALL PANELS: 36 INCH WIDE NET COVERAGE WITH 1-1/4 INCH HIGH MAJOR RIBS AT 12 INCHES ON CENTER WITH MINOR RIBS SPACED BETWEEN THE MAJOR RIBS.
  1. MATERIAL: GALVANIZED STEEL WITH G90 COATING.
  2. THICKNESS: 26 GAGE.
  3. SIDE LAPS: TWO FULLY OVERLAPPING MAJOR RIBS SECURED TOGETHER WITH 1/4 INCH DIAMETER COLOR-MATCHED CARBON STEEL FASTENERS.
  4. LENGTH: CONTINUOUS FROM SILL TO EAVE.
  5. ENDLAPS WHERE REQUIRED: 4 INCHES WIDE, LOCATED AT A SUPPORT MEMBER.
  6. CRIMP PANELS AT THE BASE AND NOTCH TO MAKE ROOF PANEL CONFIGURATION AT THE EAVE.
  7. CUT PANELS SQUARE AT EACH END; PROVIDE BASE TRIM AT SILL.
  8. FINISH: KYNAR 500 PRE-PAINTED FINISH ON EXTERIOR SURFACE, WASH COAT ON INTERIOR SURFACE. COLOR SELECTED BY OWNER FROM MANUFACTURER'S FULL LINE.
- C. PANEL FASTENERS:
  1. FOR ROOF PANELS: STAINLESS STEEL-CAPPED CARBON STEEL FASTENERS WITH INTEGRAL SEALING WASHER.
  2. FOR WALL PANELS: COATED CARBON STEEL.
  3. COLOR OF EXPOSED FASTENER HEADS TO MATCH THE WALL PANEL FINISH.

PRE-ENGINEERED BUILDING (CONT.)

  4. CONCEALED FASTENERS: SELF-DRILLING TYPE, OF SIZE AS REQUIRED.
  5. PROVIDE FASTENERS IN QUANTITIES AND LOCATION AS REQUIRED BY THE MANUFACTURER.
- D. FLASHING AND TRIM: MATCH MATERIAL AND COLOR OF ADJACENT COMPONENTS. PROVIDE TRIM AT RAKES, INCLUDING PEAK AND CORNER ASSEMBLIES, HIGH AND LOW EAVES, CORNERS, BASES, FRAMED OPENINGS AND AS REQUIRED OR SPECIFIED TO PROVIDE WEATHER-TIGHTNESS AND A FINISHED APPEARANCE.
- E. PLASTIC PARTS: GLASS FIBER-REINFORCED RESIN OR THERMO-FORMED ABS.
  1. ABS: MINIMUM 1/8 INCH THICK.
  2. COLOR: MANUFACTURER'S STANDARD COLOR.
- F. SEALANTS, MASTICS AND CLOSURES: MANUFACTURER'S STANDARD TYPE.
  1. PROVIDE AT ROOF PANEL ENDLAPS, SIDELAPS, RAKE, EAVE, TRANSITIONS AND ACCESSORIES AS REQUIRED TO PROVIDE A WEATHER-RESISTANT ROOF SYSTEM; USE TAPE MASTIC OR GUNNABLE SEALANT AT SIDELAPS AND ENDLAPS.
  2. PROVIDE AT WALL PANEL RAKES, EAVES, TRANSITIONS AND ACCESSORIES.
  3. CLOSURES: FORMED TO MATCH PANEL PROFILES; CLOSED CELL ELASTIC MATERIAL, MANUFACTURER'S STANDARD COLOR.
  4. TAPE MASTIC: PRE-FORMED BUTYL RUBBER-BASED, NON-HARDENING, NON-CORROSIVE TO METAL; WHITE OR LIGHT GRAY.
  5. GUNNABLE SEALANT: NON-SKINNING SYNTHETIC ELASTOMER BASED MATERIAL; GRAY OR BRONZE.
- G. BLANKET INSULATION: GLASS FIBER WITH FACTORY-LAMINATED FACING MATERIAL:
  1. GLASS FIBER: ODORLESS, NEUTRAL-COLORED, LONG FILAMENT, FLEXIBLE RESILIENT, PRODUCED IN COMPLIANCE WITH THE NAIMA 202 SPECIFICATIONS.
  2. THERMAL RESISTANCE: TO MEET R=19 AT 75 DEGREES F MEAN TEMPERATURE.
  3. FLAME SPREAD INDEX: 25 OR LESS, WHEN TESTED IN ACCORDANCE WITH UL 723.
  4. SMOKE DEVELOPED INDEX: 50 OR LESS, WHEN TESTED IN ACCORDANCE WITH UL 723.
  5. UL CLASSIFIED.
  6. FACING: WHITE VINYL SCRIM POLYESTER; 0.0025 INCH THICK PVC FILM, GLASS FIBER SCRIM REINFORCING, 0.0005 INCH THICK POLYESTER FILM; PERMEANCE 0.02 PERMS. COMPOSITE FIBERGLASS AND FACING TO MEET FLAME SPREAD OF 25 OR LESS, SMOKE DEVELOPED OF 50 OR LESS, WHEN TESTED IN ACCORDANCE WITH UL 723.
  7. PROVIDE FACING 3 INCHES WIDER ON BOTH EDGES THAN BLANKET.
  8. WIDTH: AS REQUIRED FOR INSTALLATION.
  9. USE BLANKET INSULATION AT ROOF AND WALLS.

2.5 WALL ACCESSORIES
- A. SERVICE DOORS.
- B. SECTIONAL OVERHEAD DOORS.
- C. PROVIDE FRAMED OPENINGS FOR LOUVERS.

2.6 ROOF ACCESSORIES
- A. EAVE GUTTERS: ROLL-FORMED 26 GAGE STEEL SHEET, WITH GUTTER STRAPS, FASTENERS AND JOINT SEALANT; SAME COLOR AS WALL PANELS.
  1. DOWNSPOUTS: 4 BY 5 INCHES IN 10 FOOT LENGTHS WITH DOWNSPOUT ELBOWS AND DOWNSPOUT STRAPS; SAME COLOR AS WALL PANELS.
- B. SNOWGUARDS:
  1. MANUFACTURERS: SNOJAX, INC., OR AS APPROVED.
  2. FABRICATED FROM CLEAR POLYCARBONATE.
  3. PROVIDE ADHESIVE FOR SECURING SNOWGUARDS TO ROOF PANELS.
  4. CONSULT MANUFACTURER FOR SPACING RECOMMENDATIONS.
- C. PROVIDE FRAMED OPENINGS FOR FANS.

2.7 DOORS
- A. OVERHEAD DOORS TO BE COILING TYPE, STEEL CONSTRUCTION, INSULATED. CURTAIN SLATS MIN 20 GA EXTERIOR AND 24 GA BACK COVER. LOCKING MECHANISM REQUIRED. PROVIDE COUNTERBALANCING MECHANISM WITH HELICAL TORSIONAL SPRINGS. PLACE HOOD EXTERIOR OF BUILDING.
- B. INTERIOR MANDOOR - 20 GA., HONEY COMB CORE, WITH 16 GA. FRAME AND LOCKS.
- C. EXTERIOR MANDOOR - 18 GA., INSULATED CORE, STANDARD KEYING, BALL BEARING HINGES, AND 16 GA. FRAME.

COLD FORMED METAL FRAMING

1.1 MATERIALS
- A. STEEL SHEET: ASTM A653/A 653M, STRUCTURAL STEEL, ZINC COATED, OF GRADE AND COATING AS FOLLOWS:
  1. GRADE: 33 OR 50, CLASS 1 OR 2 AS REQUIRED BY STRUCTURAL CALCULATIONS.
  2. COATING: G60 (Z180).

1.2 FRAMING ACCESSORIES
- A. FABRICATE STEEL-FRAMING ACCESSORIES OF THE SAME MATERIAL AND FINISH USED FOR FRAMING MEMBERS, WITH MINIMUM YIELD STRENGTH OF 33,000 PSI (230 MPA).
- B. PROVIDE ACCESSORIES OF MANUFACTURER'S STANDARD THICKNESS AND CONFIGURATION.

1.3 MISCELLANCEOUS MATERIALS
- A. GALVANIZING REPAIR PAINT: SSPC-PAINT 20 OR DOD-P21035, ASTM A780.

1.4 FASTENERS
- A. SCREWS: CORROSION-RESISTANT COATED, SELF-DRILLING, PAN OR HEX WASHER HEAD. PROVIDE SCREW TYPE AND SIZE AS REQUIRED BY STRUCTURAL DESIGN CALCULATIONS FOR THE CONDITION AND THICKNESS OF MATERIALS BEING JOINED.

1.5 FABRICATION
- A. FABRICATE ASSEMBLIES TO SIZE AND CONFIGURATION REQUIRED.
- B. CUT ALL FRAMING COMPONENTS SQUARE FOR ATTACHMENT TO PERPENDICULAR MEMBERS, OR AS REQUIRED FOR AN ANGULAR FIT AGAINST ABUTTING MEMBERS.
- C. FASTEN COMPONENTS WITH SELF-DRILLING SCREWS OR WELDING. FURNISH SCREWS OF SIZES TO BE SUFFICIENT TO INSURE STRENGTH OF CONNECTION. TOUCH UP ALL WELDS WITH ZINC-RICH PRIMER. MECHANICAL FASTENERS, EITHER POWDER ACTUATED OR PNEUMATICALLY DRIVEN, ARE PROHIBITED.
- D. REINFORCE AND BRACE ASSEMBLIES TO WITHSTAND HANDLING STRESSES.
- E. COLD-FORMED METAL FRAMING MAY BE SHOP OR FIELD FABRICATED FOR INSTALLATION, OR IT MAY BE FIELD ASSEMBLED.
- F. INSTALL COLD-FORMED METAL FRAMING ACCORDING TO ASTM C1007, UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED.
- G. INSTALL COLD-FORMED METAL FRAMING AND ACCESSORIES PLUMB, SQUARE, AND TRUE TO LINE, AND WITH CONNECTIONS SECURELY FASTENED, ACCORDING TO MANUFACTURER'S WRITTEN RECOMMENDATIONS AND REQUIREMENTS IN THIS SECTION.
  1. CUT FRAMING MEMBERS BY SAWING OR SHEARING; DO NOT TORCH CUT.
  2. FASTEN COLD-FORMED METAL FRAMING MEMBERS BY WELDING OR SCREW FASTENING, AS STANDARD WITH FABRICATOR. WIRE TYING OF FRAMING MEMBERS IS NOT PERMITTED.
- H. INSTALL STUDS AT SPACING AS SHOWN ON DRAWINGS AND AS REQUIRED BY STRUCTURAL DESIGN CALCULATIONS, AT EACH SIDE OF OPENINGS AND NOT MORE THAN 2 INCHES FROM ABUTTING WALLS.
  a. FRAME CORNERS WITH THREE STUDS.
  b. FRAME WALL OPENINGS WIDER THAN STUD SPACING WITH DOUBLE STUD AT EACH JAMB.
  2. INSTALL SUPPLEMENTARY FRAMING OR BLOCKING TO SUPPORT WORK ATTACHED TO FRAMING.

1.6 TOLERANCES
- A. STUDS: VERTICAL ALIGNMENT (PLUMBNESS), 1/960 (1/8 INCH IN 10 FEET).
- B. WALLS: HORIZONTAL ALIGNMENT (LEVELNESS), 1/960 (1/8 INCH IN 10 FEET).
- C. STUD SPACING: 1/8 INCH FROM DESIGNATED SPACING PROVIDING THAT THE CUMULATIVE ERROR DOES NOT EXCEED REQUIREMENTS OF FINISHING MATERIALS.

DRAFT

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's No.: 083766

State	Date Signed	Project Mgr.
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Designed by: AAH	Drawn by: AAH	Checked by: TEM/WSW

ARCADIS OF NEW YORK, INC.

NORTHROP GRUMMAN CORPORATION • BETHPAGE, NEW YORK
OPERABLE UNIT 3 - FORMER GRUMMAN SETTLING PONDS

STRUCTURAL NOTES AND SYMBOLS #2

STRUCTURAL

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