

DEWATERING BUILDING (EXISTING)

EXISTING BELT PRESS DISCHARGE CONVEYORS

WET SCRUBBER

14' PVC STACK

SILO DOOR

HEATER

3-8H

3-8E

3-10

3-11

3-8A

50 TON LIME SILO

12'-0" SQ. SILO SILO FOUNDATION

LIME SILO DUST FILTER

MCC & CONTROL ROOM

DOOR TYP.

FAN A/C UNIT

LINEP PANELS BETWEEN CONCRETE COLUMNS

LIME TRUCK

SLUDGE TRUCK

30' SQ. FOUNDATION TYPICAL

NORTH

EQUIPMENT LIST

ITEM	DESCRIPTION	QTY	MAT'L - CONST.	NOTES
3-1	RECEIVING CONVEYOR - 14" DIA X 36' LONG	1	CARBON STEEL	10 HP.
3-2	BLENDING HOPPER 10 TON CAPACITY (APPROX.)	1	CARBON STEEL	20 HP.
3-3	BLENDING HOPPER DISCHARGE CONVEYOR - 14" DIA X 24' LONG	1	CARBON STEEL	20 HP.
3-4	BLENDER FEED CONVEYOR - 14" DIA X 22' LONG	1	CARBON STEEL	10 HP.
3-5	LEOPOLD BLENDER MODEL B 3100	1	CARBON STEEL	25 HP.
3-6	BLENDER DISCHARGE CONVEYOR - 16" DIA X 42' LONG	1	CARBON STEEL	15 HP.
3-7	LOAD OUT SREW CONVEYOR - 16" DIA X 16' LONG	1	CARBON STEEL	10 HP.
3-8A	SILO FEED	1	CARBON STEEL	
3-8B	SILO FILTER AND FAN	1	CARBON STEEL	2 HP.
3-9H	AIR COMPRESSOR	1	CARBON STEEL	5 HP.
3-9E	LIME SILO DISCHARGE CONVEYOR - 9" DIA X 22' LONG	1	CARBON STEEL	5 HP.
3-9A	BLENDER LIME FEED CONVEYOR - 9" DIA X 8' LONG	1	CARBON STEEL	5 HP.
3-10	10" ROTOLULU	1	C.S. / S.S.	1.5 HP.
3-11	5" DIA. BIN ACTIVATOR	1	CARBON STEEL	3 HP.
3-12	DRIVE THROUGH TRUCK CANOPY	1	CARBON STEEL	
3-13	DAVIS PFOLESS SCRUBBER	1	HDXLPE / C.S.	10 HP.
3-14	MCC & CONTROL ROOM	1		60 AMP.
3-15	BUILDING ENCLOSURE	1	CARBON STEEL	
3-16	ELECTRICAL WORK	1		
3-17	AIR POLLUTION CONTROL DUCTWORK	1	SCH. 40 PVC.	

NOTES:

- INDICATES PLATFORM
- INDICATES AIR POLLUTION / ODDP CONTROL DUCTWORK AND AIR PICK-UP POINTS

Messick & Gray
 U.S. & Inc 1988 Bridgeville, PA 15005
 800-877-8777 Fax 800-877-8181

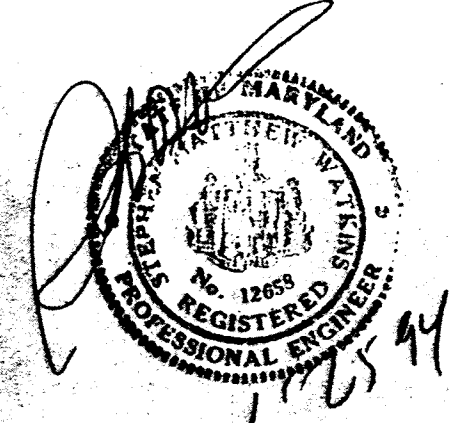
FOR **BIO GRO SYSTEMS, INC.**
BIO-FIX CHEMICAL STABILIZATION FACILITY

DRAWN BY **WKD** SIGNATURE *W. K. DeWitt* DATE *1/25/91*
 CHECKED BY **PRD** SIGNATURE *P. R. DeWitt* DATE *1/25/91*
 APRVD. BY **MSG** SIGNATURE *M. S. Gray* DATE *1-25-91*
 APRVD. BY **GLC** SIGNATURE *G. L. C.* DATE *1-25-91*

SCALE **3/16" = 1'-0"** DWG # **HOW 01**

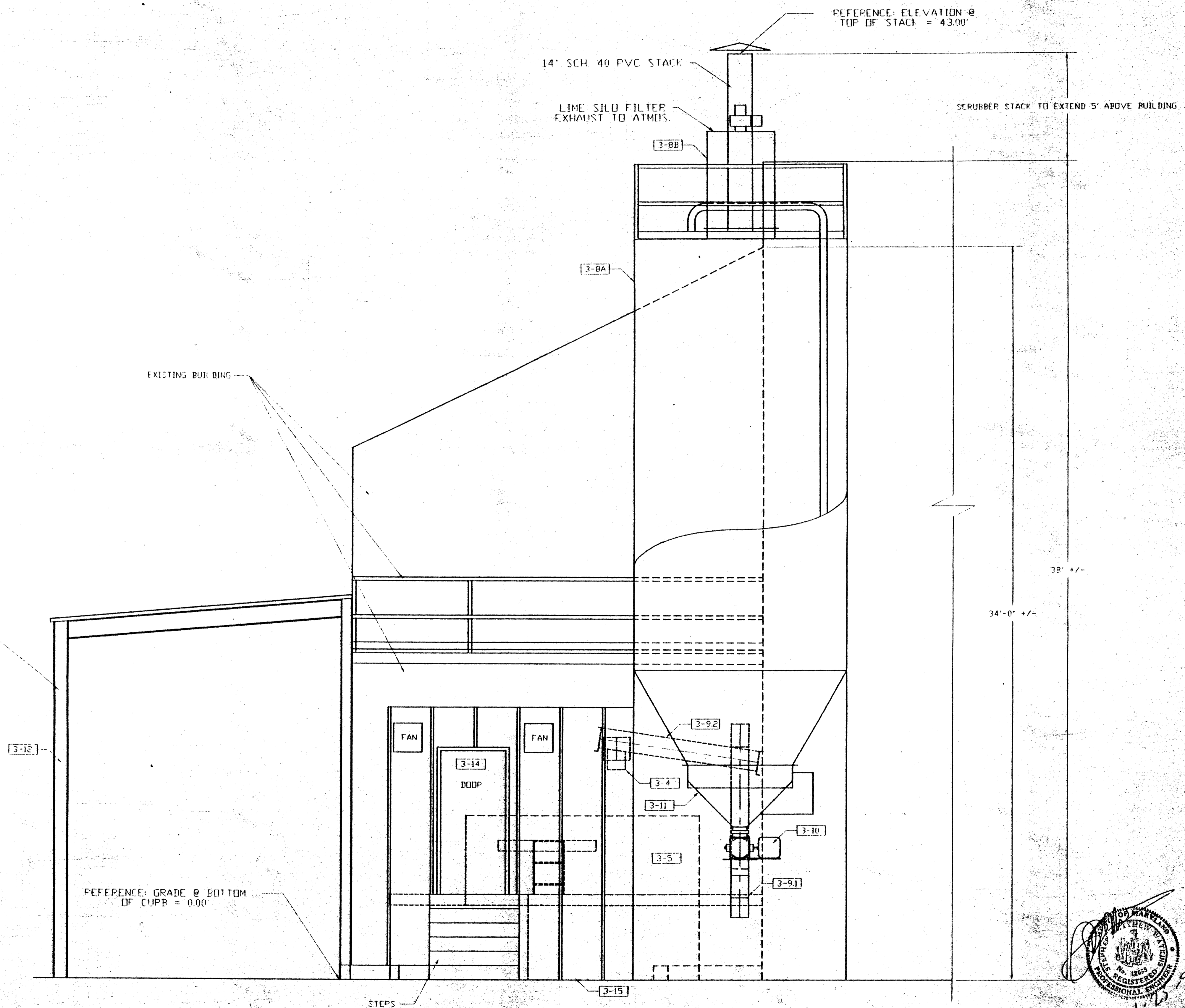
LITTLE PATUXENT / WWTP FACILITY HOWARD CO, MD. PLAN VIEW

A	1-11-91	UPDATE PER BIO GRO	WKD	PRD	
REV.	DATE	REVISED	REV. BY	CHK. BY	APV. BY

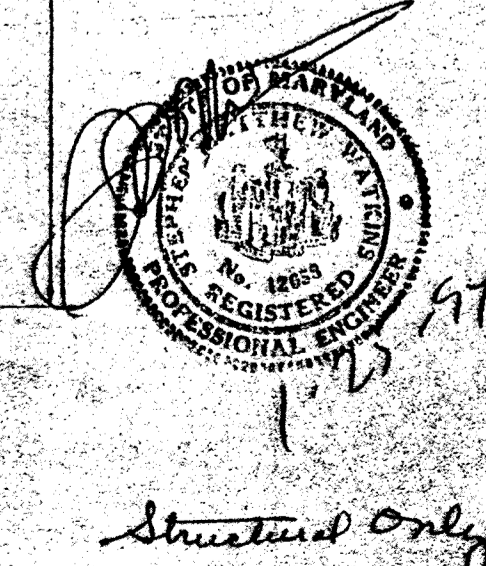


Structural Only

ITEM	DESCRIPTION	MATL - CONST. NOTES
3-1	RECEIVING CONVEYOR - 34" DIA X 36' LONG	CARBON STEEL 10 HP
3-2	RECEIVING HOPPER WITH 1000 LB CAPACITY	CARBON STEEL 20 HP
3-3	RECEIVING HOPPER DISCHARGE CONVEYOR - 14" DIA X 24' LONG	CARBON STEEL 20 HP
3-4	BLENDER FEED CONVEYOR - 14" DIA X 22' LONG	CARBON STEEL 10 HP
3-5	LEPBL BLENDER MODEL D-3100	CARBON STEEL 25 HP
3-6	BLENDER DISCHARGE CONVEYOR - 16" DIA X 42' LONG	CARBON STEEL 15 HP
3-7	LOADOUT SCREW CONVEYOR - 16" DIA X 16' LONG	CARBON STEEL 10 HP
3-8A	SILICO FILTER DISC 50 TON CAPACITY	CARBON STEEL
3-8B	AIR COMPRESSOR	CARBON STEEL 2 HP
3-9A	LIME SILU FILTER EXHAUST TO ATMOS	CARBON STEEL 5 HP
3-9B	LIME SILU DISCHARGE CONVEYOR - 9" DIA X 22' LONG	CARBON STEEL 5 HP
3-9C	BLENDER LINE FEED CONVEYOR - 9" DIA X 6' LONG	CARBON STEEL 5 HP
3-10	10" HOIST	CS / SS 15 HP
3-11	DAVIS PROLESS SCUBBER	CARBON STEEL 3 HP
3-12	DAVIS THROUGH TRUCK LAMP	CARBON STEEL
3-13	DAVIS PROLESS SCUBBER	HDXLPE / CS 10 HP
3-14	MCC & CONTROL ROOM	60 AMP
3-15	BUILDING ENCLURE	CARBON STEEL
3-16	ELECTRICAL WDR	
3-17	AIR POLLUTION CONTROL DUCTWORK	SCH 40 PVC



VIEW B



Structural only

REV	DATE	DESCRIPTION	BY	CHKD BY	APP'D BY
A	1-11-94	ISSUED PER BID QSD	WKO	PRD	
		REVISED			

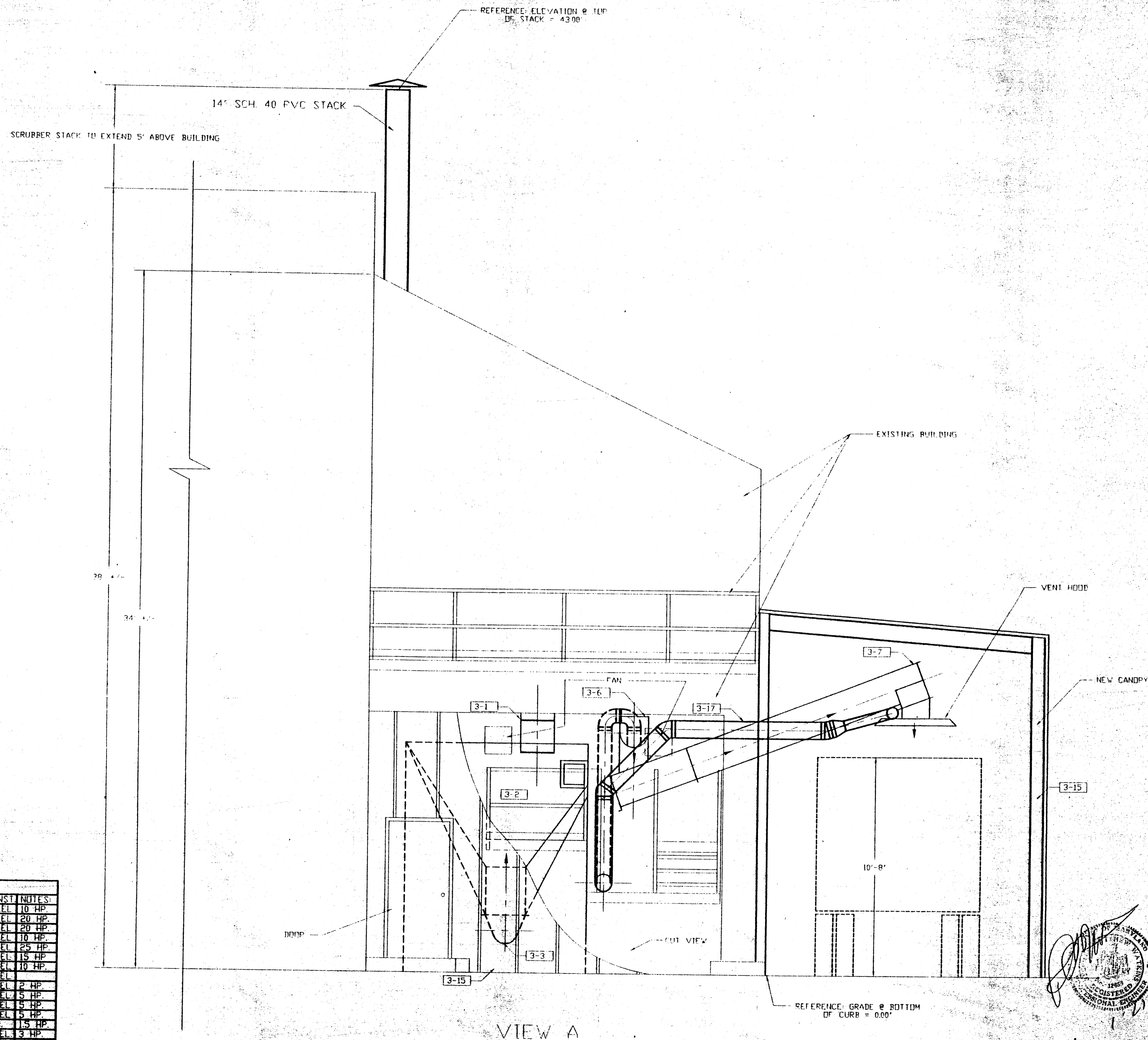
Messick & Gray
 U.S. & Inc. 1992 Baltimore, MD 21208
 410-527-9777 Fax 410-527-9424

FOR **BIO GRO SYSTEMS, INC.**
BIO-FIX CHEMICAL STABILIZATION FACILITY

DRAWN BY: WKO SIGNATURE: DATE: 1/11/94
 CHECKED BY: PRD SIGNATURE: DATE: 1/11/94
 APPROV. BY: MJC SIGNATURE: DATE: 1/26/94
 APPROV. BY: DLG SIGNATURE: DATE: 1/26/94

SCALE: 3/8" = 1'-0" DWG # HOW 02

LITTLE PATUXENT / WWTP FACILITY HOWARD CO., MD.
VIEW B



EQUIPMENT LIST

ITEM	DESCRIPTION	QTY	MAT'L - CONST	NOTES
3-1	RECEIVING CONVEYOR - 14" DIA X 36' LONG	1	CARBON STEEL	10 HP
3-2	RECEIVING HOPPER 10 TON CAPACITY (APPROX)	1	CARBON STEEL	20 HP
3-3	RECEIVING HOPPER DISCHARGE CONVEYOR - 14" DIA X 24' LONG	1	CARBON STEEL	20 HP
3-4	BLENDER FEED CONVEYOR - 14" DIA X 22' LONG	1	CARBON STEEL	10 HP
3-5	BLENDING BLENDER MODEL D-3000	1	CARBON STEEL	25 HP
3-6	BLENDER DISCHARGE CONVEYOR - 16" DIA X 42' LONG	1	CARBON STEEL	15 HP
3-7	LOAD-OUT SCREW CONVEYOR - 16" DIA X 16' LONG	1	CARBON STEEL	10 HP
3-8A	SILD 10 FT. DIA 50 TON CAPACITY	1	CARBON STEEL	
3-8B	SILD FILTER AND FAN	1	CARBON STEEL	2 HP
3-8H	AIR COMPRESSOR	1	CARBON STEEL	5 HP
3-9	LIME SILD DISCHARGE CONVEYOR - 9" DIA X 22' LONG	1	CARBON STEEL	5 HP
3-9A	BLENDER LIME FEED CONVEYOR - 9" DIA X 8' LONG	1	CARBON STEEL	5 HP
3-10	10" ROLLER	1	C.S. / S.S.	1.5 HP
3-11	35" DIA. BIN ACTIVATOR	1	CARBON STEEL	3 HP
3-12	DRIVE THROUGH TRUCK CANOPY	1	CARBON STEEL	
3-13	DAVIS PROCESS SCRUBBER	1	HDXL PL / C.S.	10 HP
3-14	HCL & CONTROL ROOM	1		60 AMP
3-15	BUILDING ENCLOSURE	1	CARBON STEEL	
3-16	ELECTRICAL WORK			
3-17	AIR POLLUTION CONTROL DUCTWORK		SCH. 40 PVC	

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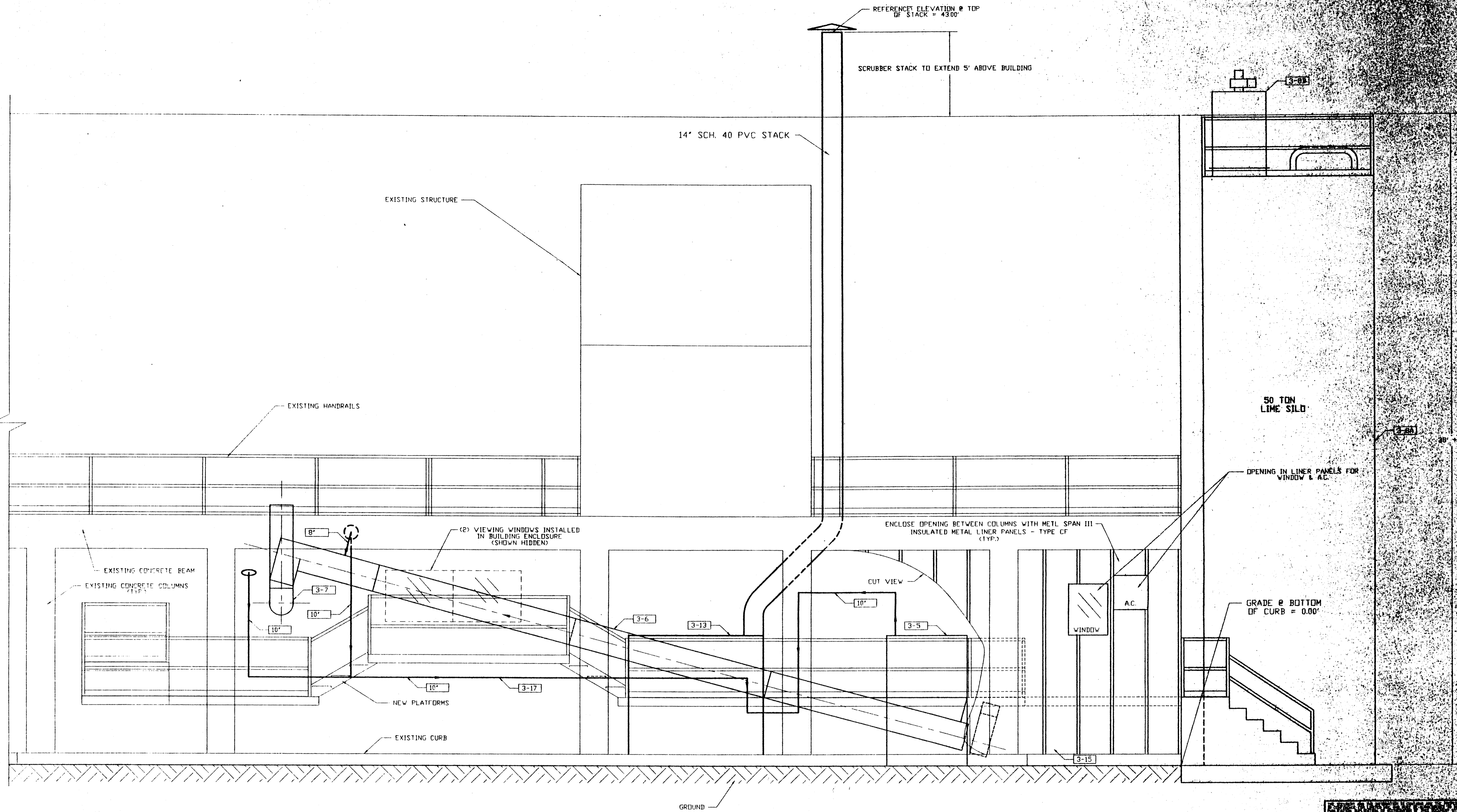
FOR **BIO GRO SYSTEMS, INC.**
BIO-FIX CHEMICAL
STABILIZATION FACILITY

DRAWN BY: WKD
 CHECKED BY: PRD
 APPR'D BY: MJC
 APPR'D BY: DFC

SCALE: 3/8" = 1'-0"

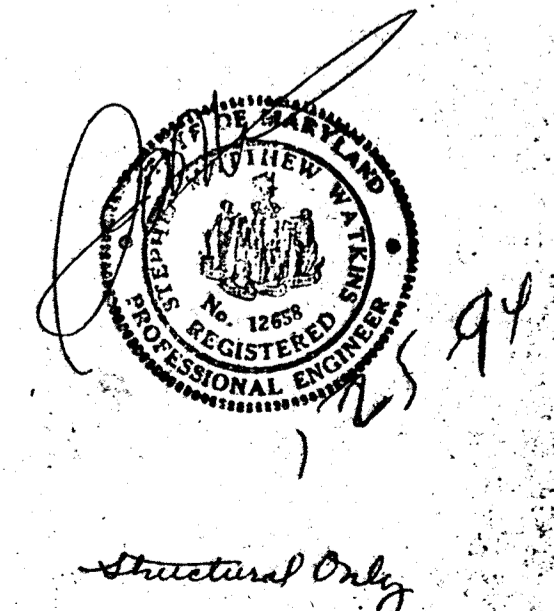
LITTLE PATUXENT / WWTP
 FACILITY HOWARD CO., MD.
 VIEW A

REV.	DATE	REVISED	CHKD. BY	APV. BY
A	1-12-94	UPDATES PER BID QRD	WKD	PRD



EQUIPMENT LIST

ITEM	DESCRIPTION	QTY.	MAT'L. - CONST.	NOTES
3-1	RECEIVING CONVEYOR - 14" DIA X 36' LONG	1	CARBON STEEL	10 HP.
3-2	RECEIVING HOPPER 10 TON CAPACITY (APROX.)	1	CARBON STEEL	20 HP.
3-3	RECEIVING HOPPER DISCHARGE CONVEYOR - 14" DIA. X 24' LONG	1	CARBON STEEL	20 HP.
3-4	BLENDER FEED CONVEYOR - 14" DIA. X 22' LONG	1	CARBON STEEL	10 HP.
3-5	LEOPOLD BLENDER MODEL D-3100	1	CARBON STEEL	25 HP.
3-6	BLENDER DISCHARGE CONVEYOR - 16" DIA. X 42' LONG	1	CARBON STEEL	15 HP.
3-7	LOAD-OUT SCREW CONVEYOR - 16" DIA. X 16' LONG	1	CARBON STEEL	10 HP.
3-8A	SILO 10 FT. DIA. 50 TON CAPACITY	1	CARBON STEEL	
3-8B	SILO FILTER AND FAN	1	CARBON STEEL	2 HP.
3-8H	AIR COMPRESSOR	1	CARBON STEEL	5 HP.
3-9.1	LIME SILO DISCHARGE CONVEYOR - 9" DIA. X 22' LONG	1	CARBON STEEL	5 HP.
3-9.2	BLENDER LIME FEED CONVEYOR - 9" DIA. X 8' LONG	1	CARBON STEEL	5 HP.
3-10	10" ROTLOCK	1	C.S. / S.S.	1.5 HP.
3-11	5" DIA. BIN ACTIVATOR	1	CARBON STEEL	3 HP.
3-12	DRIVE THROUGH TRUCK CANOPY	1	CARBON STEEL	
3-13	DAVIS PROCESS SCRUBBER	1	HDXLPE / C.S.	10 HP.
3-14	MCC & CONTROL ROOM	1		60 AMP.
3-15	BUILDING ENCLOSURE	1	CARBON STEEL	
3-16	ELECTRICAL WDRK	1		
3-17	AIR POLLUTION CONTROL DUCTWORK	1	SCH. 40 PVC.	



Structural Only

Messliok & Gray

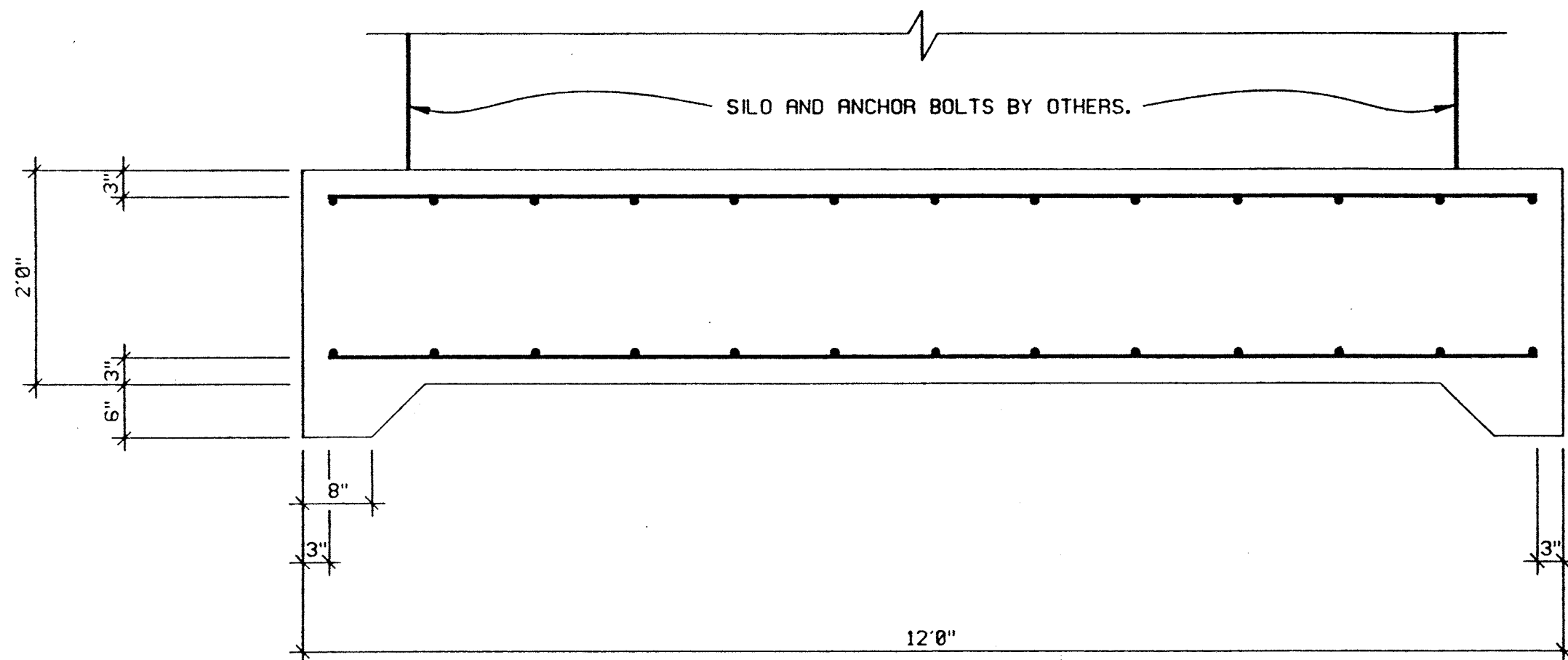
FOR **BIO GRO SYSTEMS, INC.**
BIO-FIX CHEMICAL STABILIZATION FACILITY

DRAWN BY: WJK
 CHECKED BY: [Signature]
 APPROVED BY: [Signature]

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

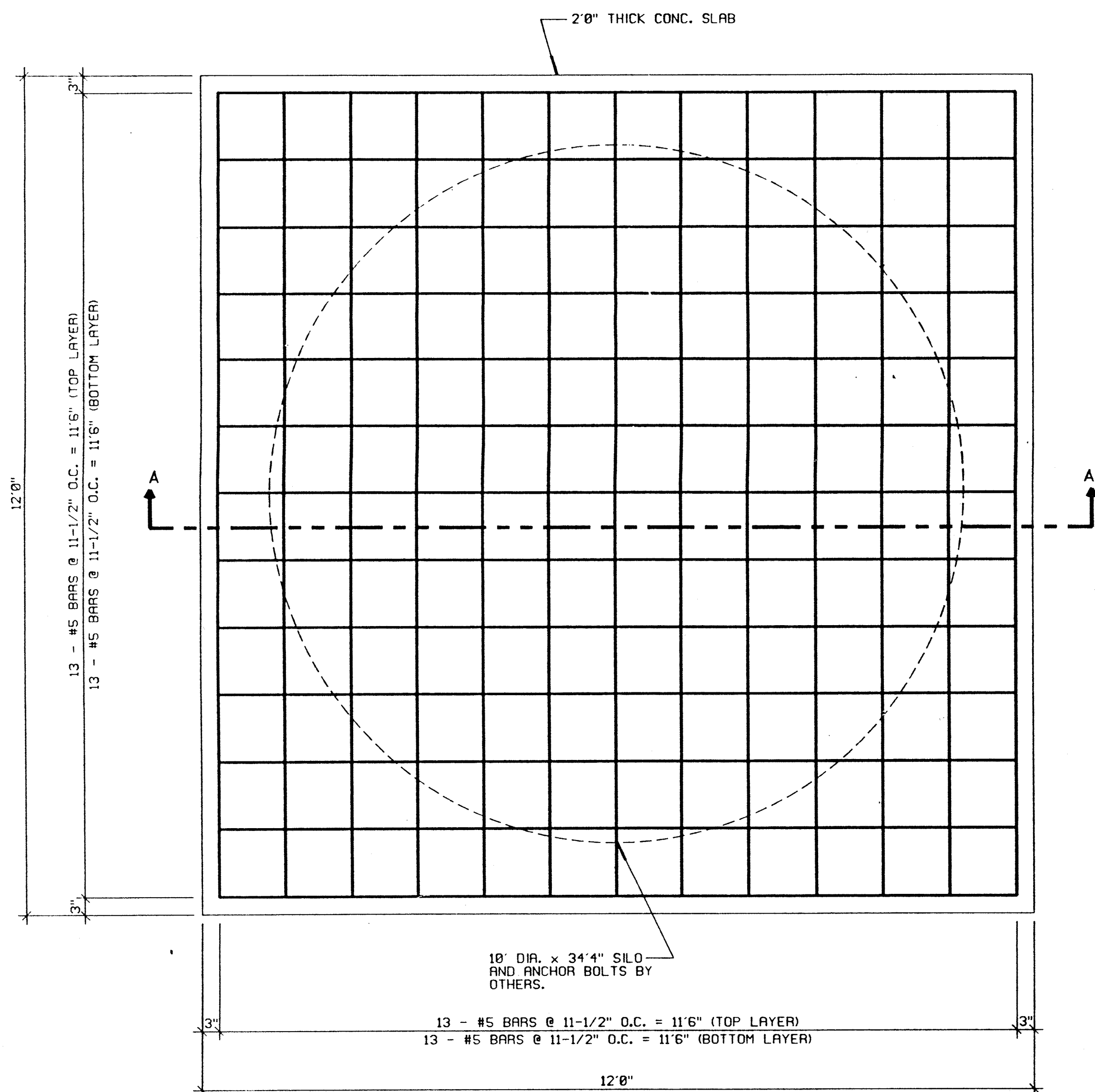
LITTLE PATOKENT / WJK FACILITY HOWARD COUNTY

REV.	DATE	DESCRIPTION	REV. BY	CHK. BY
A	1-11-94	ISSUED FOR BID	WRD	PRD
		REVISED	REV. BY	CHK. BY



SECTION 'A - A'

SCALE: 3/4"=1'0"



SILO FOUNDATION PLAN

SCALE: 3/4"=1'0"

GENERAL NOTES:

GENERAL: ALL NOTES ARE FOR SUPPLEMENTING THE GENERAL SPECIFICATION AND ARE IN NO WAY TO BE CONSIDERED AS EXCLUDING ANY ITEM THEREIN.

COORDINATION: IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE STRUCTURAL DRAWINGS AND THEIR DIMENSIONS WITH OTHER DRAWINGS AND IF A CONFLICT EXISTS HE SHALL NOT CARRY OUT THE DIRECTED WORK UNTIL THE ARCHITECT HAS RESOLVED THE CONFLICT.

CODE: DESIGN AND CONSTRUCTION TO BE IN ACCORD WITH THE BOCA CODE AND THE PARTICULAR CODES AS REFERENCED IN BOCA.

LOADS: THE STRUCTURE HAS BEEN DESIGNED FOR THE LOADS PROVIDED BY LEECH MANUFACTURING COMPANY, DRAWING NUMBER 11811-00, DATED 9/18/83 FOR A 10' DIA. X 34'4" SILO

SILO WEIGHT EMPTY	10 KIPS
PRODUCT WEIGHT	101 KIPS
WIND BASE SHEAR	5 KIPS
WIND BASE MOMENT	77 KIPS
SEISMIC BASE SHEAR (FULL)	8 KIPS
SEISMIC BASE MOMENT	147 FT-KIPS

CONSTRUCTION SAFETY: LOADS GREATER THAN THE APPLICABLE DESIGN LOADS SHALL NOT BE PLACED ON THE STRUCTURE. PROVISION SHALL BE MADE FOR ADEQUATE BRACING AND SUPPORT OF ADJACENT CONSTRUCTION, UTILITIES AND EXCAVATIONS. JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE THE RESPONSIBILITY OF THE CONTRACTOR.

FOUNDATION: EXCAVATION FOR AND BEARING MATERIAL FOR FOUNDATIONS SHOULD BE SUPERVISED AND APPROVED BY A SOILS ENGINEER, REGISTERED IN THE STATE OF MARYLAND.

THE FOOTINGS SHALL BE EXCAVATED AFTER THE BUILDING AREAS HAVE BEEN PROPERLY PREPARED.

ALL FOOTINGS SHALL BE CARRIED DOWN A MINIMUM OF ONE FOOT INTO VIRGIN SOIL OR COMPACTED FILL OR AS DIRECTED BY THE SOILS ENGINEER AND, IF EXTERIOR, SHALL BE A MINIMUM OF 2'-0" BELOW FINISHED EXTERIOR GRADE. FOOTINGS ARE DESIGNED FOR A SOIL BEARING PRESSURE OF 2,000 PSF.

WATER, LOOSE SOIL AND SOIL SOFTENED BY WATER SHALL BE REMOVED FROM THE BOTTOM OF THE FOOTING EXCAVATIONS BEFORE PLACING CONCRETE.

FOOTING EXCAVATIONS SHALL NOT BE LEFT OPEN FOR LONG PERIODS. IT IS SUGGESTED THAT THE BOTTOM OF THE FOOTING EXCAVATIONS AND TRENCHES BE PROTECTED BY UNDERCUTTING AND PLACING THREE (3) INCHES OF A LEAN-MIX CONCRETE SLAB IMMEDIATELY UPON APPROVAL AND BEFORE REINFORCING STEEL IS PLACED.

DEPTH OF EXCAVATIONS BELOW ANY FOOTINGS SHALL NOT EXCEED 1/2 THE DISTANCE FROM THE NEAREST EDGE OF THAT FOOTING.

PROVISIONS MUST BE TAKEN TO PROTECT ALL CONCRETE WORK FROM FROST DAMAGE WITH SPECIAL ATTENTION PAID TO FOOTINGS AND OTHER CONCRETE ON GRADE PRIOR TO BACKFILLING AND ENCLOSING THE BUILDING.

CARE SHOULD BE TAKEN TO ASSURE THAT DURING PLACING OF CONCRETE FOOTINGS AND SLABS ON GRADE NO ORGANIC MATTER, SALTS, OR CLAYS ARE MIXED WITH THE CONCRETE.

COMPACTION: EACH LAYER OF FILL SHALL BE COMPACTED AT OPTIMUM MOISTURE CONTENT (PLUS OR MINUS 2%) TO NOT LESS THAN 95% OF MAXIMUM DRY DENSITY.

LOWER DEGREES OF COMPACTION MAY BE PERMITTED BY THE BUILDING OFFICIAL AFTER RECEIPT OF A REPORT FROM THE SOILS ENGINEER CERTIFYING THAT HE HAS INVESTIGATED THE SUBSOIL OF THE SITE, HAS TESTED REPRESENTATIVE FILL MATERIALS AND THAT IN HIS OPINION SUCH LOWER DEGREE OF COMPACTION WILL BE ADEQUATE FOR THE INTENDED USE OF THE FILL.

IN-PLACE FIELD DENSITY SHALL BE DETERMINED IN ACCORDANCE WITH AASHTO T-180.

ALL FILLS SHALL BE PLACED IN APPROXIMATELY HORIZONTAL LAYERS, EACH LAYER HAVING A LOOSE THICKNESS OF NOT MORE THAN 8 INCHES.

NO FILL SHALL BE PLACED ON FROZEN GROUND.

CONCRETE: TO BE MIXED AND PLACED IN ACCORDANCE WITH THE CURRENT "AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". A COPY OF THIS CODE SHALL BE AVAILABLE ON THE PROJECT AT ALL TIMES.

ALL REINFORCED CONCRETE TO HAVE A COMPRESSIVE STRENGTH (f'c) OF 3,000 PSI, UNLESS OTHERWISE NOTED.

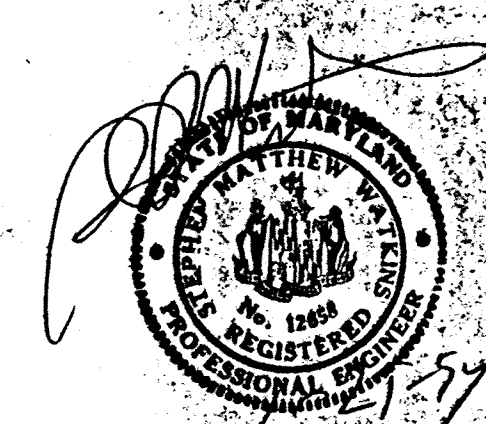
CONCRETE CYLINDER TESTS SHALL BE MADE BY AN INDEPENDENT QUALIFIED TESTING AGENCY, TO BE RETAINED AND PAID FOR BY THE OWNER, IN ACCORDANCE WITH ASTM SPECIFICATION FOR "COMPRESSION TESTS OF CONCRETE". A MINIMUM OF 4 TEST CYLINDERS SHALL BE MADE FOR EACH 50 CUBIC YARDS, OR FRACTION THEREOF, OF CONCRETE PLACED: TWO TESTED AT SEVEN DAYS AND TWO TESTED AT TWENTY-EIGHT DAYS. THE TESTING AGENCY SHALL BE RESPONSIBLE FOR OBTAINING SAMPLES AND FOR STORAGE.

ALL CONTINUOUS REINFORCING SHALL BE CONTINUOUS OR LAPPED AT ALL SPLICES, CORNERS AND INTERSECTIONS A MINIMUM OF 30 BAR DIAMETERS (U.N.O.).

PROVIDE SPACERS, CHAIRS, TIES AS REQUIRED AND NECESSARY FOR ASSEMBLING, PLACING AND SUPPORTING ALL REINFORCEMENT IN PROPER POSITION. CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE AS GIVEN IN ACI-318.

REINFORCING STEEL: SHALL CONFORM TO ASTM SPECIFICATION A615, GRADE 60 FOR BARS.

FABRICATION, INCLUDING ACCESSORIES, ALLOWANCE FOR CONCRETE PROTECTION AND MINIMUM AREA OF STEEL REQUIRED, TO BE IN ACCORDANCE WITH THE ACI BUILDING CODE AND MANUAL OF STANDARD PRACTICE.



PROJECT/LOCATION			
SILO FOUNDATION			
MESSICK & GRAY SAVAGE, MARYLAND			
DRAWING:			
FOUNDATION PLAN, SECTIONS & NOTES			
SCALE:	DATE:	DESIGNED BY:	DRAWN BY:
AS NOTED	10/14/83	P. BICHEL	B. SHERWOOD
		2832 Mitchellville Road Suite 202 Annapolis, Maryland 21403 (410) 741-1791 (301) 249-0974 WASH. (301) 249-0974 FAX (301) 249-0976	
PROJECT #:		93173	

S-1