

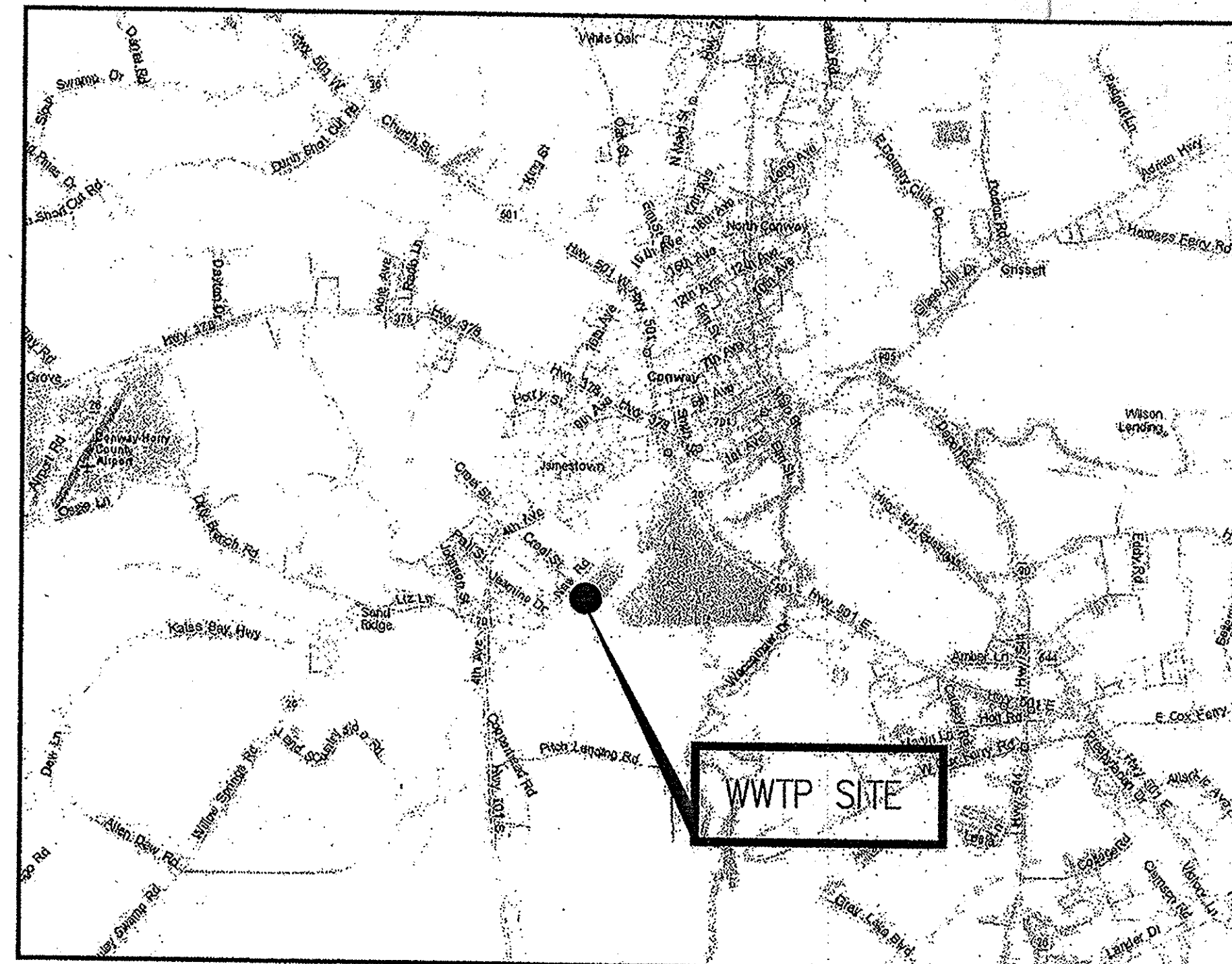
GRAND STRAND WATER AND SEWER AUTHORITY

CONWAY WWTP

4.0 MGD EXPANSION AND UPGRADE

GSWSA PROJECT NO 8 39-01
SRF PROJECT NO 381-59

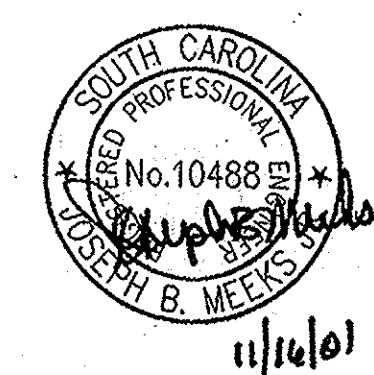
CONTRACT 1 - GENERAL CONSTRUCTION
AUGUST 2001



LOCATION MAP



HAZEN AND SAWYER
Environmental Engineers & Scientists

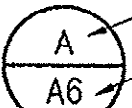
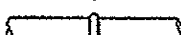
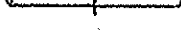
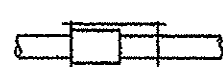
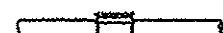


AS BUILT
5/16/03
35-009-001

ISSUED FOR CONSTRUCTION
BY JBW DATE 11/16/01

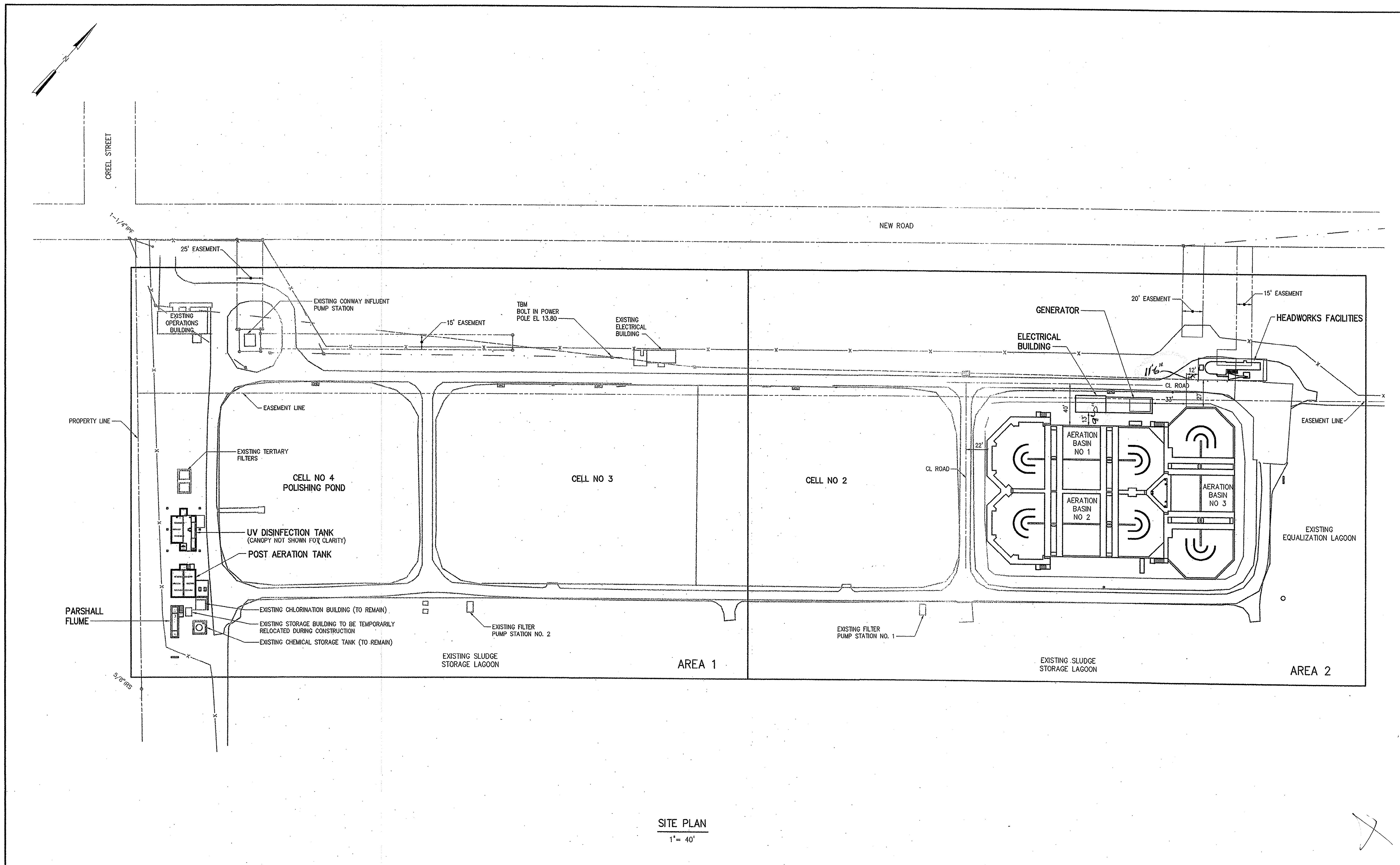
INDEX OF DRAWINGS

A	AIR
BW	BACKWASH
CD	CHEMICAL DRAIN
CEN	CENTRATE
CLS	CHLORINE SOLUTION
CW	CITY WATER
D	DRAIN
DG	DIGESTER GAS
DP	DRY POLYMER
DS	DIGESTED SLUDGE
FD	FLOOR DRAIN
FE	FINAL EFFLUENT
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
HOCL	SODIUM HYPOCHLORITE
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
ICR	INTERCOOLER RETURN
ICS	INTERCOOLER SUPPLY
IR	IRRIGATION
JWR	JACKET WATER RETURN
JWS	JACKET WATER SUPPLY
LPL	LIQUID POLYMER
ML	MIXED LIQUOR
MLW	MIXED LIQUOR WASTE
NPW	NON-POTABLE WATER
PCE	PRIMARY CLARIFIER EFFLUENT
PD	PROCESS DRAIN
PI	PLANT INFLUENT
PLS	POLYMER SOLUTION
PS	PRIMARY SLUDGE
PT	PRELIMINARY TREATMENT
PTE	PRELIMINARY TREATMENT EFFLUENT
PW	POTABLE WATER
RAS	RETURN ACTIVATED SLUDGE
RD	ROOF DRAIN
RS	RAW SEWAGE
S	SAMPLE
SA	SERVICE AIR
SBS	STRAINER BACKWASH DISCHARGE
SDS	SODIUM BISULFITE
SC	SCUM
SCE	SECONDARY CLARIFIER EFFLUENT
SD	STORM DRAIN
SL	SLUDGE
SPD	SUMP PUMP DISCHARGE
SS	SANITARY SEWER
SW	SEAL WATER
TW	THICKENER MAKE-UP WATER
THO	THICKENER OVERFLOW
THS	THICKENED SLUDGE
V	VENT
WAS	WASTE ACTIVATED SLUDGE
W1	POTABLE WATER
W2	POTABLE WATER WITH BACKFLOW PREVENTER
W3	NON POTABLE WATER

SYMBOLS		LEGEND		SECTION AND DETAIL KEYING		LINETYPES	
	GATE VALVE		WALL PENETRATION	DRAWINGS ARE CROSS REFERENCED IN THE FOLLOWING METHOD: (A) A SECTION CUT ON DRAWING A3 IS IDENTIFIED AS FOLLOWS:  SECTION LETTER DRAWING WHERE SECTION IS SHOWN (B) THE SECTION SHOWN ON DRAWING A6 IS IDENTIFIED AS FOLLOWS:  SECTION LETTER DRAWING FROM WHERE SECTION WAS TAKEN DETAILS ARE CROSS REFERENCED IN A SIMILAR MANNER, EXCEPT DETAILS ARE IDENTIFIED BY A SQUARE WITH A NUMBER IN THE UPPER HALF. STANDARD DETAILS ARE REFERENCED BY A UNIQUE SEVEN DIGIT NUMBER AND ARE SHOWN ON THE CONTRACT DRAWINGS BY ONE OF TWO METHODS: 1509203 → [REFERENCED ITEM] OR: SEE 1509203 → [REFERENCED ITEM] STANDARD DETAILS ARE COMPILED IN APPROXIMATE NUMERICAL ORDER IN THE BACK OF THE CONTRACT DRAWINGS ON THE D+ DRAWINGS.			PROPOSED ITEMS
	BUTTERFLY VALVE		MECHANICAL COUPLING				EXISTING ITEMS
	PLUG VALVE		WELDED JOINT		HIDDEN ITEMS		
	SWING CHECK VALVE		FLANGED JOINT		DEMOLITION ITEMS		
	GLOBE VALVE		MECHANICAL, PUSH ON OR RESTRAINED JOINT		CENTER LINE		
	PINCH VALVE		SLUICE GATE		MATCH LINE		
	DIAPHRAGM VALVE		SLIDE GATE/STOP GATE		SILT FENCE		
	BALL VALVE		FLUSHING CONNECTION				
	BALL CHECK VALVE		HOSE BIBB				
	HARNESSED FLANGED ADAPTER		QUICK DISCONNECT FITTING				
	HARNESSED SLEEVE TYPE COUPLING		YARD HYDRANT				
	SLEEVE TYPE COUPLING		FIRE HYDRANT				
	HARNESSED FLEXIBLE COUPLING		SOIL BORING				

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001	
	H & S JOB NUMBER 30631	
	CONTRACT NUMBER 1	DRAWING NUMBER X1
	H&S FLAT FILE NO. 56	

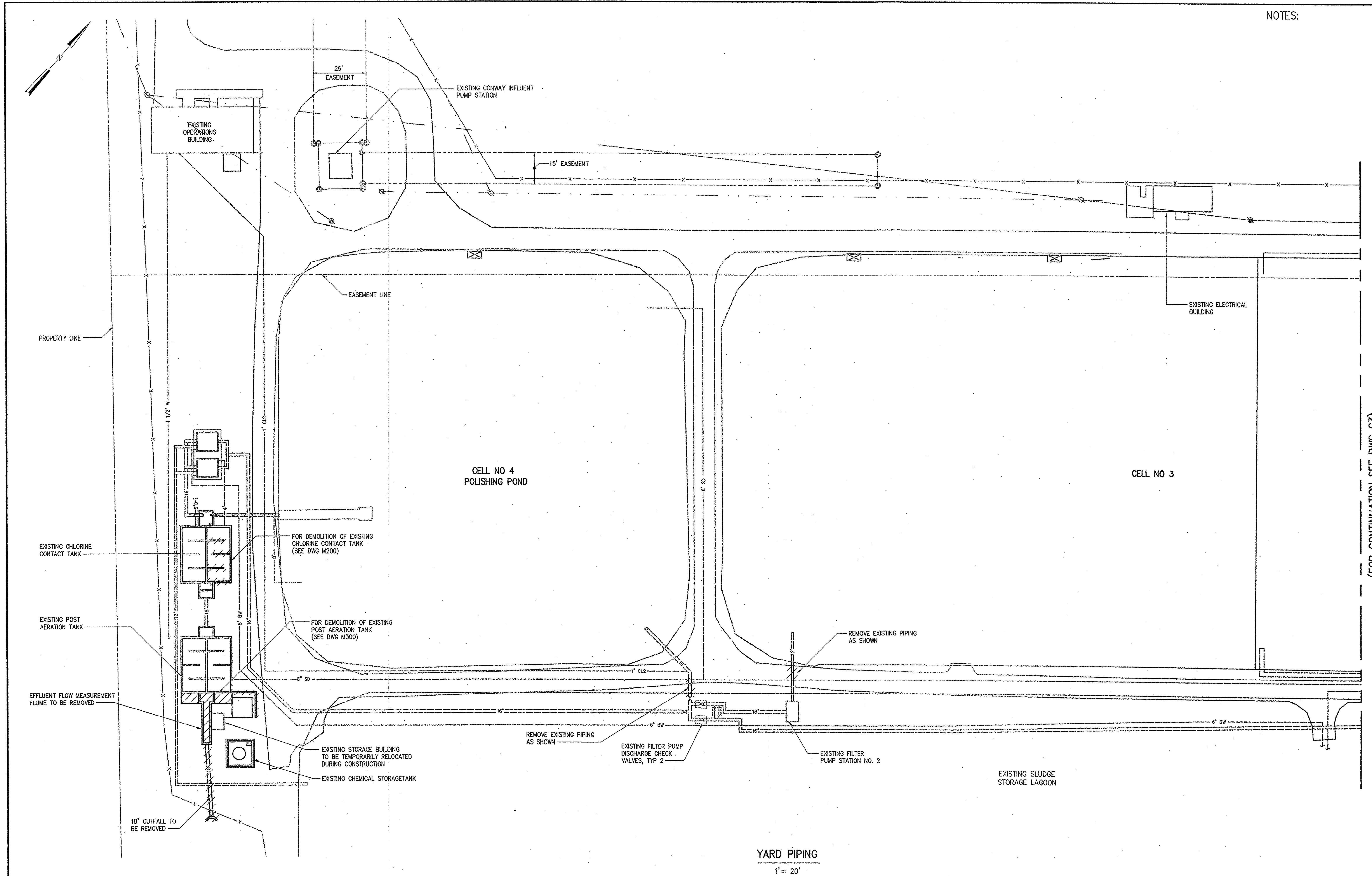
35-009-002



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35-001-003

NOTES:



YARD PIPING
1" = 20'

(FOR CONTINUATION SEE DWG G3)

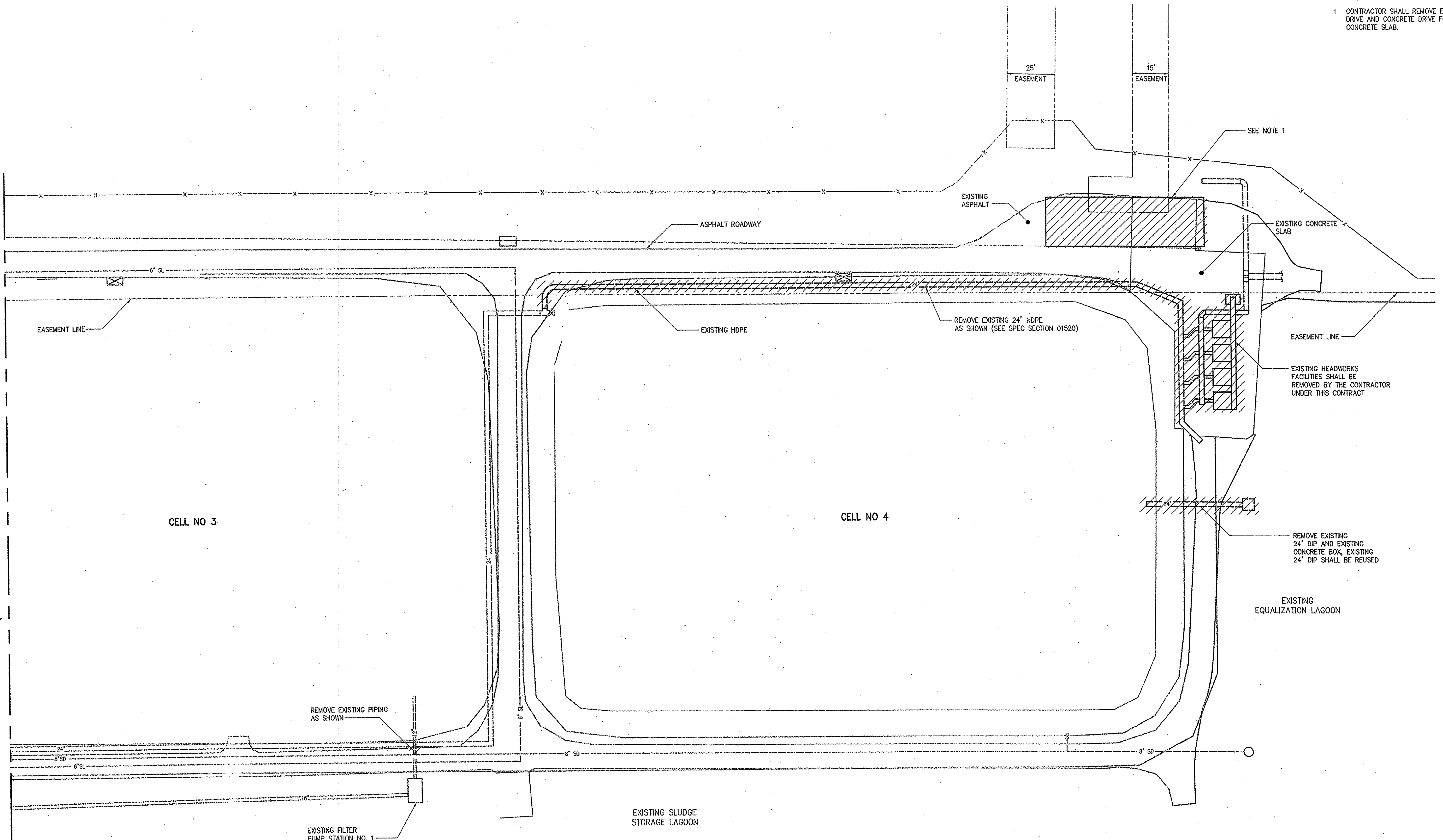
2 CONSTRUCTION 8-31-01 11/16/01 BY 11/16/01 NO.	DESIGNED JBM DRAWN JTB CHECKED JBM PROJ. ENGR. JBM APPROVED [Signature]	SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 10488 RONALD L. TAYLOR 11/16/01 SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 10488 JOSEPH B. MEANS 11/16/01	HAZEN AND SAWYER Environmental Engineers & Scientists 4011 WestChase Blvd., Raleigh, North Carolina 27607	GRAND STRAND WATER AND SEWER AUTHORITY SOUTH CAROLINA CONWAY WWTP 4.0 MGD EXPANSION AND UPGRADE	SITE WORK GENERAL AREA 1 DEMOLITION PLAN	THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING. DATE AUGUST 2001 H & S JOB NUMBER 30631 CONTRACT NUMBER 1 DRAWING NUMBER G2 H&S FLAT FILE NO. 56
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35-004-004

NOTES:

1. CONTRACTOR SHALL REMOVE EXISTING ASPHALT DRIVE AND CONCRETE DRIVE FOR THE HEADWORKS CONCRETE SLAB.

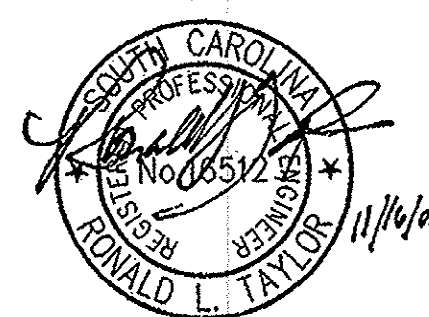
(FOR CONTINUATION SEE DWG G2)



YARD PIPING

1" = 20'

DESIGNED	JBM
DRAWN	JTB
CHECKED	JBM
PROJ. ENGR.	JBM
DATE	11/16/01
BY	JBM
APPROVED	[Signature]



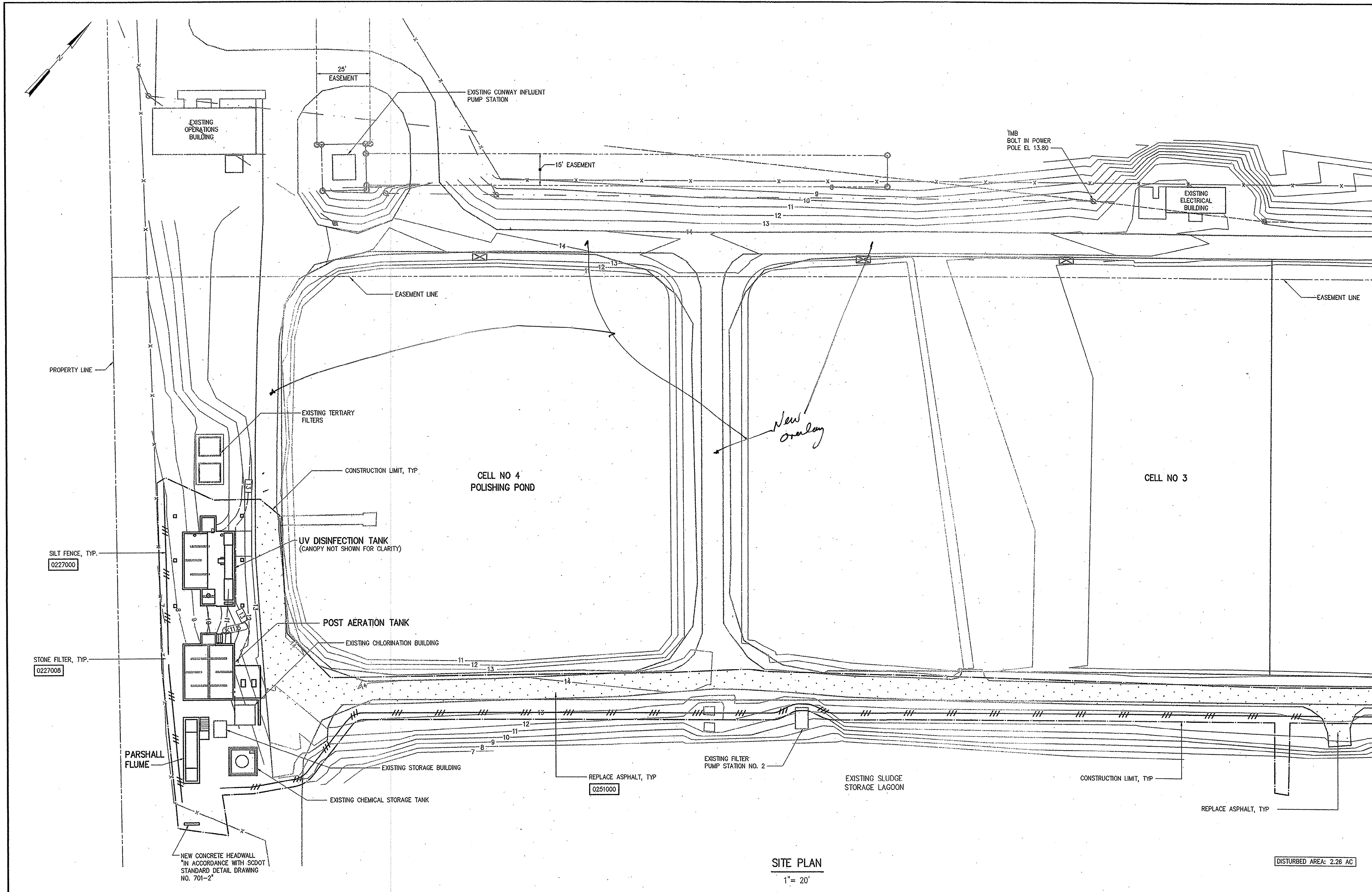
Hazen and Sawyer
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

SITE WORK
GENERAL
AREA 2
DEMOLITION PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	G3
	H&S FLAT FILE NO.	56

35-004-005



SITE PLAN
1" = 20'

DISTURBED AREA: 2.26 AC

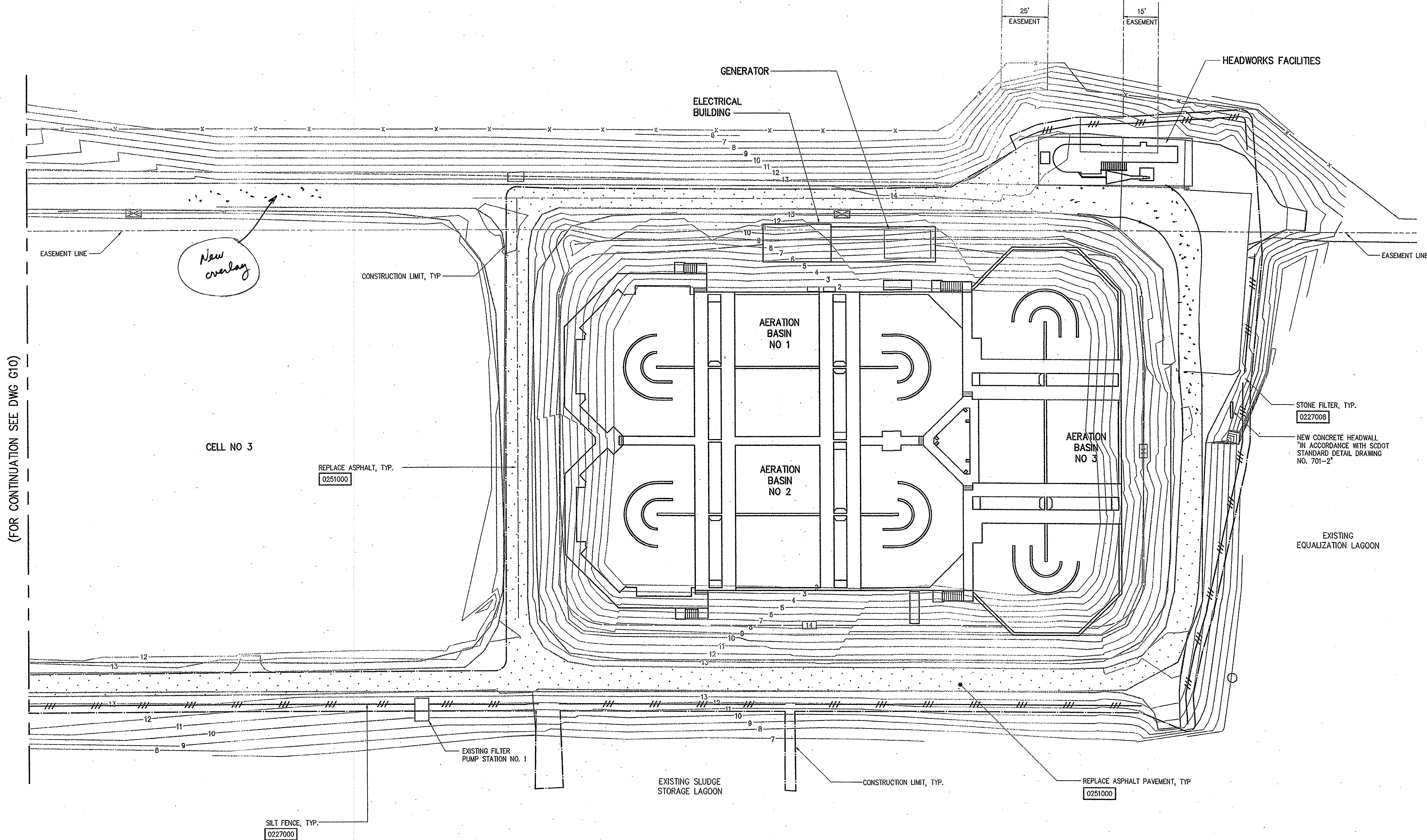
(FOR CONTINUATION SEE DWG G11)

2 CONSTRUCTION 11/16/01 8-31-01 DATE BY 11/16/01 DATE BY 11/16/01 DATE BY	DESIGNED JTC DRAWN JTC CHECKED JBM PROJ. ENGR. JBM APPROVED [Signature]	SEAL SEAL	HAZEN AND SAWYER Environmental Engineers & Scientists 4011 WestChase Blvd, Raleigh, North Carolina 27607	GRAND STRAND WATER AND SEWER AUTHORITY SOUTH CAROLINA CONWAY WWTP 4.0 MGD EXPANSION AND UPGRADE	SITE WORK GENERAL AREA 1 GRADING AND EROSION CONTROL	THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING. DATE AUGUST 2001 H & S JOB NUMBER 30631 CONTRACT NUMBER 1 DRAWING NUMBER G10 H&S FLAT FILE NO. 56
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35-004-008

NOTES:

- 1 ALL AREAS SHALL BE GRADED SO AS TO ENSURE POSITIVE DRAINAGE OF STORMWATER RUNOFF. AREAS SHOWING PONDING OF STORMWATER SHALL BE RE-GRADED TO DRAIN PROPERLY.



SITE PLAN

1" = 20'

DISTURBED AREA: 2.26 AC

DESIGNED	JTC
DRAWN	JTC
CHECKED	JBM
PROJ. ENGR.	JBM
APPROVED	PA
DATE	11/16/01
BY	JBM
ISSUED FOR	CONSTRUCTION
NO.	1



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

SITE WORK
GENERAL
AREA 2
GRADING AND EROSION CONTROL

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	G11
	H&S FLAT FILE NO.	56

This profile view illustrates the vertical flow of wastewater through various treatment stages. The process begins with raw influent entering at a 24-inch dip, passing through a mechanical bar screen and an influent Parshall flume. The water then moves to a grit classifier before entering a brush aeration tank equipped with a rotor. Following aeration, the water passes through a 30-inch dip with a 0.058% slope and a new 16-inch pressure valve (PV) into an existing 16-inch stand pipe. The final stage is UV disinfection, which includes an 8-inch dip and a 16-inch dip. The profile also shows the location of filter influent pump stations 1 and 2. Elevation markers are provided throughout the system, ranging from 5.67 feet to 25.50 feet.

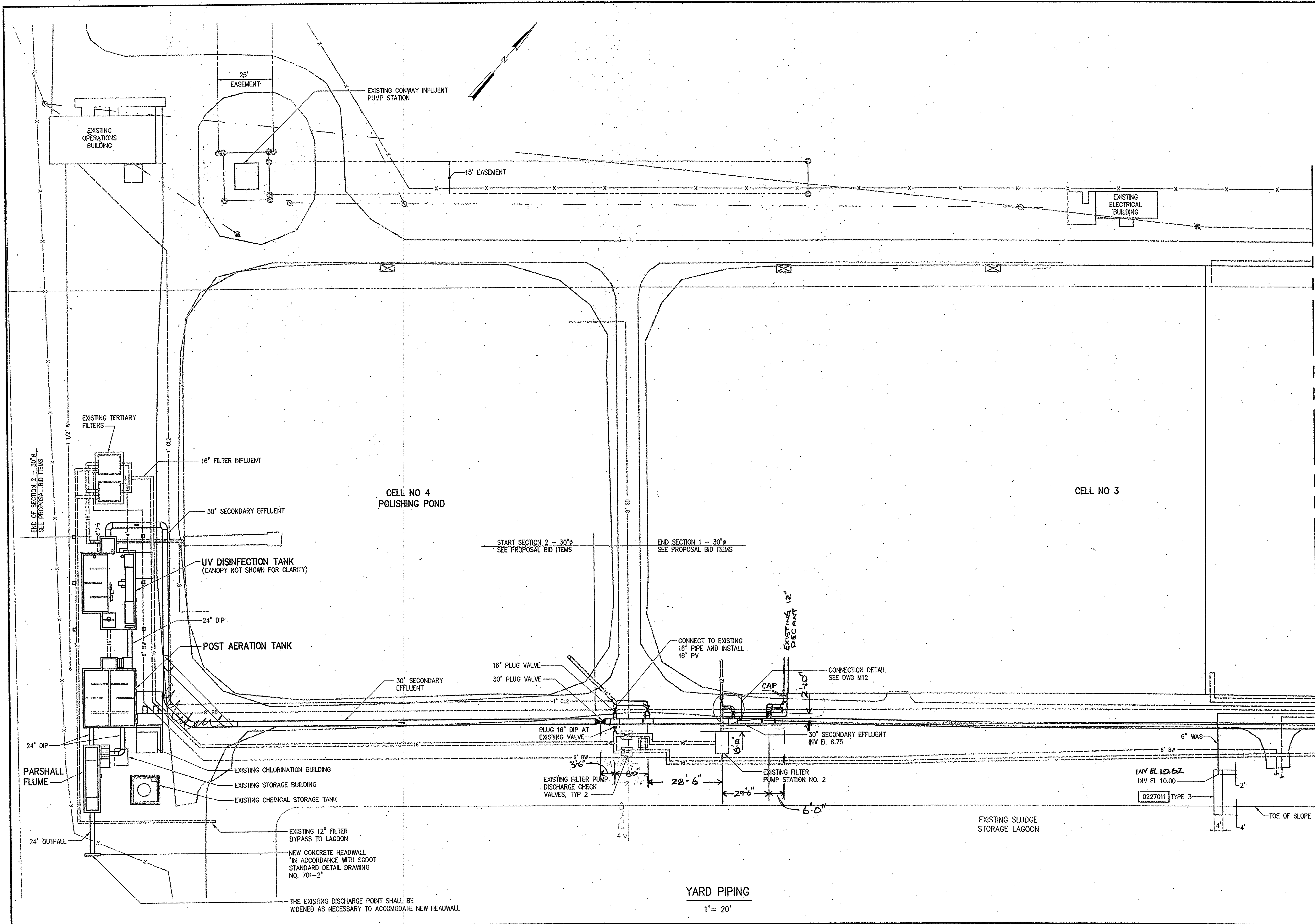
Location / Feature	Elevation (ft)
EL 25.50	25.50
MECHANICAL BAR SCREEN	25.50
INFLUENT PARSHALL FLUME	21.25
TOP OF WEIR	20.56
GRIT CLASSIFIER	18.75
EL 24.25	24.25
BRUSH AERATOR	19.92
TOP OF AERATOR BRIDGE	19.92
EL 21.34	21.34
EL 16.42	16.42
EL 14.75	14.75
CL OF ROTOR	17.58
EL 18.17	18.17
EL 15.75	15.75
EL 14.00	14.00
EL 8.00	8.00
EL 5.67	5.67
INV EL 6.75	6.75
EL 0.50 - 1.00	0.50 - 1.00
TOP OF BERM	13.50

FLOYD FLOOD EL 11.43
 100 YEAR FLOOD EL 10.00
 EXISTING OUTFALL INV EL 4.7±

2" WIDE MANUAL GATE INV EL 6.55
 EXISTING 2"x4"-6" OPENING
 EXISTING 16" DIP EFFLUENT LINE IN FROM FILTERS (REF. PROFILE A FOR HYDRAULICS THROUGH FILTER)
 EXISTING 8" DIP FROM POLISHING POND
 30" DIP INV 5.75 LINE FROM OXIDATION DITCHES
 EXISTING 16" DIP FROM POLISHING POND INV EL 2.55
 INV 6.55
 EL 4.50
 TOP OF WEIR EL 9.00
 24" X24" SLUICE GATE
 24" DIP
 INV EL 4.50
 EL 2.55
 EL 1.58
 24" DIP
 INV 4.00
 24" X24" SLUICE GATE
 EL 7.50
 EL 6.25
 TOP OF HEADWALL EL 6.00
 24" DIP
 EL 2.00
 INV EL 3.00
 INV EL 3.00

INV EL 19.50
 EL 21.33
 14" DIP INV EL 14.00
 16" DIP TO UV DISINFECTION FACILITY
 INV EL 17.25
 16" DIP FROM FILTER INFLUENT PUMP STATIONS

10/30/01 1:51pm FILE=H:\30631\MECH\MOO by ECPLANTER XREF=00\Y10-PRO, MISC\30631-TB



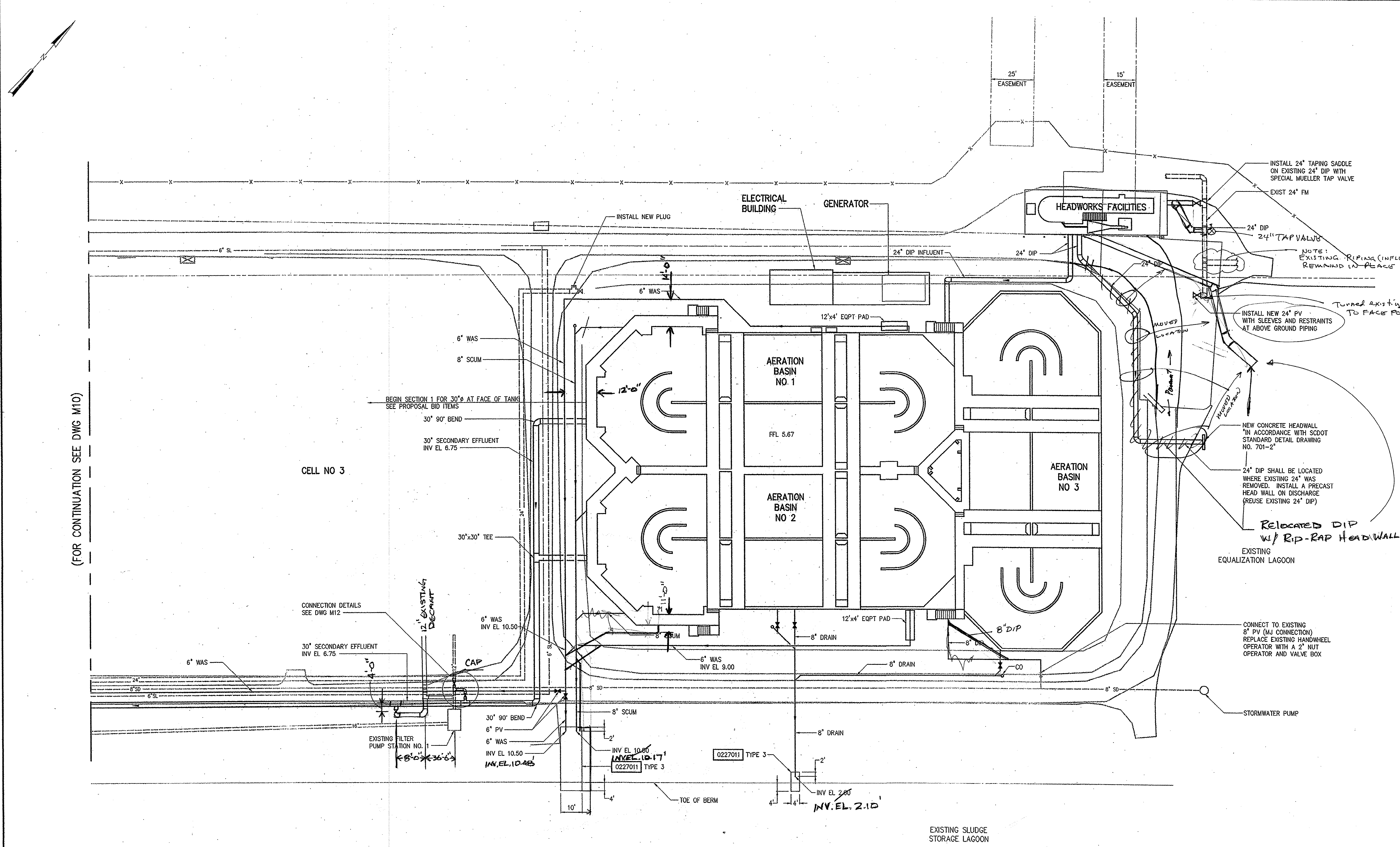
- NOTES:
1. CONNECT TO EXISTING PIPING BY REMOVING EXISTING PIPE TO NEAREST JOINT, AND INSTALLING NEW PIPE, FITTINGS AND VALVE AS INDICATED. CONNECTIONS SHALL BE RESTRAINED. CONNECT 1509221 MAY BE USED IN THESE LOCATIONS ONLY.
 2. EXISTING PIPING SHOWN IN APPROXIMATE LOCATIONS ONLY. ADDITIONAL PIPING NOT SHOWN MAY BE ENCOUNTERED. THE CONTRACTOR SHALL EXCAVATE TEST PITS IN ADVANCE OF ORDERING PIPE MATERIALS IN AREAS WHERE PROPOSED PIPING IS INDICATED TO CROSS OR CONNECT TO EXISTING PIPING. THE CONTRACTOR SHALL LOCATE BOTH HORIZONTALLY AND VERTICALLY ALL PIPING AND REPORT ANY CONFLICTS WITH PROPOSED PIPE LOCATION(S) TO THE ENGINEER AND SUBMIT FOR REVIEW HIS/HER RECOMMENDED ROUTING TO AVOID SUCH FACILITIES. BENDS NECESSARY TO OBTAIN THE ELEVATIONS INDICATED ON THE CONTRACT DRAWINGS OR TO AVOID EXISTING STRUCTURES OR PIPING SHALL BE PROVIDED BY THE CONTRACTOR.
 3. ALL BURIED (EXTERIOR) VALVES SHALL INCLUDE A ADJUSTABLE VALVE BOX AND COVER AND SHALL BE OPERATED BY A 2" SQUARE NUT OPERATOR, SEE 0264000. ADDITIONALLY ALL VALVES INSTALLED AT A DEPTH GREATER THAN 5 FEET SHALL HAVE A NUT EXTENSION INSTALLED TO 2 FEET OF FINISH GRADE. PERMANENTLY ATTACH VALVE RISER STEMS FOR ALL VALVES DEEPER THAN 5 FEET IN ACCORDANCE WITH GSWA SPECIFICATIONS.
 4. MINIMUM VERTICAL CLEARANCE BETWEEN TWO CROSSING PIPES SHALL BE 1'-0". IF CLEARANCE MUST BE LESS THAN 1'-0" CONCRETE SHALL BE PLACED AROUND PIPES AS DIRECTED BY THE ENGINEER.
 5. PROVIDE 3'-0" MINIMUM COVER ON ALL PIPES UNLESS OTHERWISE INDICATED.
 6. THE CONTRACTOR SHALL LOCATE ALL EXISTING ELECTRICAL CONDUITS AND DUCT BANKS AND COORDINATE THE LOCATIONS OF NEW CONDUITS AND DUCT BANKS WITH THE EXISTING AND WITH EXISTING AND NEW PIPING.

(FOR CONTINUATION SEE DWG M11)

YARD PIPING
1" = 20'

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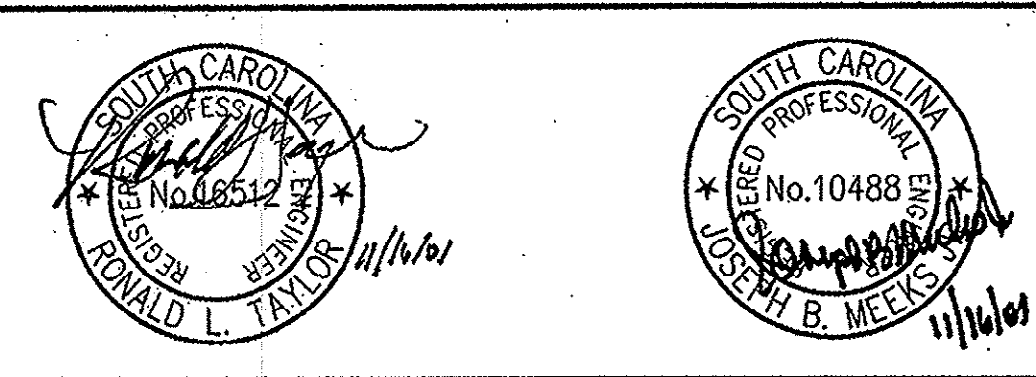
35-001-001



(FOR CONTINUATION SEE DWG M10)

YARD PIPING
1" = 20'

DESIGNED	JBM
DRAWN	JTB
CHECKED	JBM
PROJ. ENGR.	JBM
DATE	11/16/01
BY	JBM
APPROVED	
NO.	
2	CONSTRUCTION
1	REGULATORY APPROVAL
NO.	ISSUED FOR



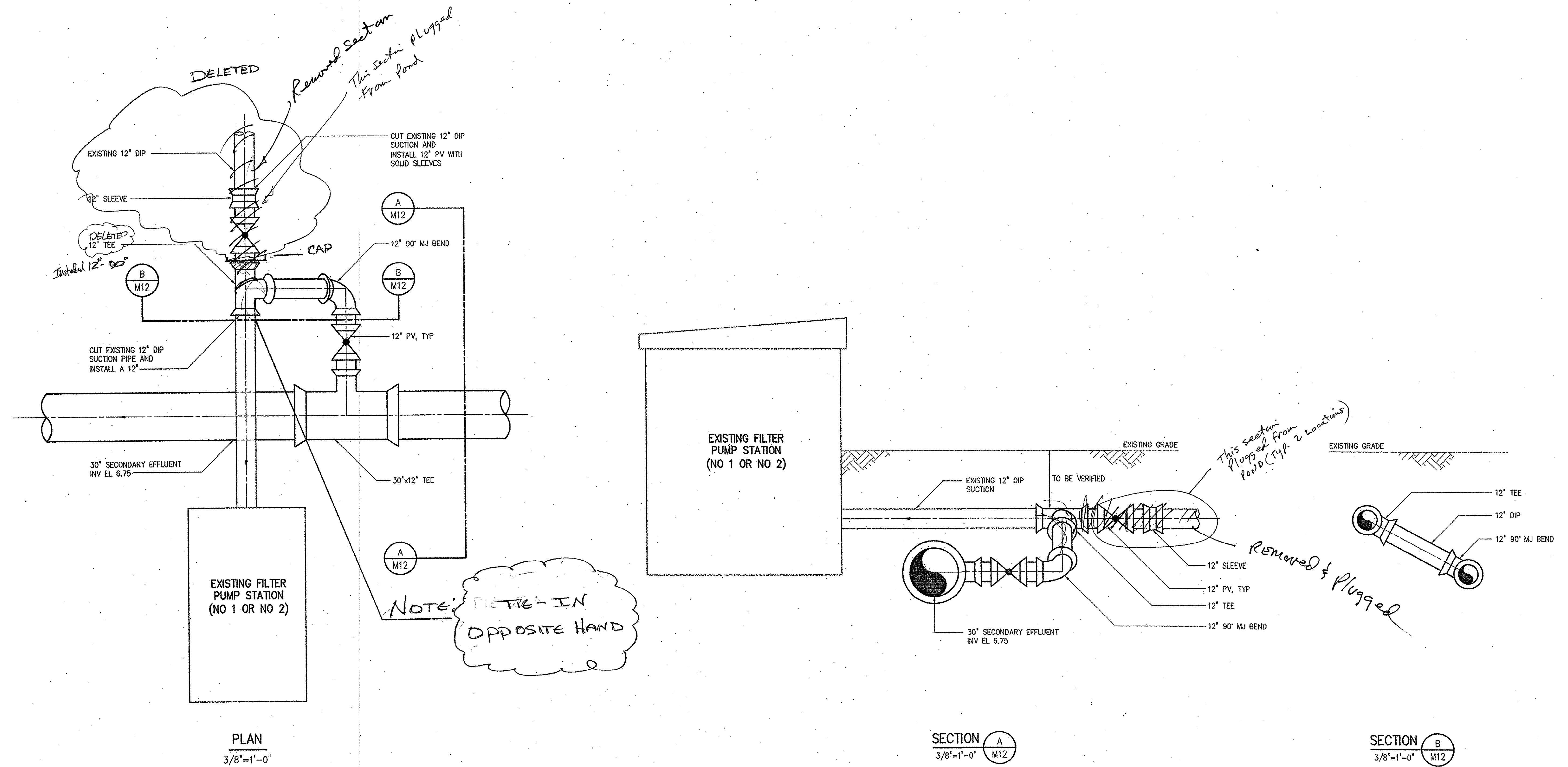
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

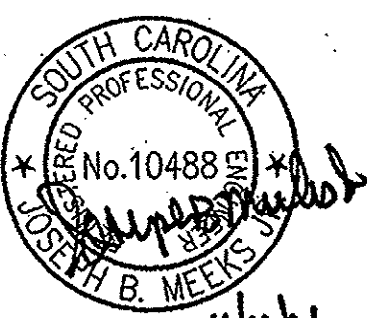
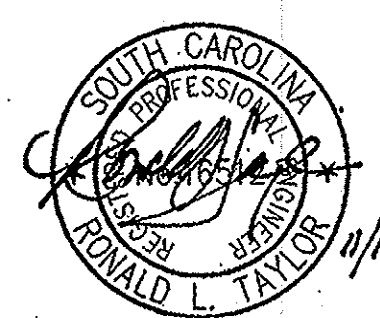
SITE WORK
MECHANICAL
AREA 2
YARD PIPING

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
H & S JOB NUMBER	30631	
CONTRACT NUMBER	1	DRAWING NUMBER
		M11
H&S FLAT FILE NO. 56		

35-004-010



DESIGNED	JBM
DRAWN	EWN
CHECKED	JBM
PROJ. ENGR.	JBM
APPROVED	JBM
CONSTRUCTION	11/16/01 JBM
REGULATORY APPROVAL	8-31-01 JBM
ISSUED FOR	DATE BY
NO.	



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

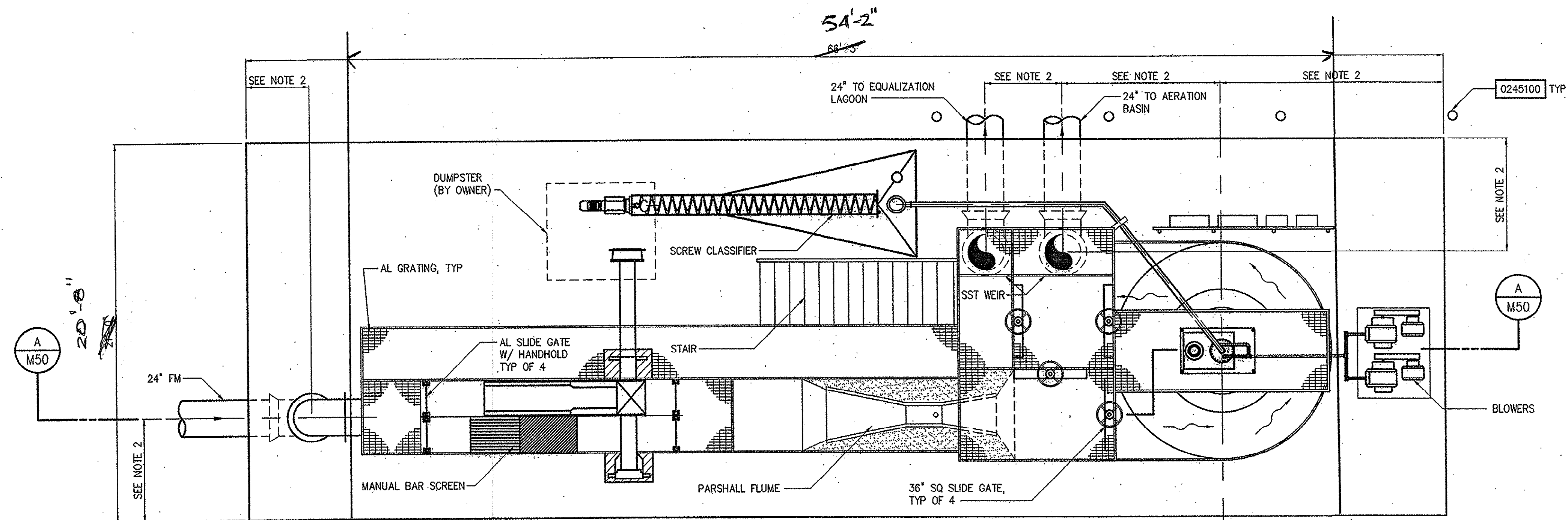
EXISTING FILTER PUMP STATION
MECHANICAL
CONNECTION DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	M12
	H&S FLAT FILE NO.	56

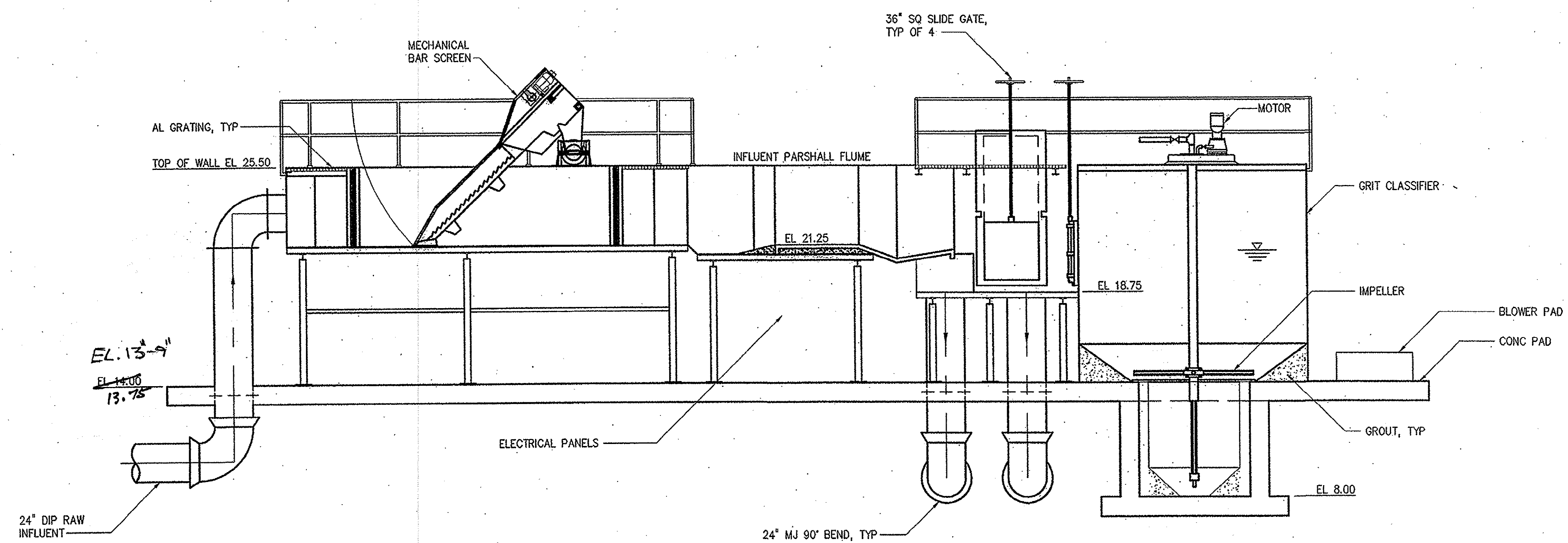
35-004-011

NOTES:

- 1 THE HEADWORK FACILITY WILL BE FURNISHED BY THE OWNER AND INSTALLED BY THE CONTRACTOR UNDER THIS CONTRACT AS INDICATED BY THE SPECIFICATION.
- 2 DIMENSION TO BE DETERMINED BY EQUIPMENT MANUFACTURER.

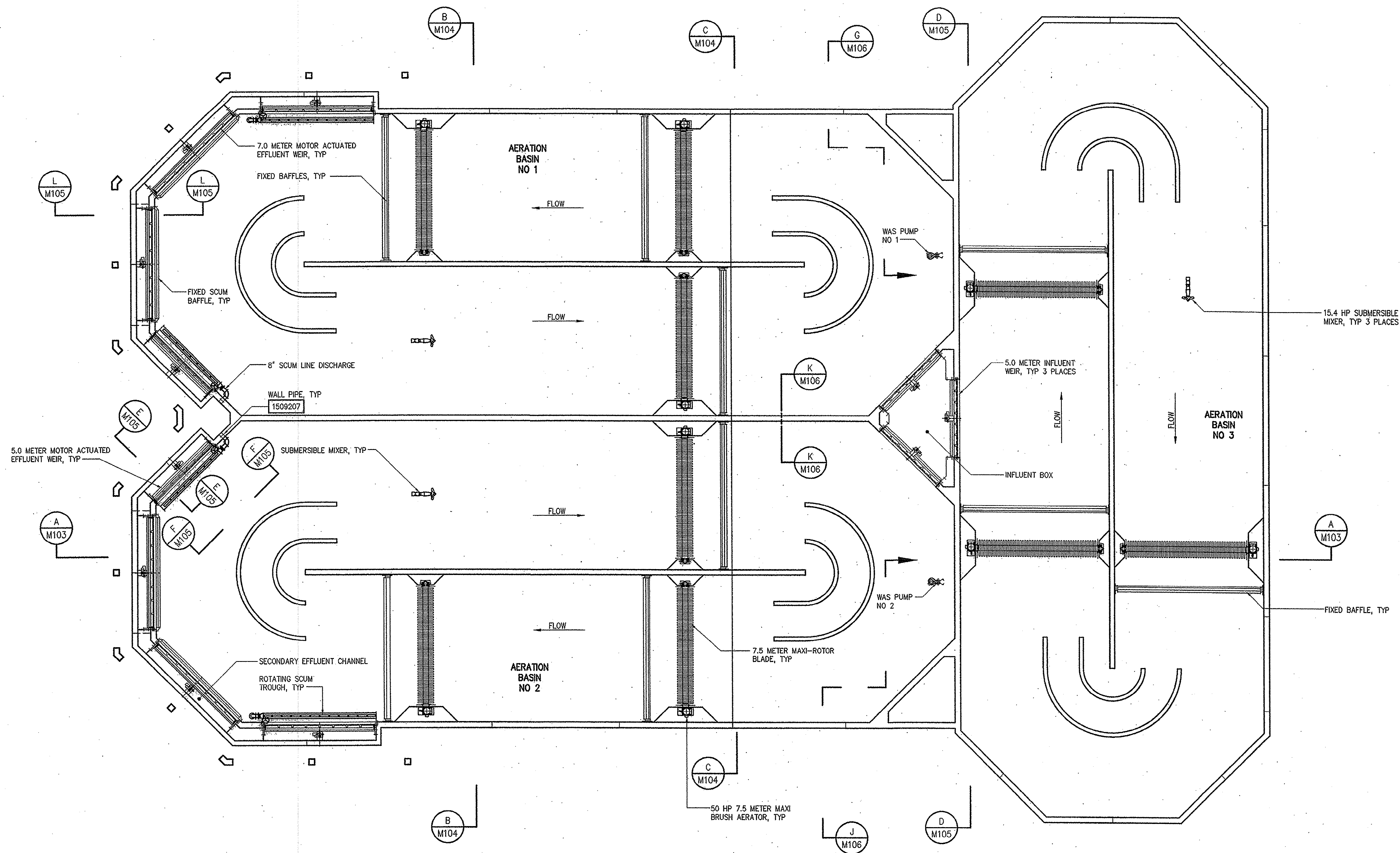


TOP PLAN
1/4"=1'-0"



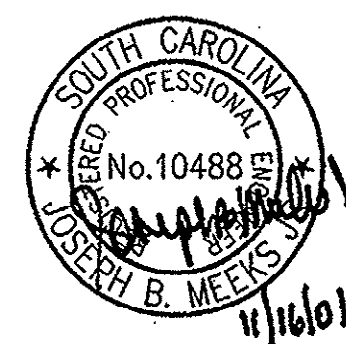
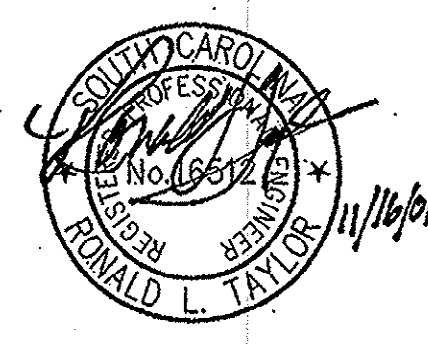
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INTERMEDIATE PLAN
3/32"=1'-0"

DESIGNED	JWAB
DRAWN	ECP/JTB
CHECKED	JBM
PROJ. ENGR.	JBM
DATE	8-31-01
BY	JBM
APPROVED	JBM
NO.	1
ISSUED FOR	CONSTRUCTION
DATE	8-31-01
BY	JBM
APPROVED	JBM



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

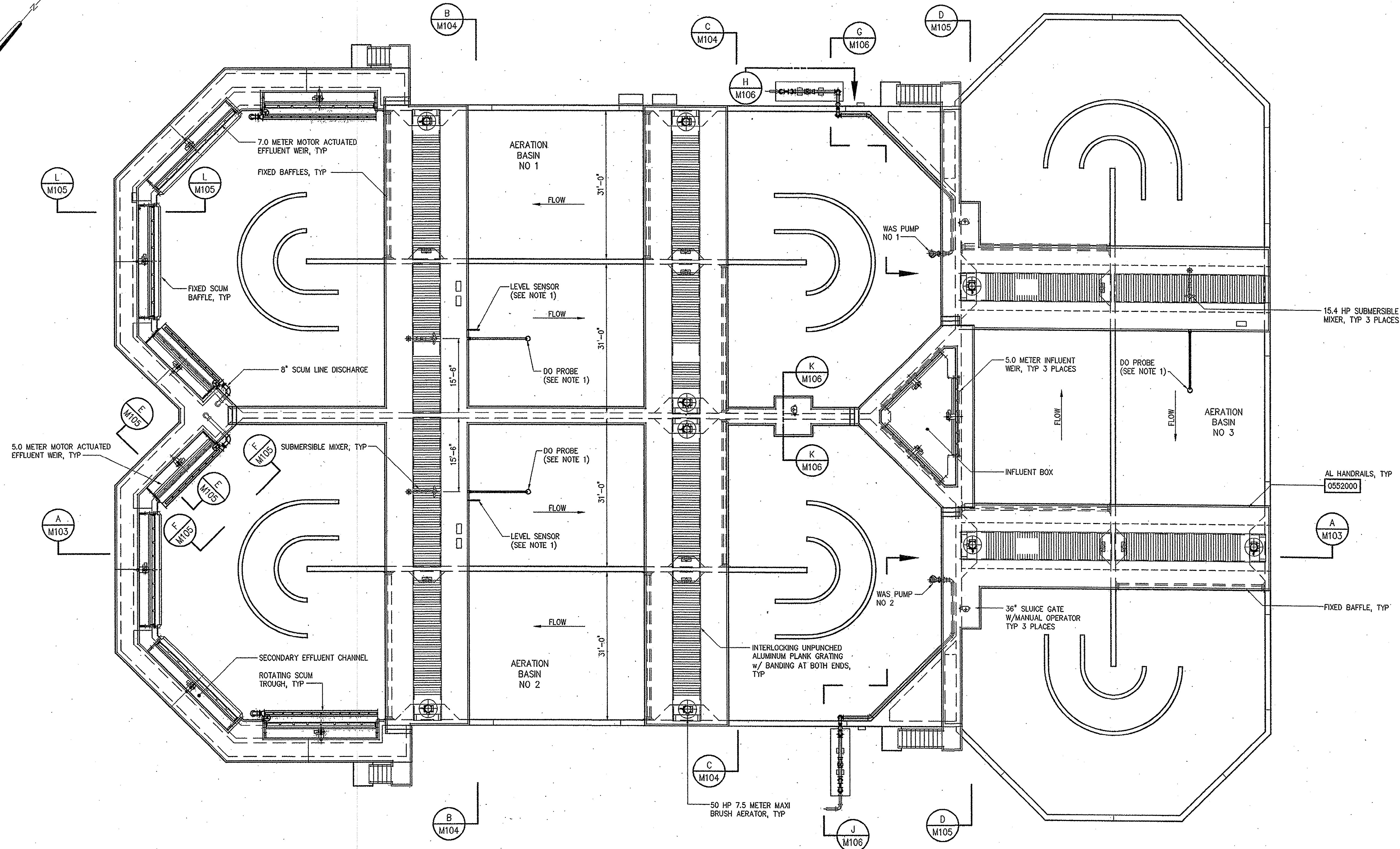
GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

4 MGD TRIPLE DITCH AERATION BASIN
MECHANICAL
INTERMEDIATE PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	M101
	H&S FLAT FILE NO.	56

NOTES:

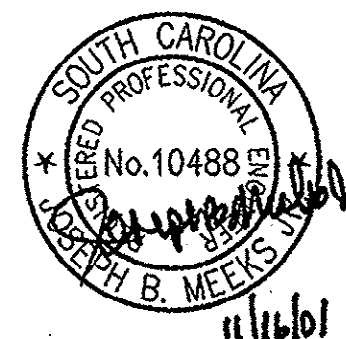
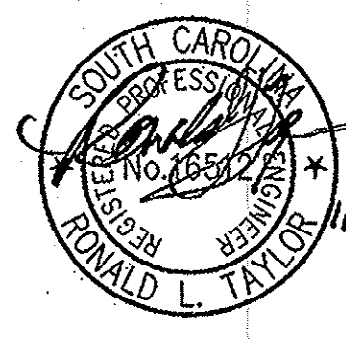
1. CONTRACTOR SHALL CONTACT MANUFACTURER FOR MECHANICAL EQUIPMENT LAYOUTS SHOWN. BASED ON 4 MGD TRIPLE DITCH AERATION BASIN, MANUFACTURED BY KRUGER PRODUCTS, AND SHALL COMPLY WITH SPECIFICATION 11460.



TOP PLAN

3/32" = 1'-0"

DESIGNED	JWAB
DRAWN	ECP/JTB
CHECKED	JBM
PROJ. ENGR.	JBM
DATE	8-31-01
ISSUED FOR	CONSTRUCTION
NO.	1
BY	JBM
APPROVED	JBM

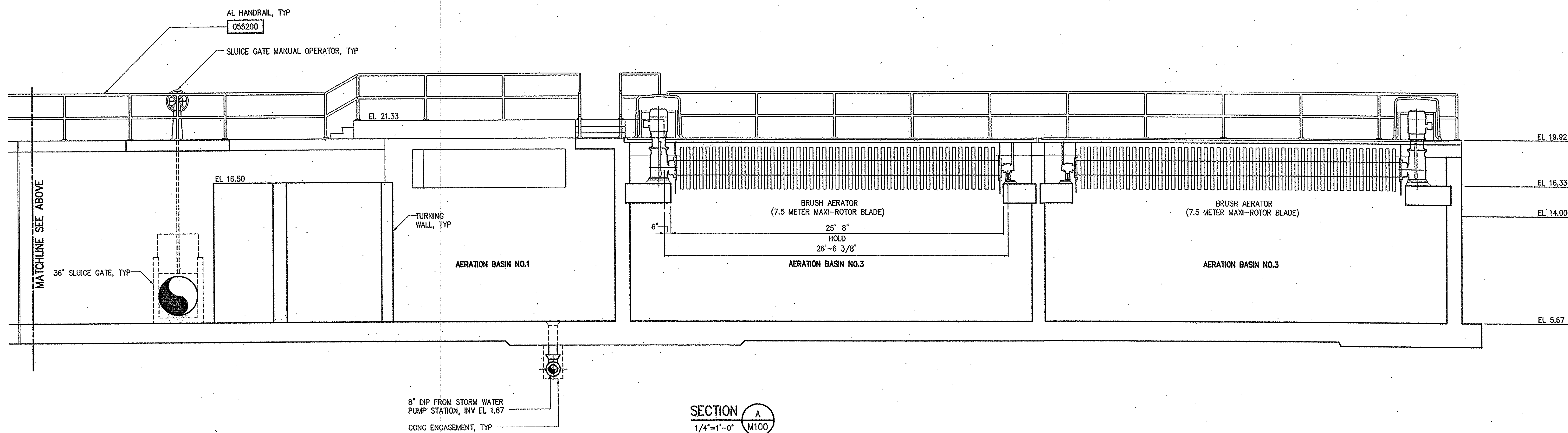
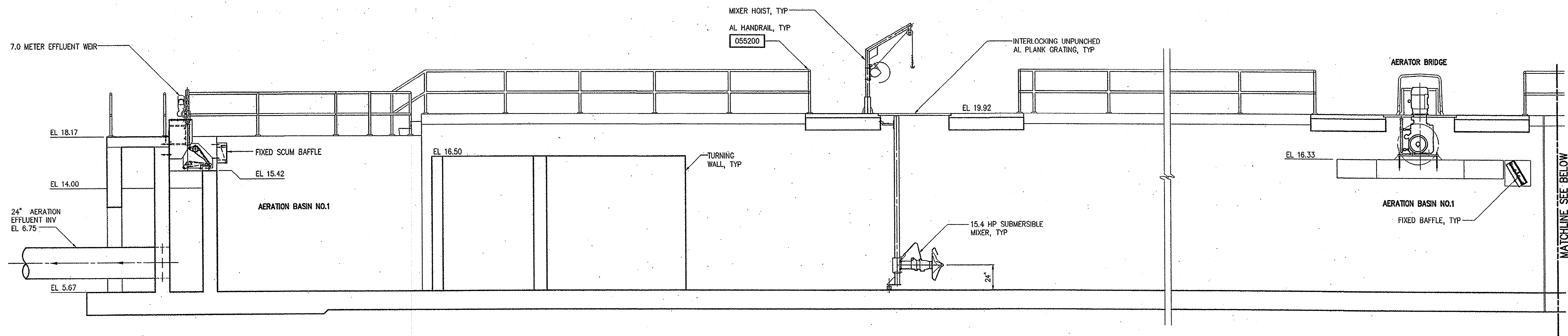


HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

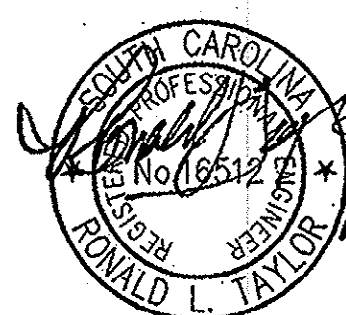
GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

4 MGD TRIPLE DITCH AERATION BASIN
MECHANICAL
TOP PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	M102
	H&S FILE NO.	56



DESIGNED	JWAB
DRAWN	ECF
CHECKED	JBM
PROJ. ENGR.	JBM
APPROVED	JBM
DATE	8/31/01
BY	JBM
NO.	1
CONSTRUCTION	8/16/01
REGULATORY APPROVAL	8/31/01
ISSUED FOR	DATE



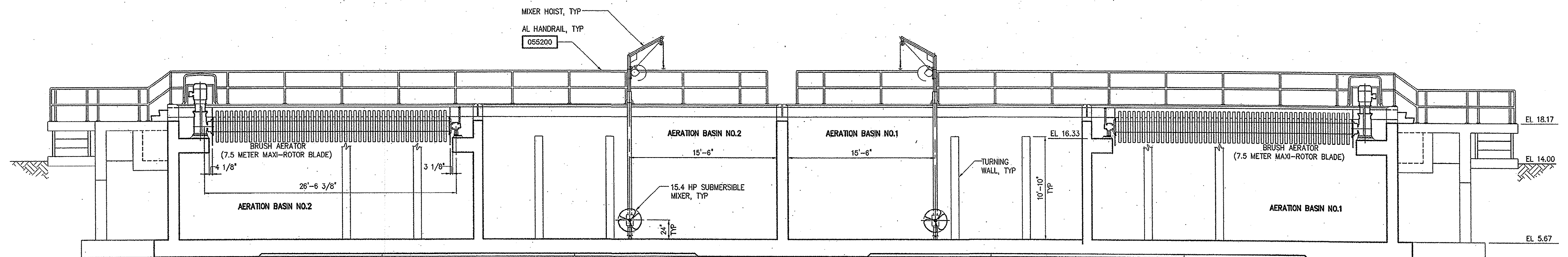
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

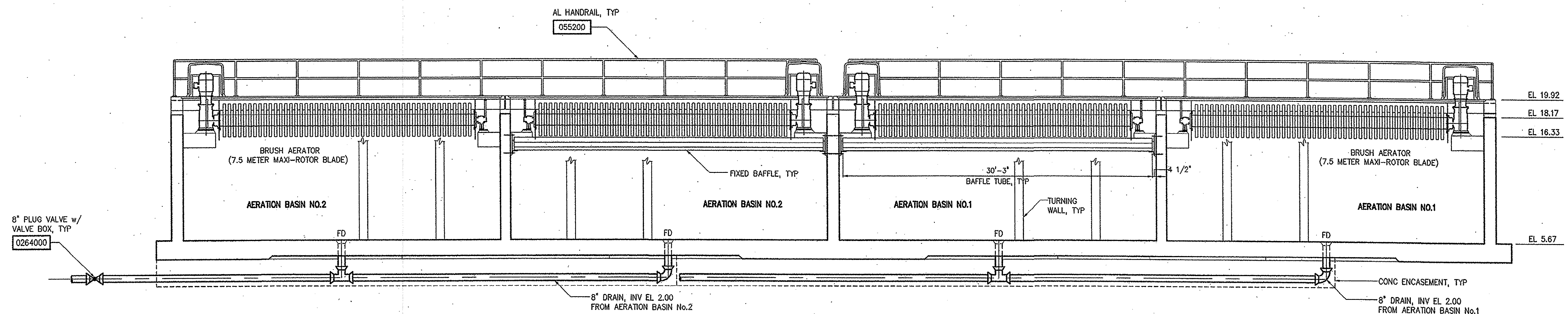
4 MGD TRIPLE DITCH AERATION BASIN
MECHANICAL
SECTIONS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001
H & S JOB NUMBER	30631
CONTRACT NUMBER	1
DRAWING NUMBER	M103
H&S FLAT FILE NO. 56	

35-004-016

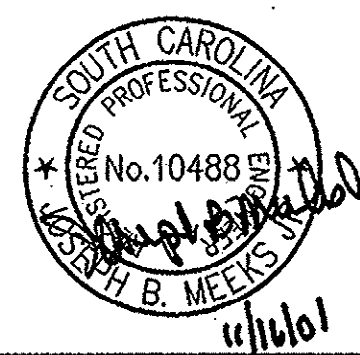
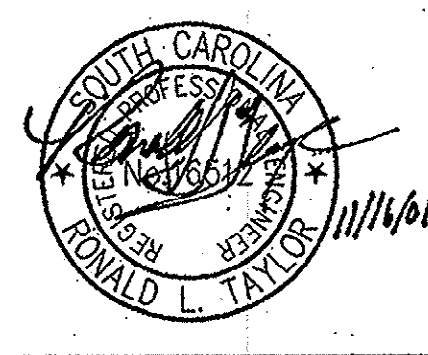


SECTION B
3/16"=1'-0" M100



SECTION C
3/16"=1'-0" M100

						DESIGNED	JWAB
						DRAWN	ECP
						CHECKED	<i>[Signature]</i>
						PROJ. ENGR.	JBM
2	CONSTRUCTION			11/12/01	JBM		
1	REGULATORY APPROVAL			8-31-01	JBM		
NO.	ISSUED FOR			DATE	BY	APPROVED	<i>[Signature]</i>



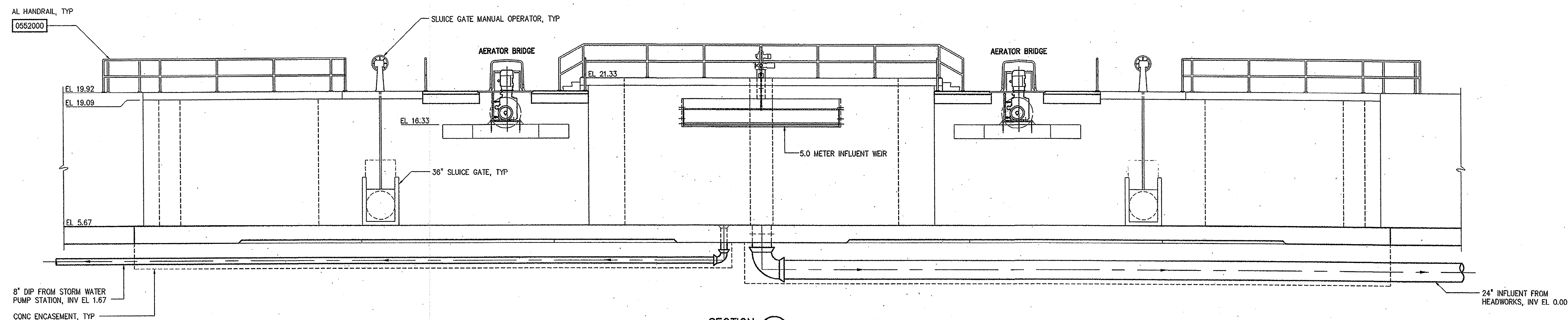
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

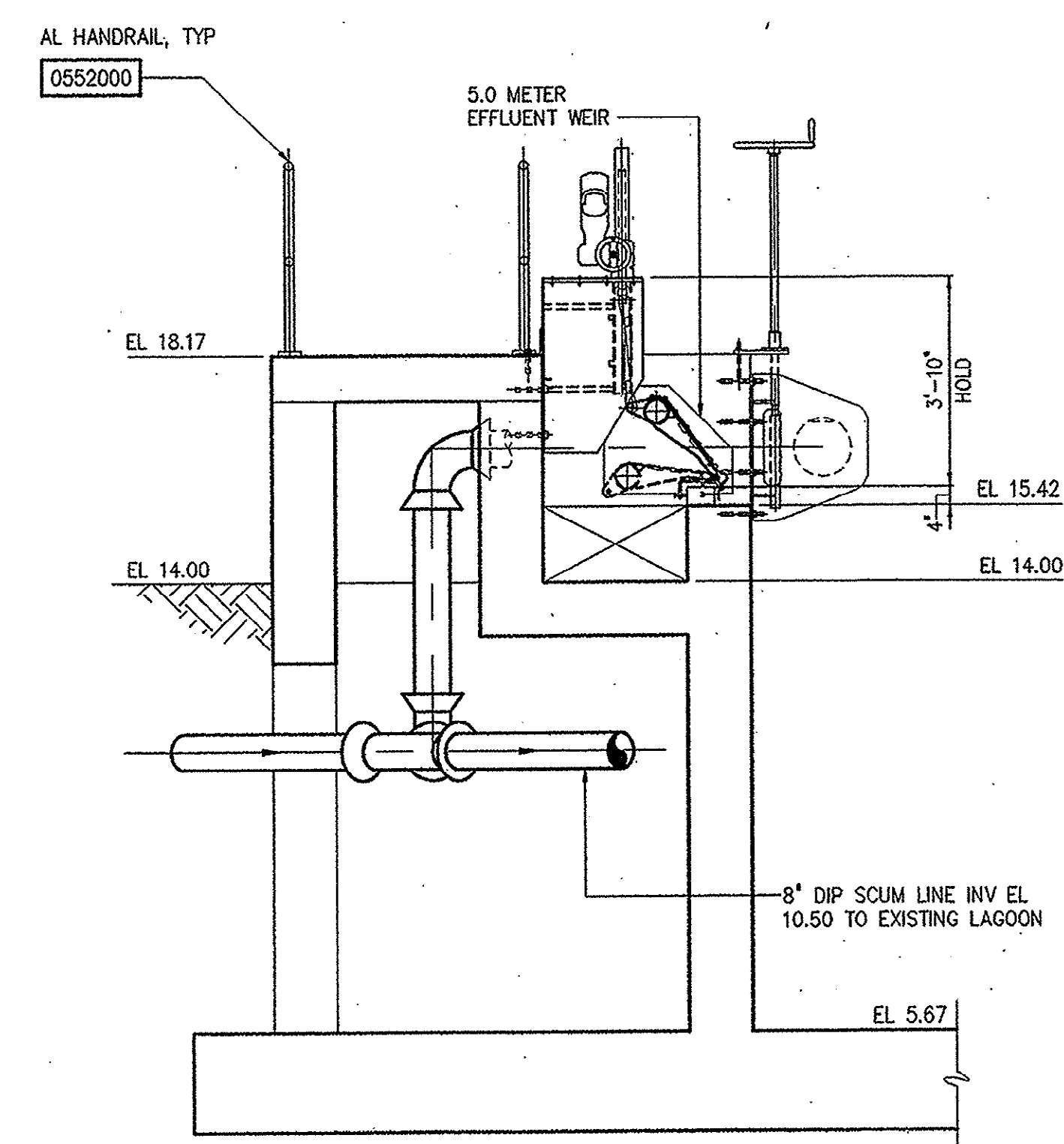
4 MGD TRIPLE DITCH AERATION BASIN
MECHANICAL
SECTIONS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
H & S JOB NUMBER	30631	
CONTRACT NUMBER	1	
DRAWING NUMBER	M104	
H&S FLAT FILE NO.	56	

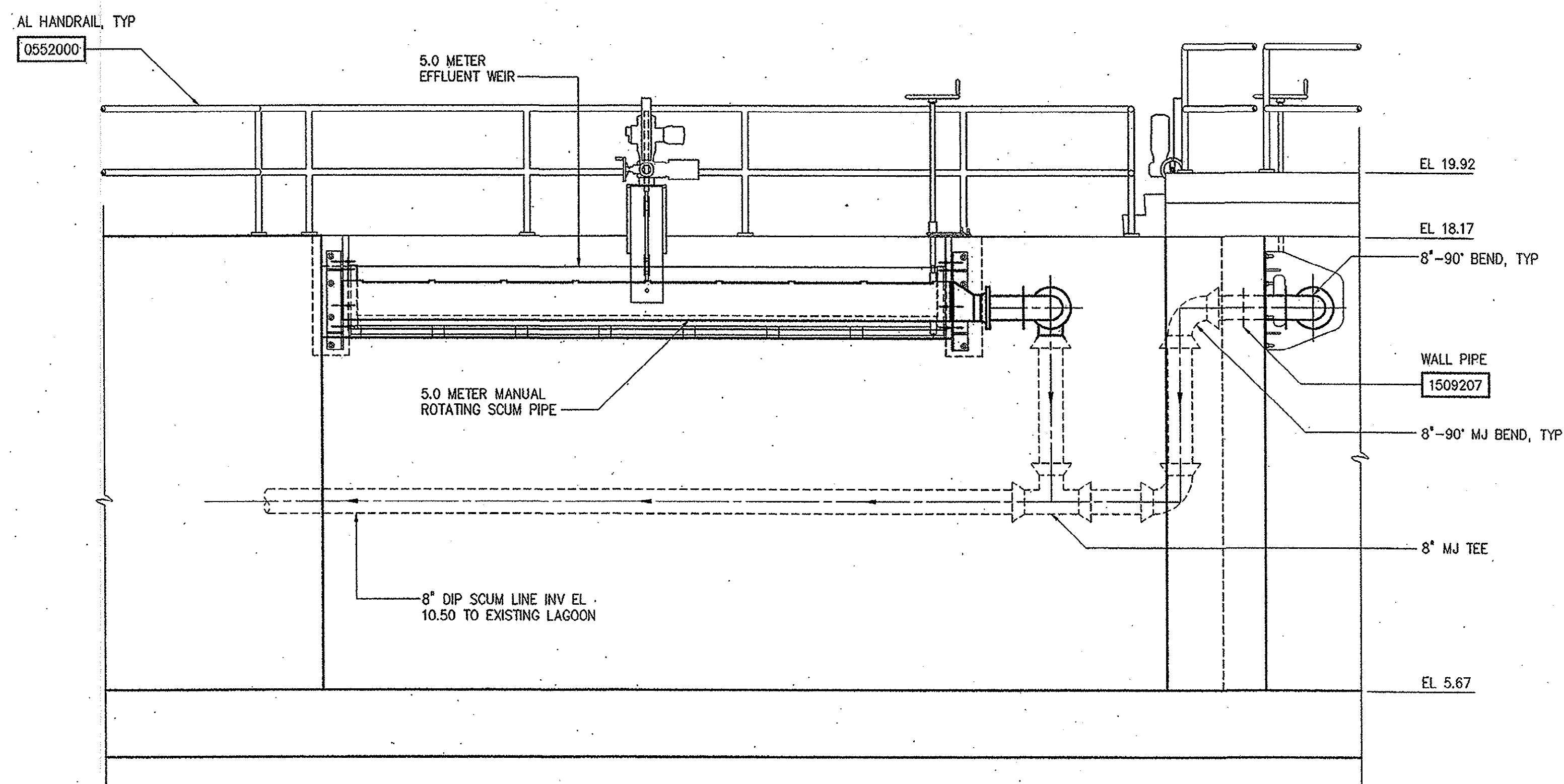
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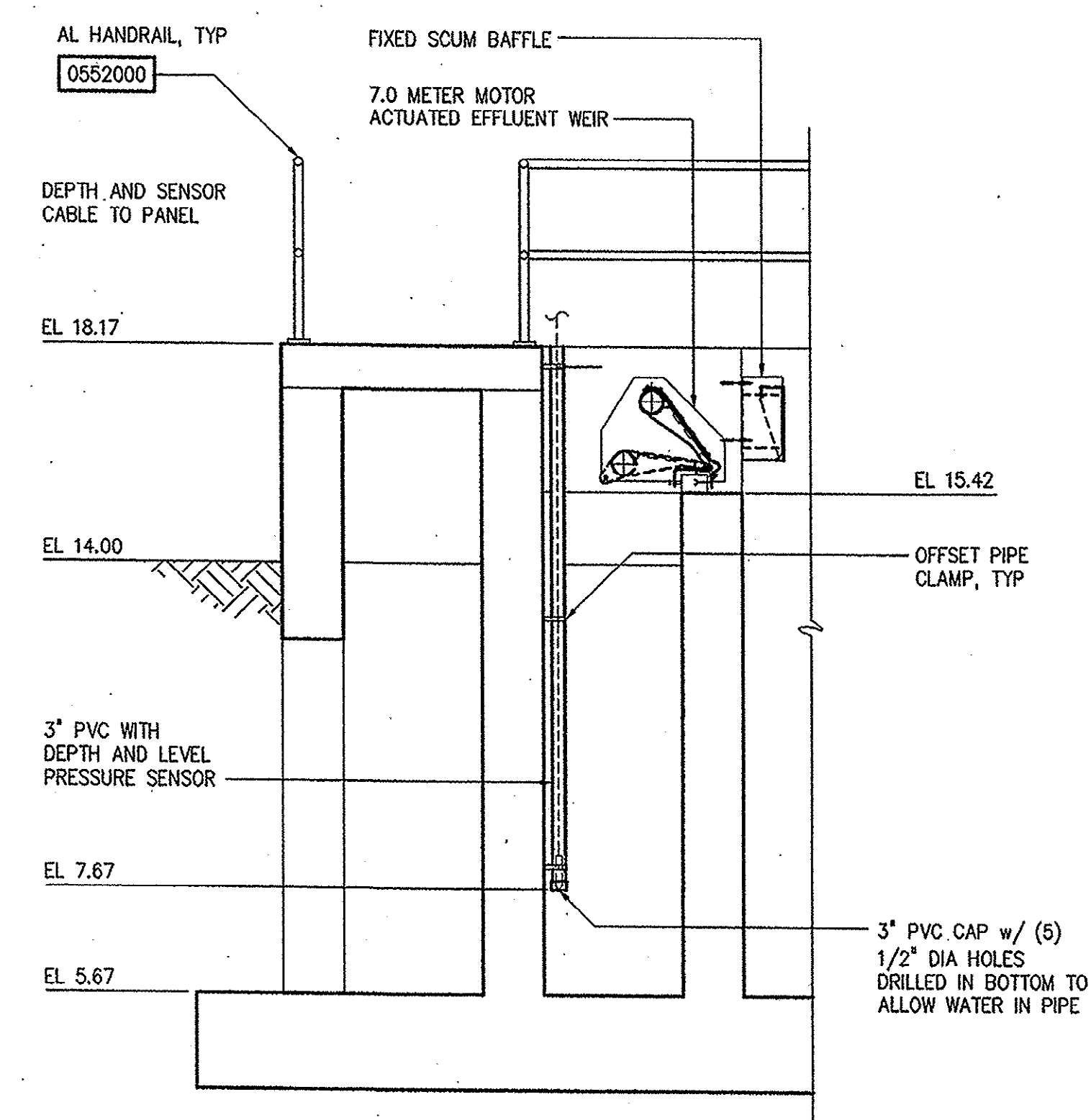
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SECTION E
3/8"=1'-0" M100

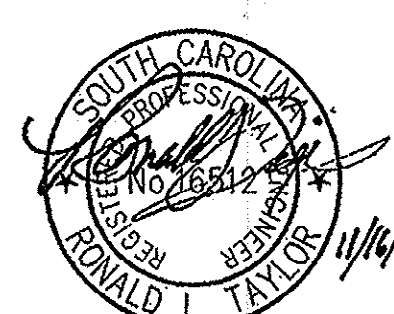


SECTION F
3/8"=1'-0" M100



SECTION L
3/8"=1'-0" M100

DESIGNED	JWAB
DRAWN	ECP
CHECKED	JBM
PROJ. ENGR.	JBM
DATE	11/16/01
BY	JBM
APPROVED	[Signature]



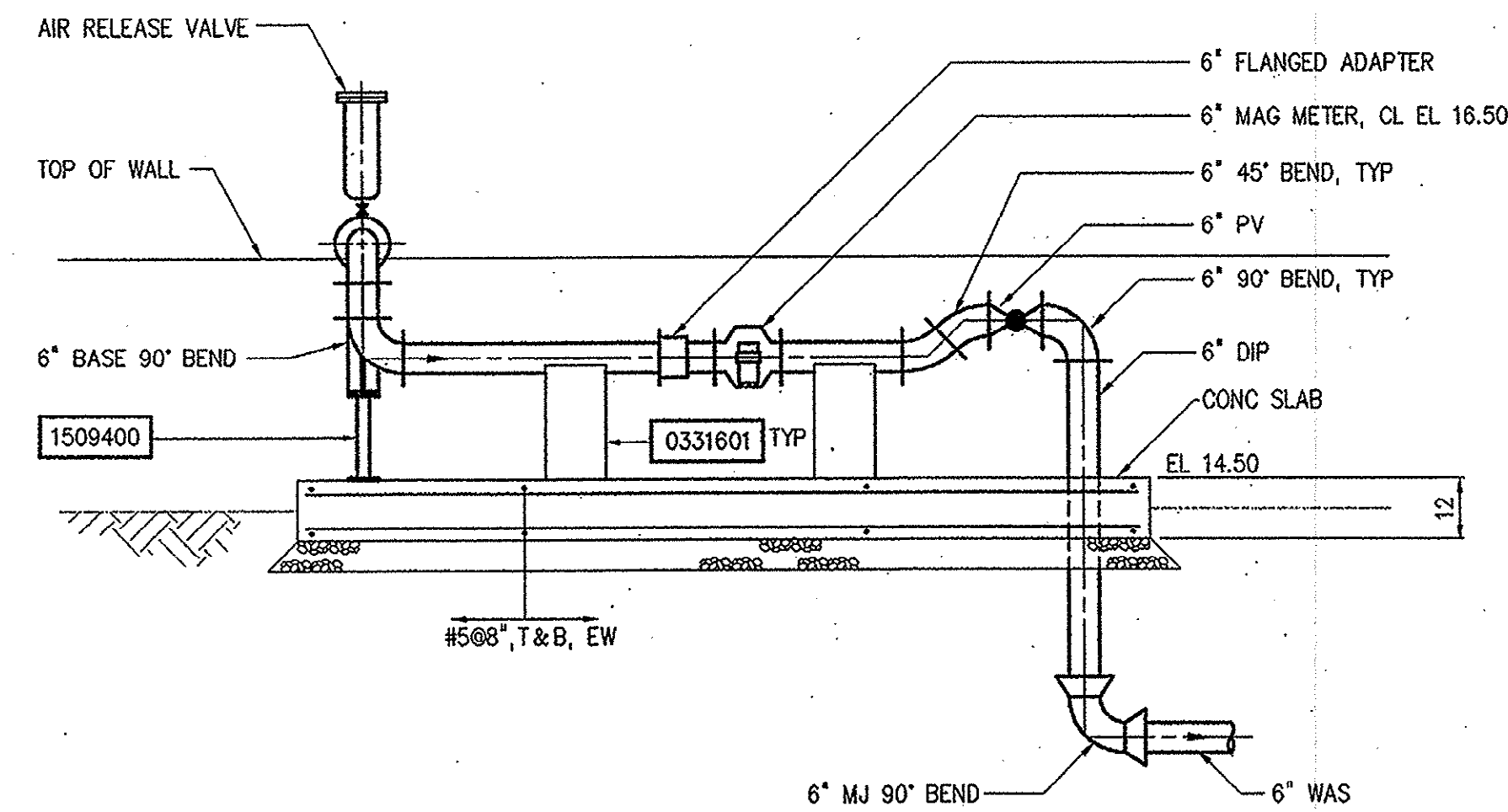
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

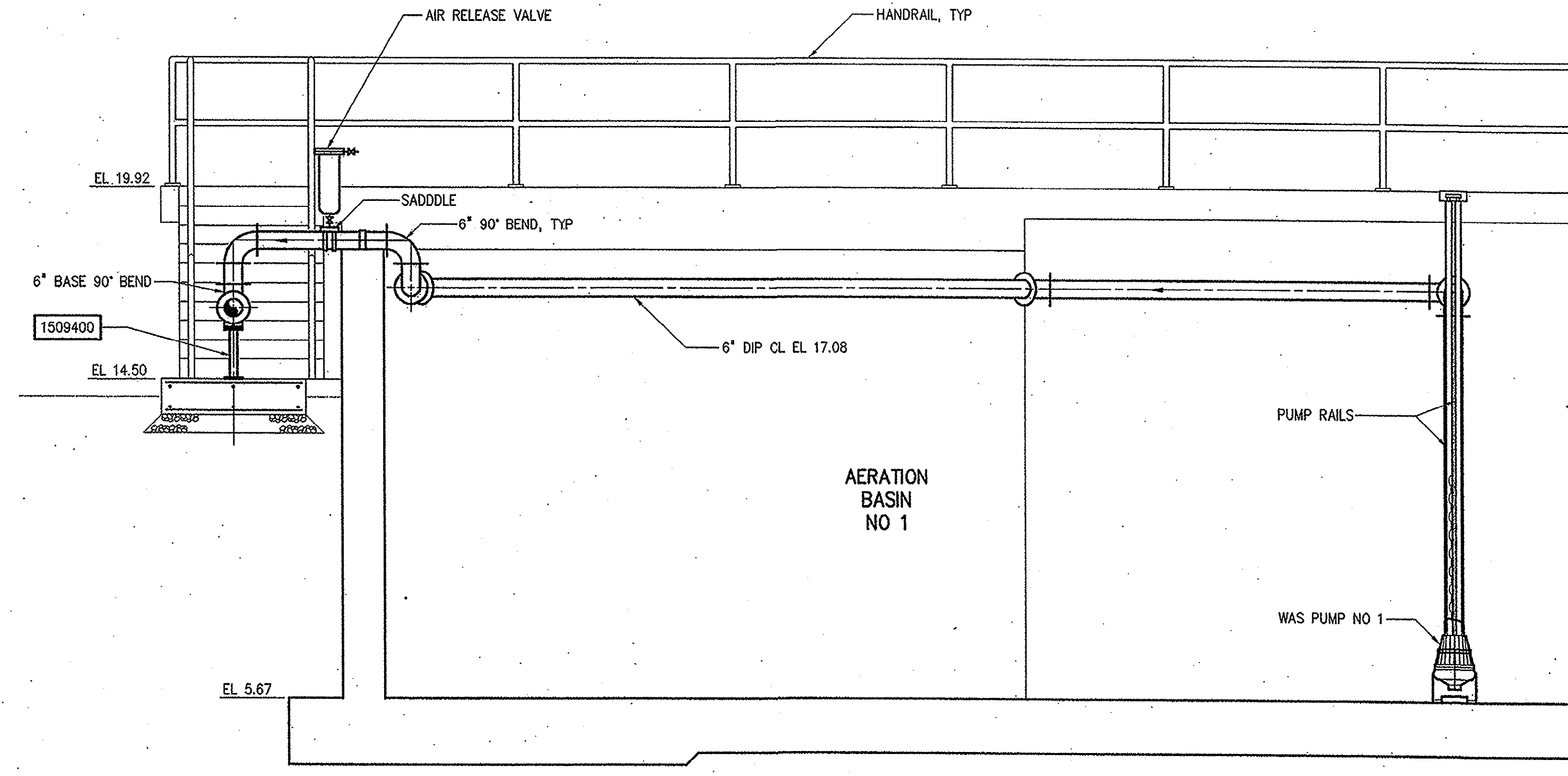
4 MGD TRIPLE DITCH AERATION BASIN
MECHANICAL
SECTIONS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001
H & S JOB NUMBER 30631	DRAWING NUMBER M105
CONTRACT NUMBER 1	H&S FLAT FILE NO. 58

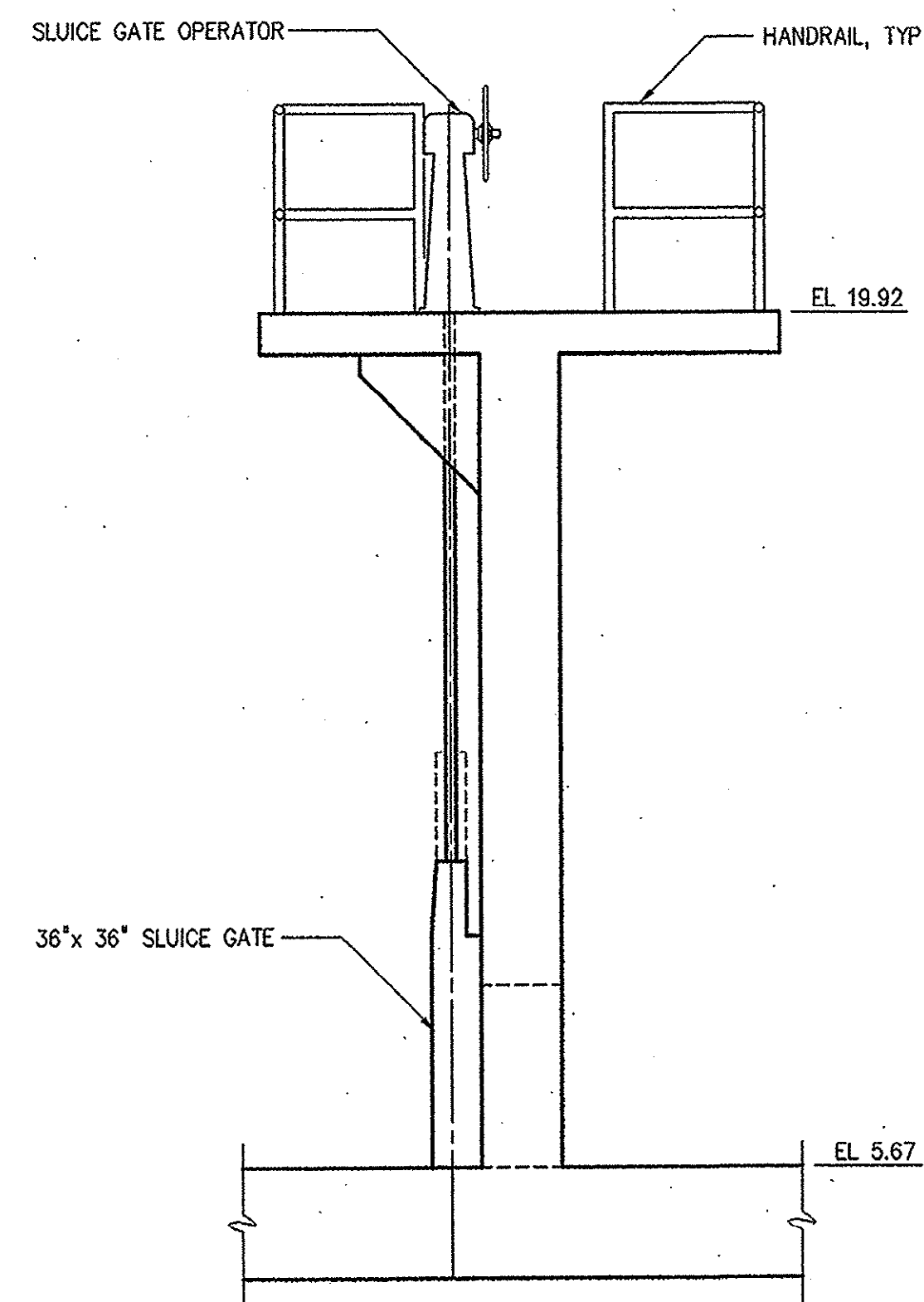
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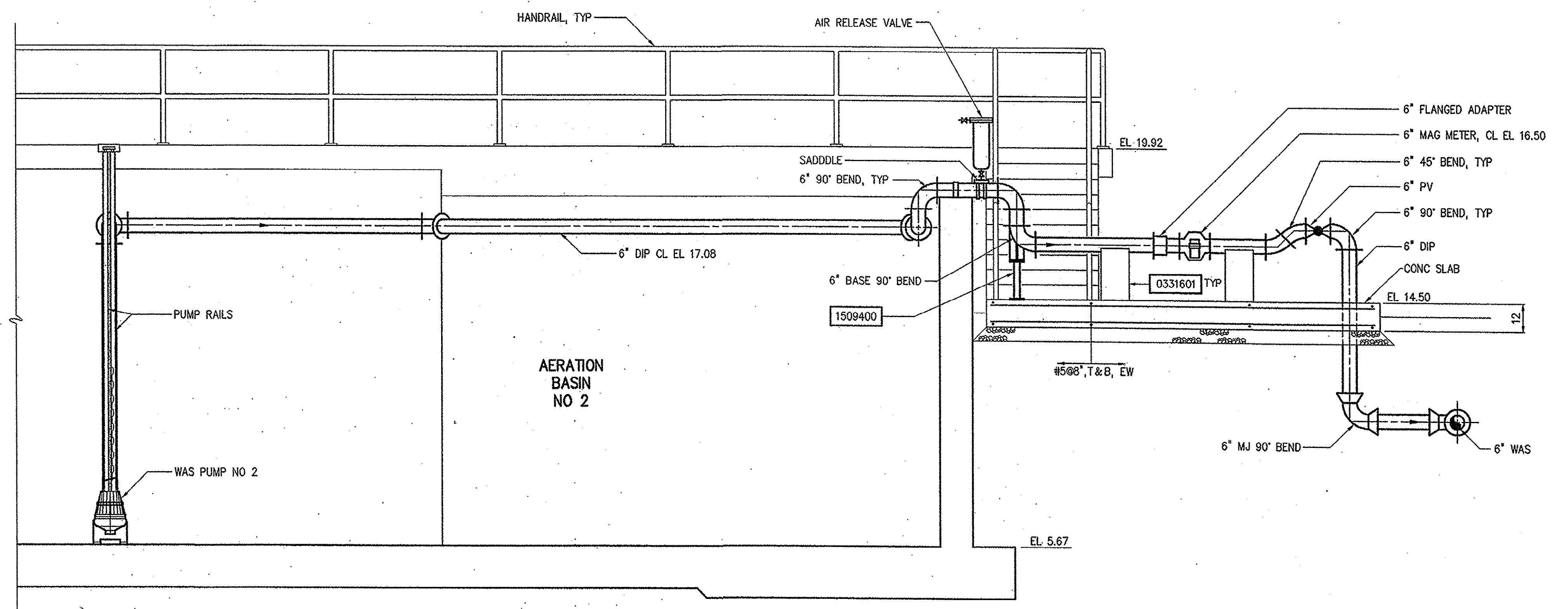
SECTION H
3/8"=1'-0" M102



SECTION G
3/8"=1'-0" M100

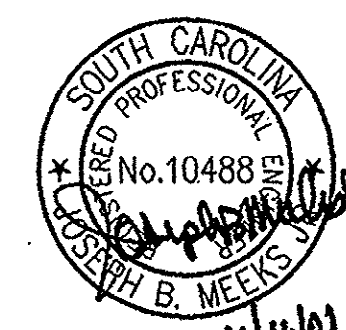
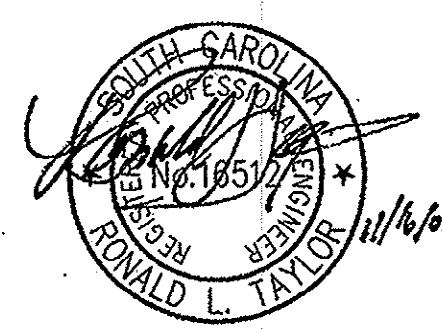


SECTION K
3/8"=1'-0" M100



SECTION J
3/8"=1'-0" M100

DESIGNED	JWAB
DRAWN	ECP/JTB
CHECKED	JBM
PROJ. ENGR.	JBM
DATE	11/16/01
BY	JBM
APPROVED	



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

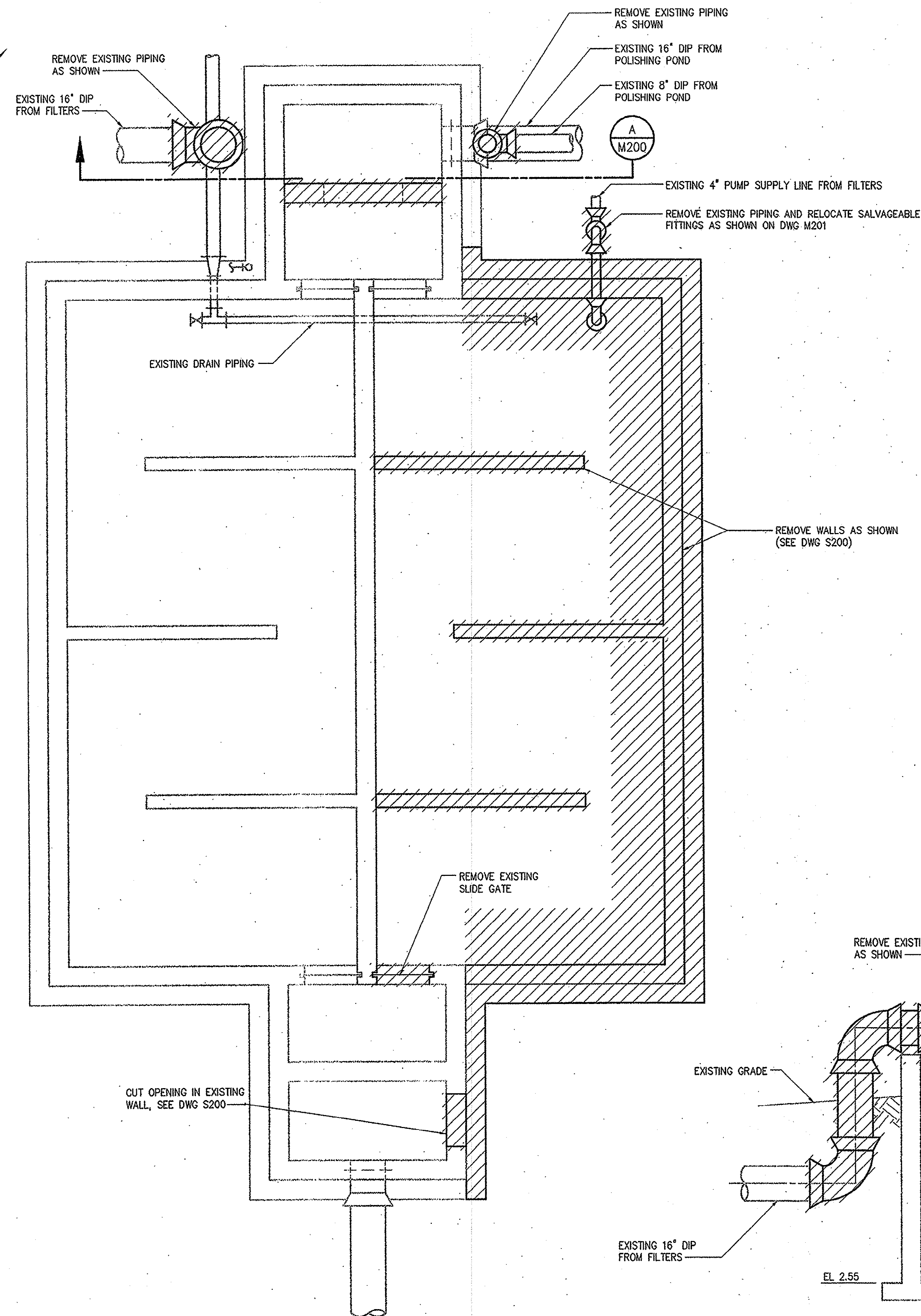
4 MGD TRIPLE DITCH AERATION BASIN
MECHANICAL
SECTIONS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
H & S JOB NUMBER	30631	
CONTRACT NUMBER	1	DRAWING NUMBER
		M106
H&S FLAT FILE NO.	56	

35-004-019

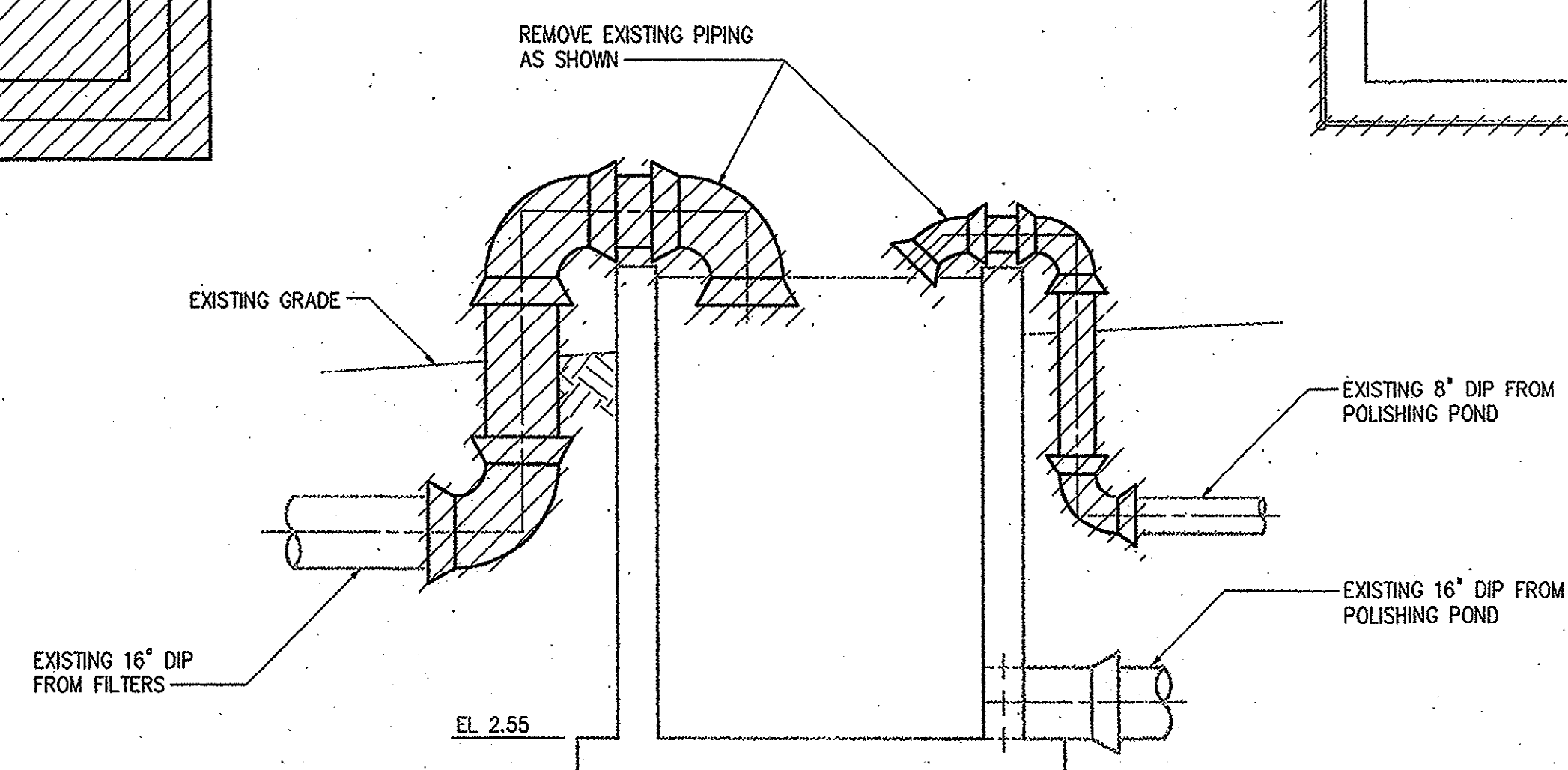
NOTES:

1 FOR SEQUENCING OF DEMOLITION WORK, SEE SPECIFICATIONS SECTION 01520- MAINTENANCE OF PLANT OPERATIONS DURING CONSTRUCTION.

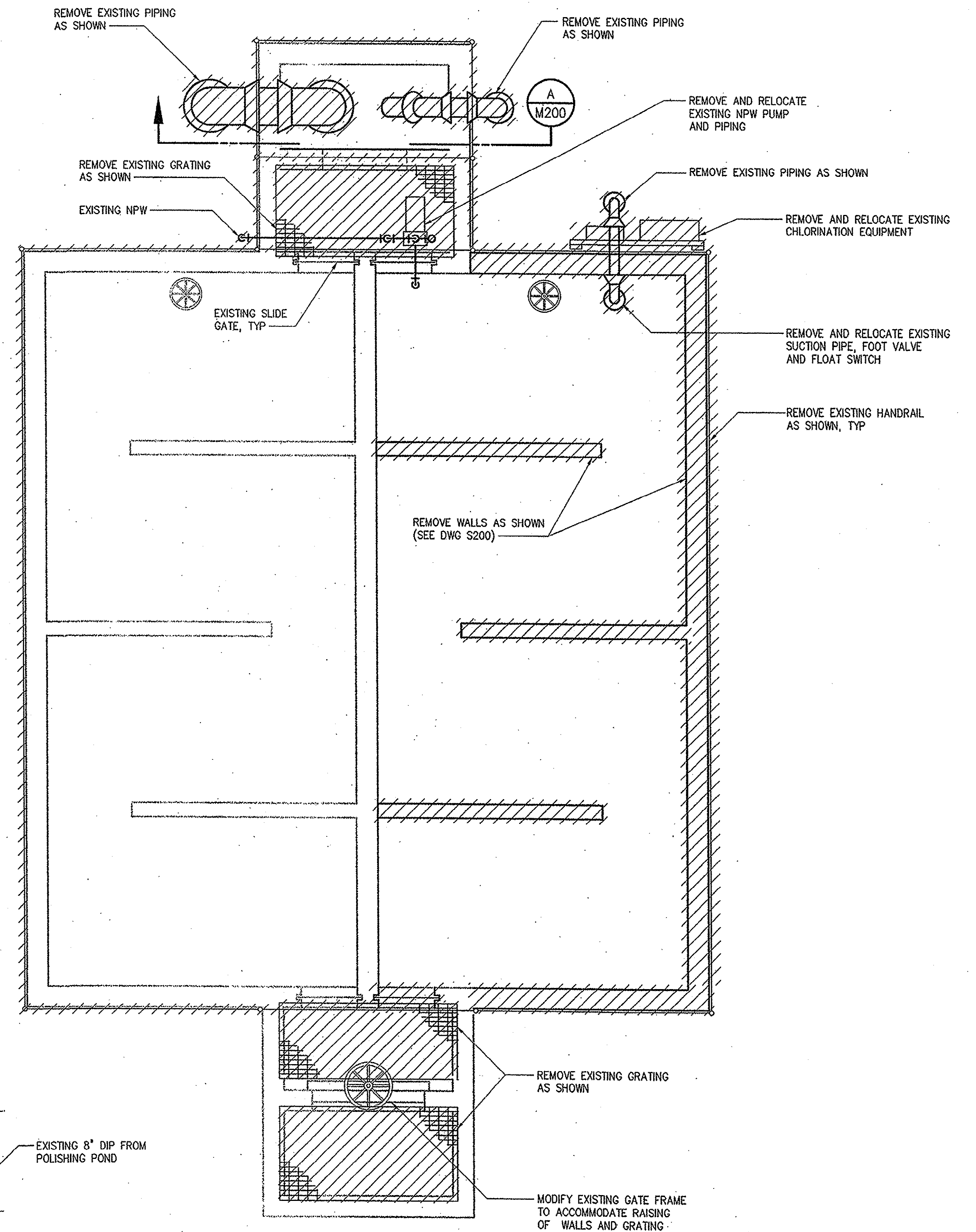


DEMOLITION - BOTTOM PLAN

3/8" = 1'-0"



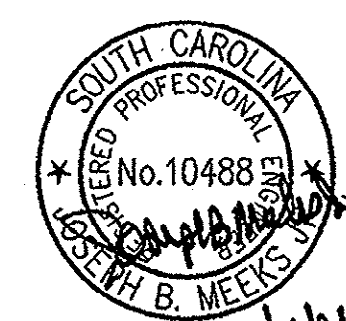
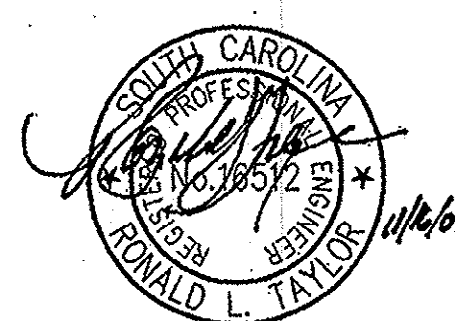
SECTION A
3/8" = 1'-0"



DEMOLITION - TOP PLAN

3/8" = 1'-0"

DESIGNED	JWAB
DRAWN	EWN
CHECKED	JBM
PROJ. ENGR.	JBM
APPROVED	
NO.	
2	CONSTRUCTION
1	REGULATORY APPROVAL
	ISSUED FOR
	DATE
	BY



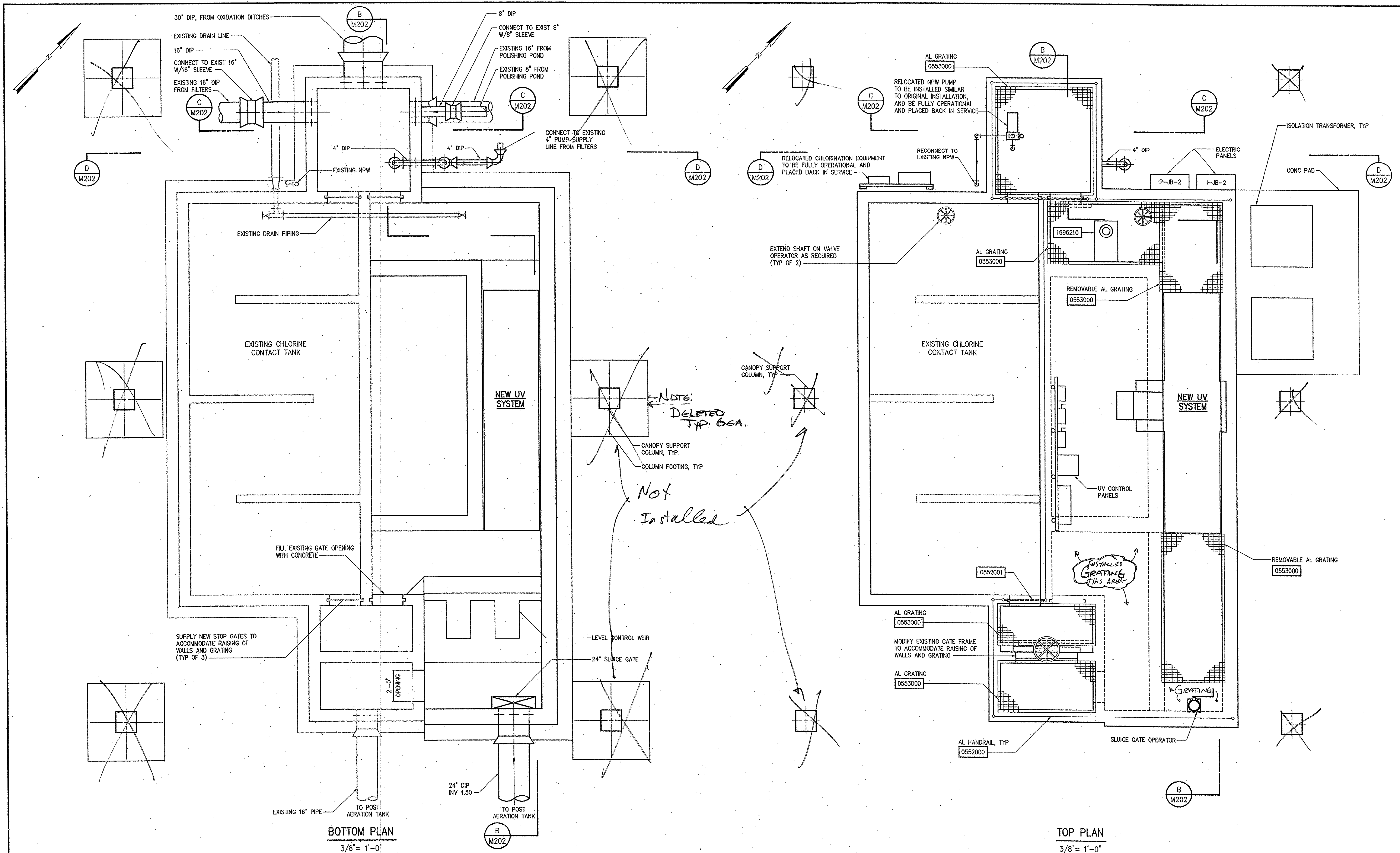
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

UV DISINFECTION TANK
MECHANICAL
DEMOLITION PLANS

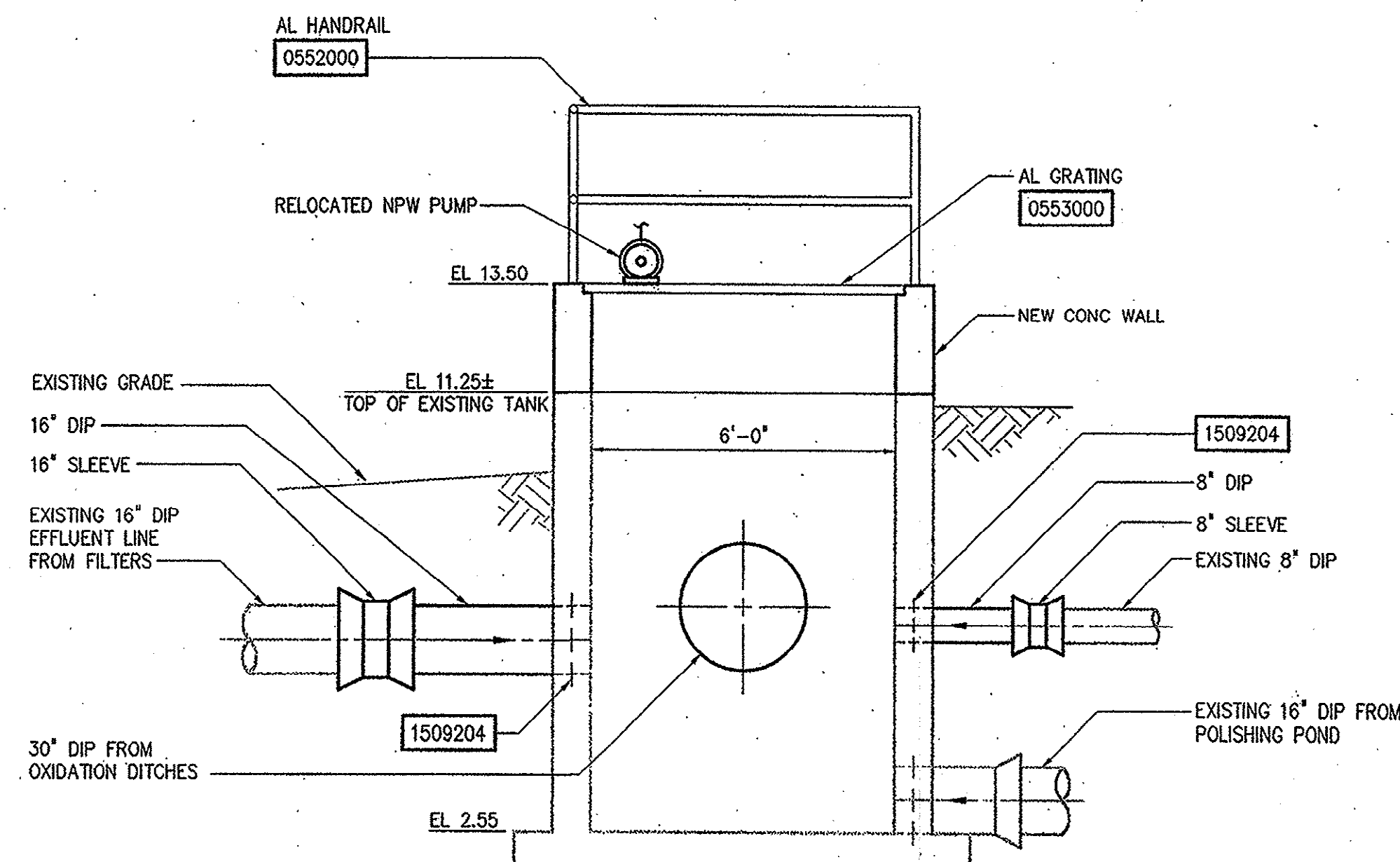
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	M200
	H & S FLAT FILE NO.	56

35-004-020

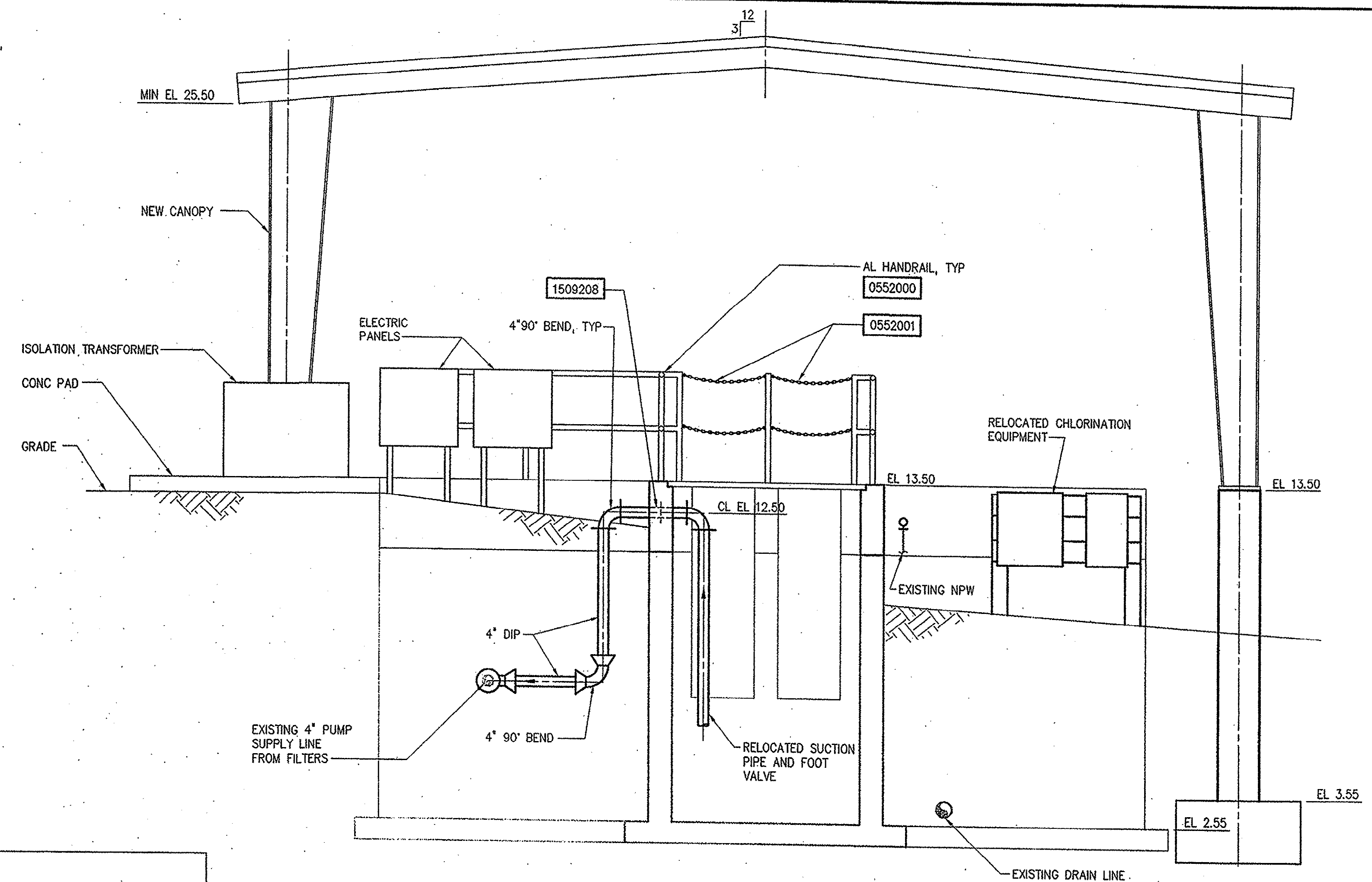


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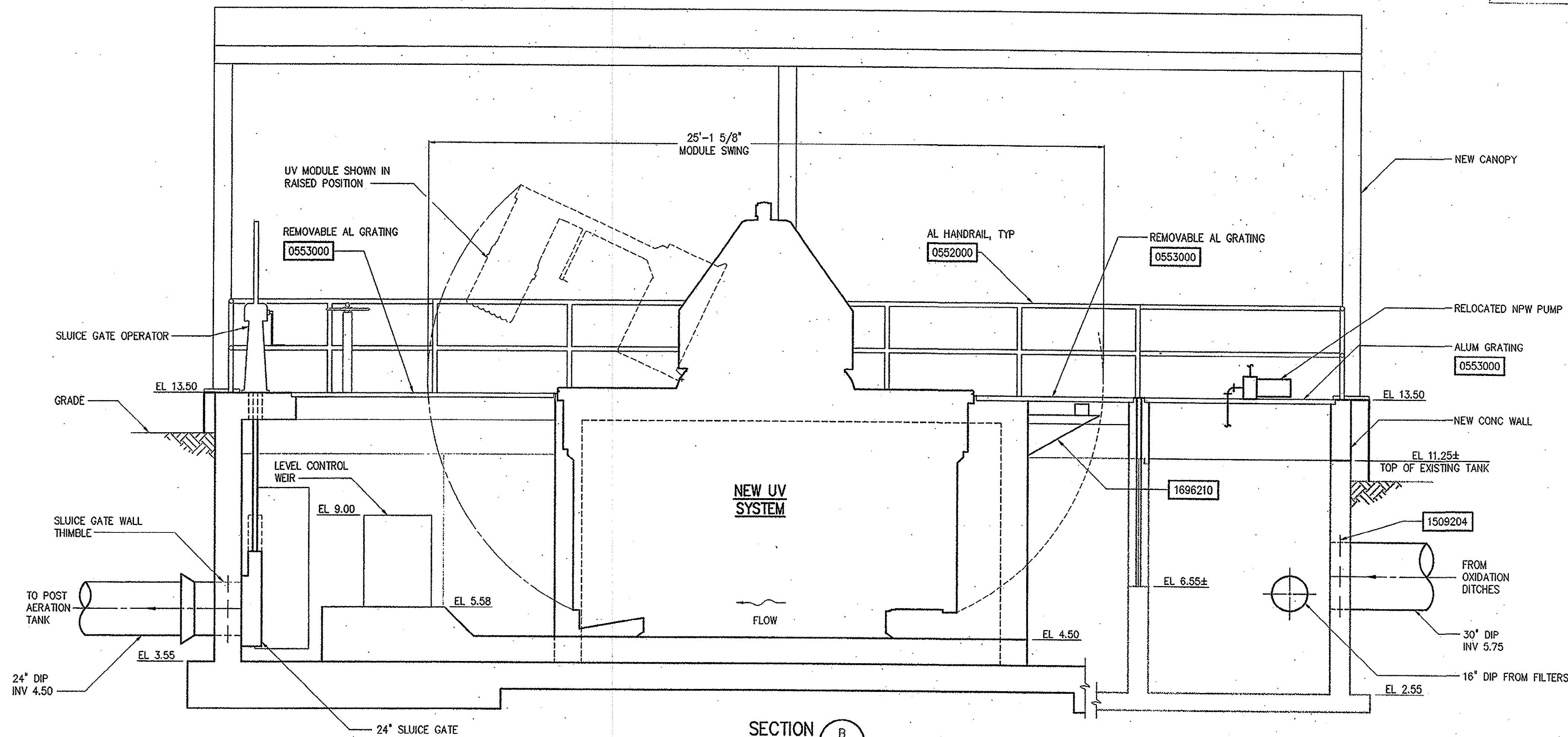
35-004-021



SECTION C
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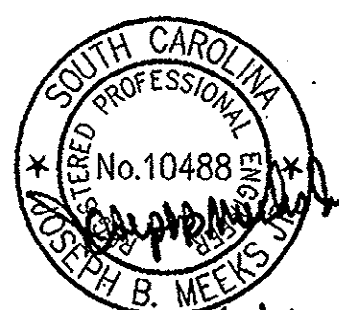
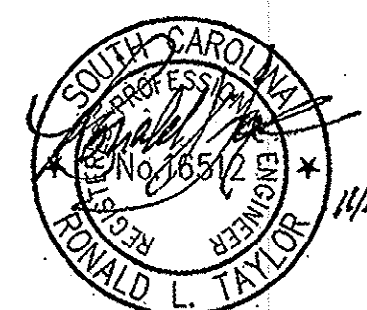


SECTION D
3/8"=1'-0" M201



SECTION B
3/8"=1'-0" M201

DESIGNED	JWAB
DRAWN	EWN
CHECKED	JBM
PROJ. ENGR.	JBM
APPROVED	TJL
NO.	1
CONSTRUCTION	8-31-01
REGULATORY APPROVAL	11/16/01
ISSUED FOR	DATE
BY	11/16/01



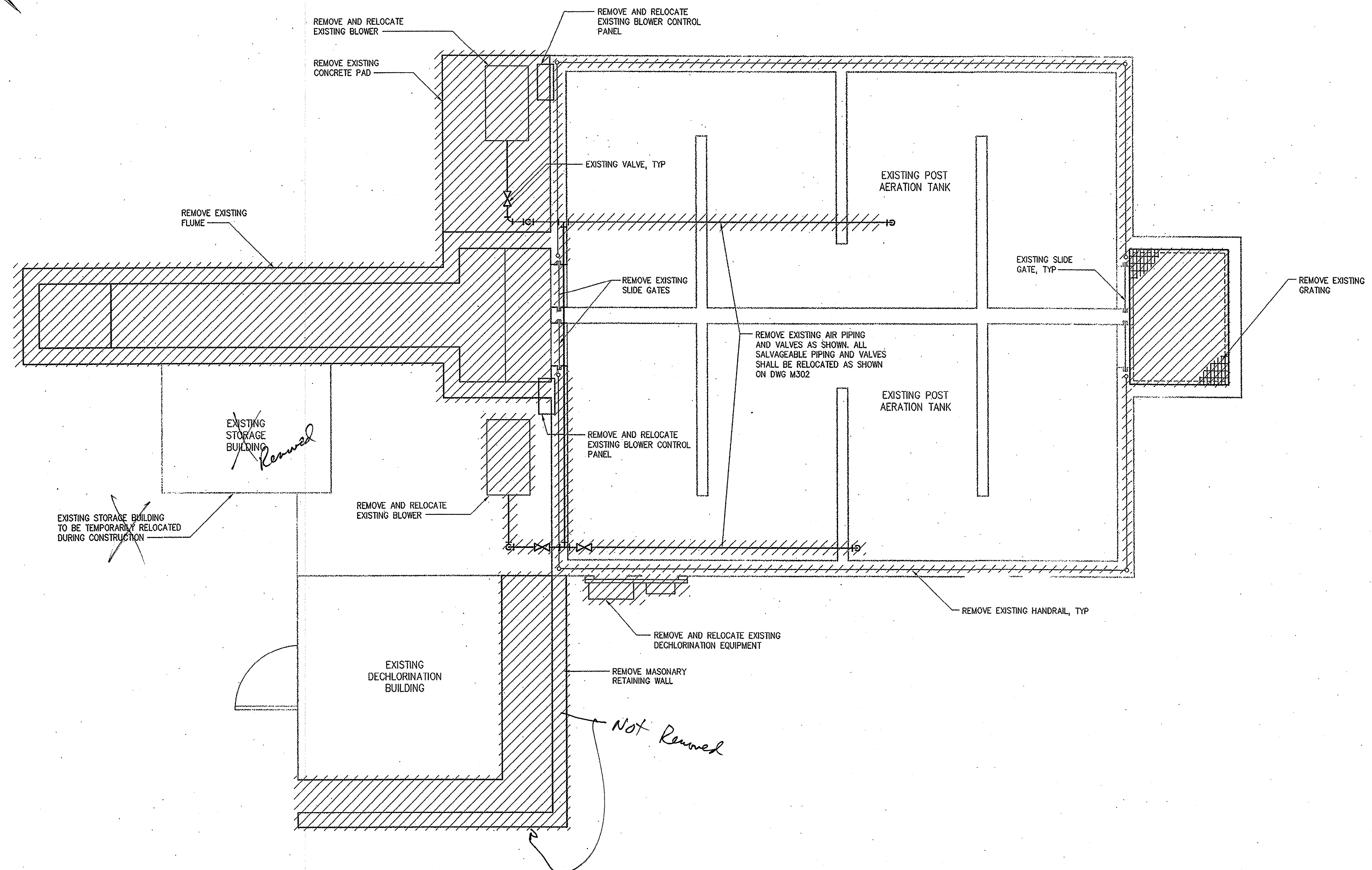
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

UV DISINFECTION TANK
MECHANICAL
SECTIONS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	M202
	H & S FLAT FILE NO.	56

NOTES:

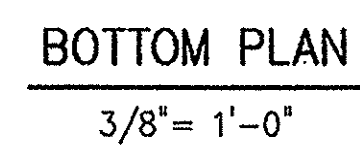


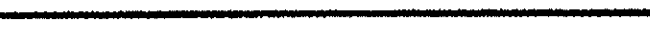
DEMOLITION PLAN
3/8" = 1'-0"

DESIGNED: JWAB DRAWN: JTB CHECKED: JBM PROJ. ENGR.: JBM				HAZEN AND SAWYER Environmental Engineers & Scientists 4011 WestChase Blvd, Raleigh, North Carolina 27607		GRAND STRAND WATER AND SEWER AUTHORITY SOUTH CAROLINA CONWAY WWTP 4.0 MGD EXPANSION AND UPGRADE		POST AERATION TANK MODIFICATIONS MECHANICAL DEMOLITION PLAN		THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING. DATE: AUGUST 2001 H & S JOB NUMBER: 30631 CONTRACT NUMBER: 1 DRAWING NUMBER: M300 H&S FLAT FILE NO. 56	
2 CONSTRUCTION 1 REGULATORY APPROVAL NO. ISSUED FOR		11/16/01 DATE		11/16/01 BY		APPROVED					

11/16/01 11:49am FILE: H:\30631\MECH\M300 by EOP/AMT/TER XREF=M300\30631-1B, 300\DC-PT,

35-004-023

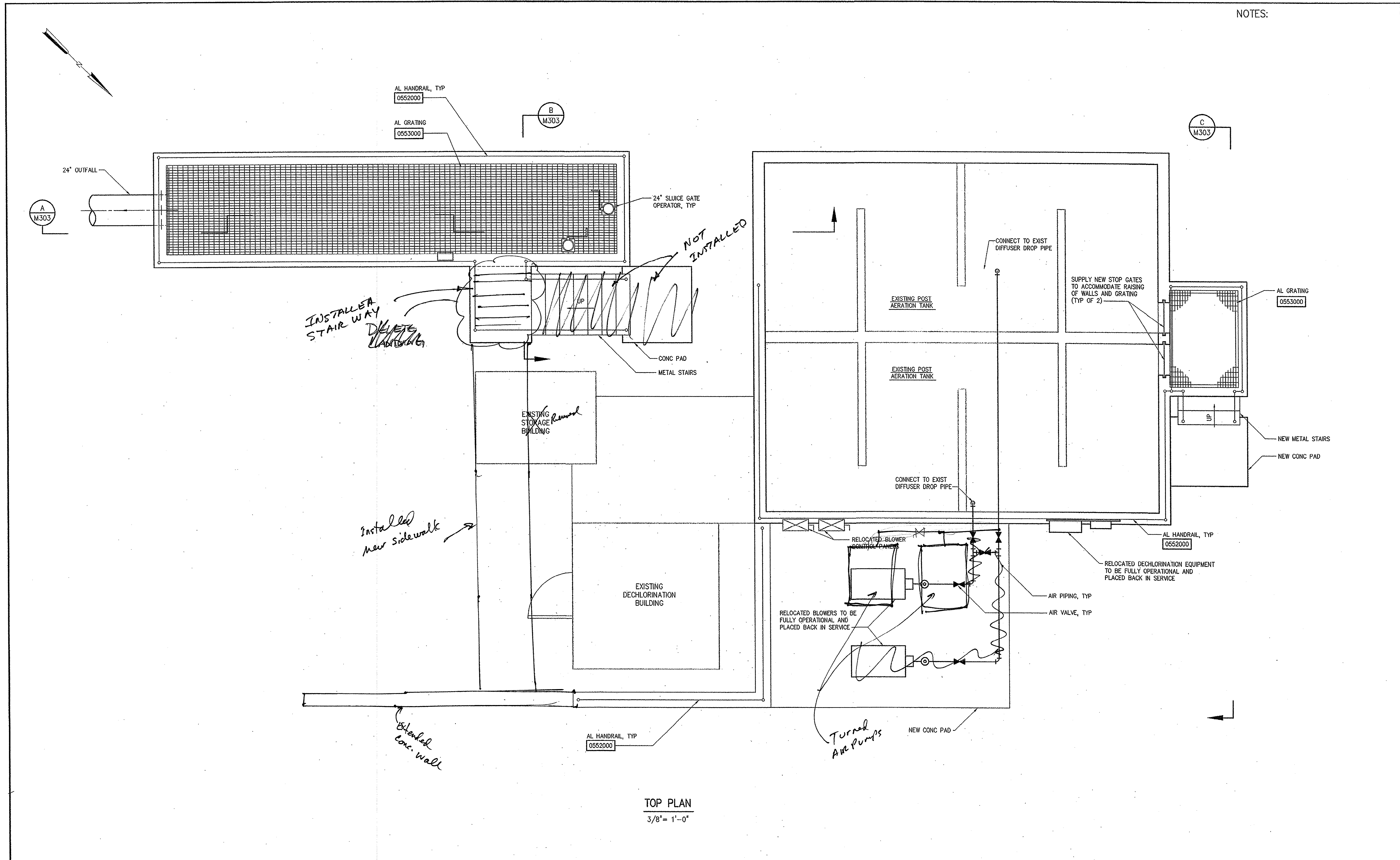


				DESIGNED	JWAB	 	HAZEN AND SAWYER Environmental Engineers & Scientists 4011 WestChase Blvd, Raleigh, North Carolina 27607	GRAND STRAND WATER AND SEWER AUTHORITY SOUTH CAROLINA CONWAY WWTP 4.0 MGD EXPANSION AND UPGRADE	POST AERATION TANK MODIFICATIONS MECHANICAL BOTTOM PLAN	THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING. DATE AUGUST 2001 H & S JOB NUMBER 30631 CONTRACT NUMBER 1 DRAWING NUMBER M301 H&S FLAT FILE NO. 56
				DRAWN	JTB					
				CHECKED	JMB					
				PROJ. ENGR.	JBM					
2	CONSTRUCTION	11/16/01	JMB							
1	REGULATORY APPROVAL	8-31-01	JMB							
NO.	ISSUED FOR	DATE	BY	APPROVED						

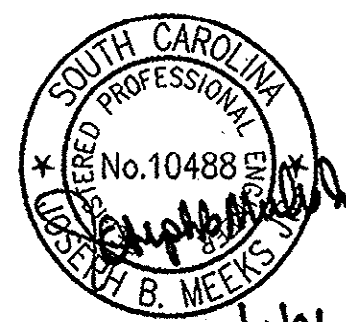
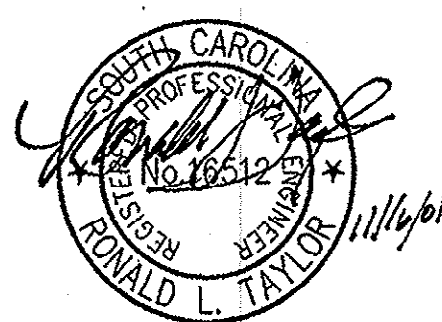
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35-004-024

NOTES:



DESIGNED	JWAB
DRAWN	JTB
CHECKED	RS
PROJ. ENGR.	JBM
APPROVED	RS
NO.	1
CONSTRUCTION	REGULATORY APPROVAL
ISSUED FOR	DATE
BY	APPROVED



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

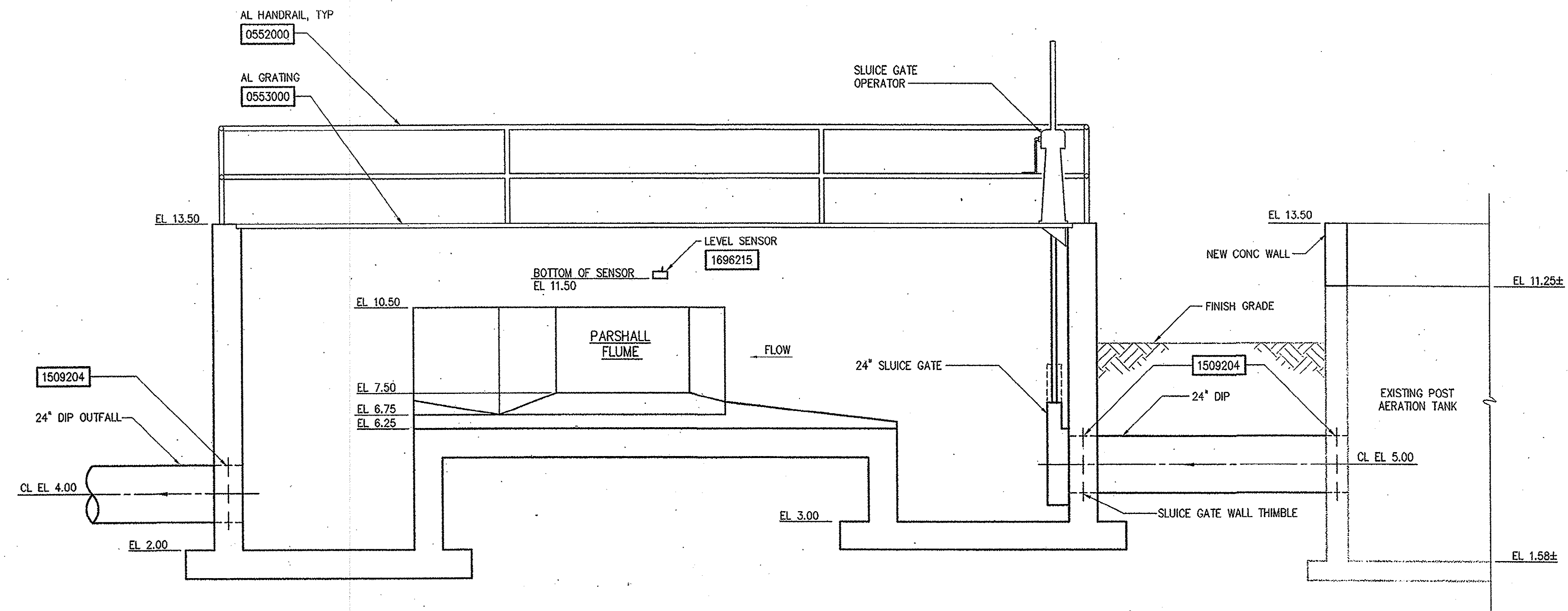
GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

POST AERATION TANK MODIFICATIONS
MECHANICAL
TOP PLAN

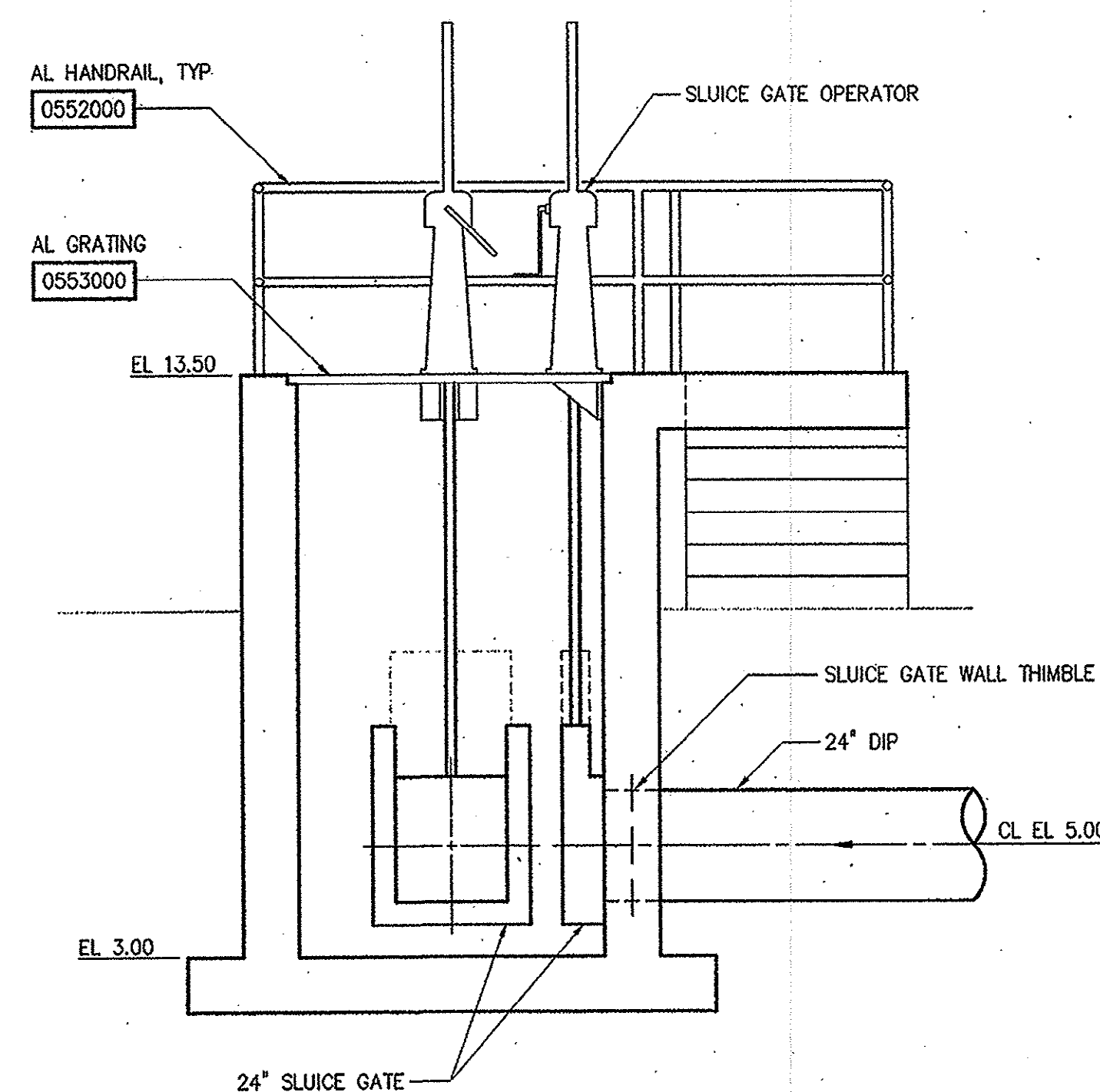
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	M302
	H & S FLAT FILE NO.	56

35-004-025

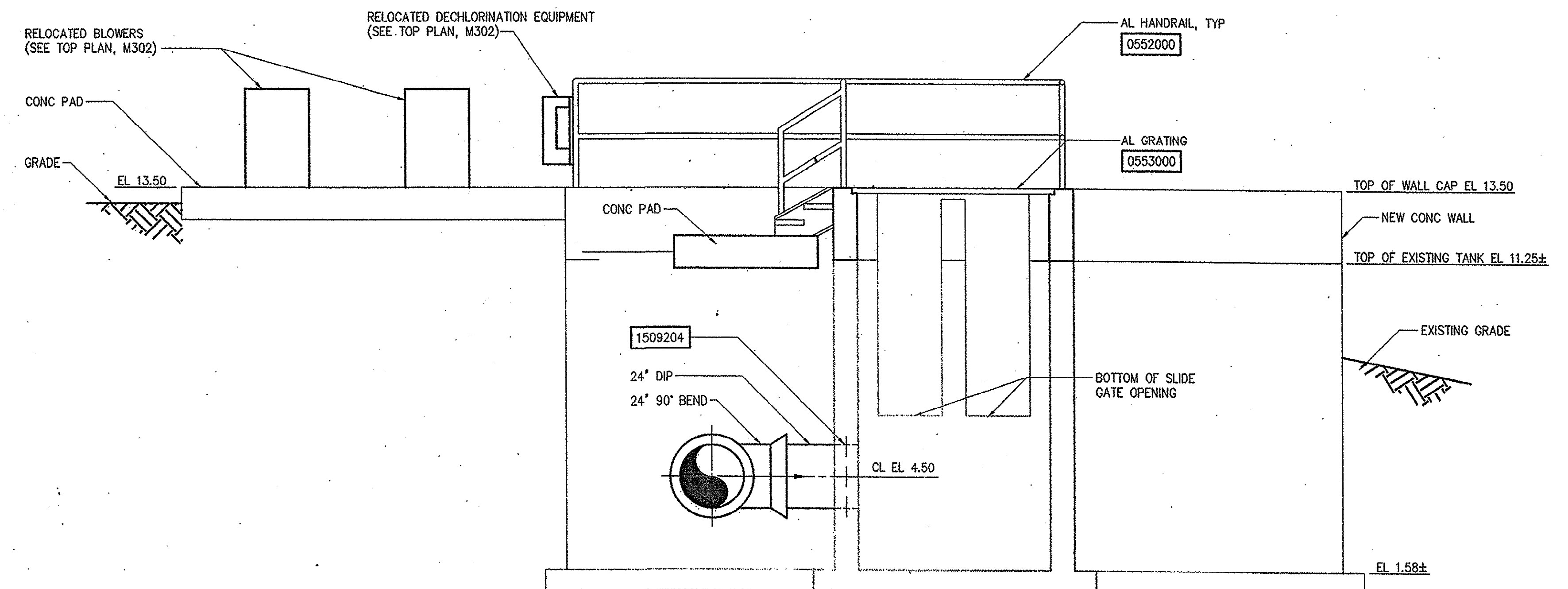
NOTES:



SECTION A
3/8"=1'-0" M301



SECTION B
3/8"=1'-0" M301



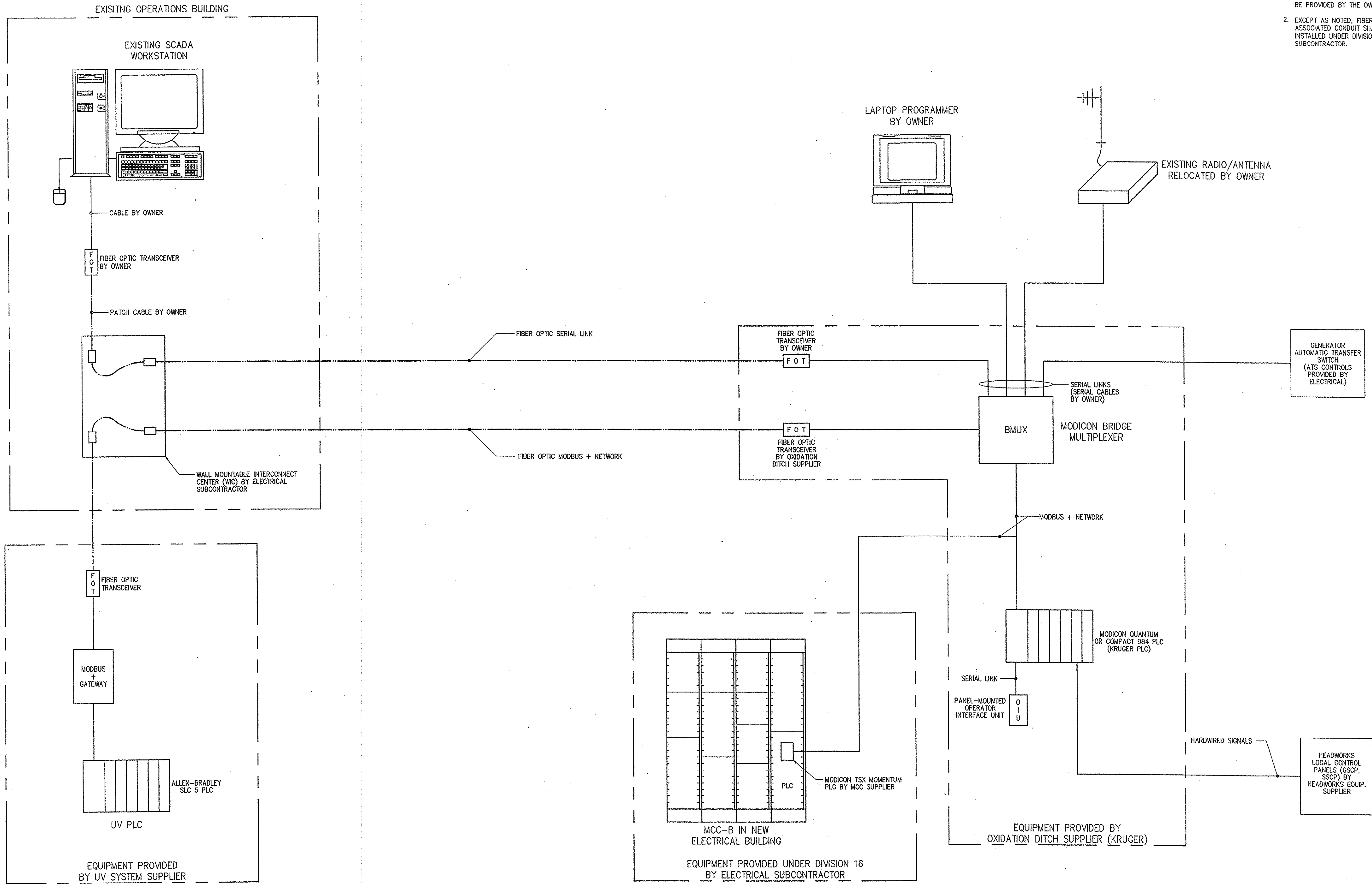
SECTION C
3/8"=1'-0" M301

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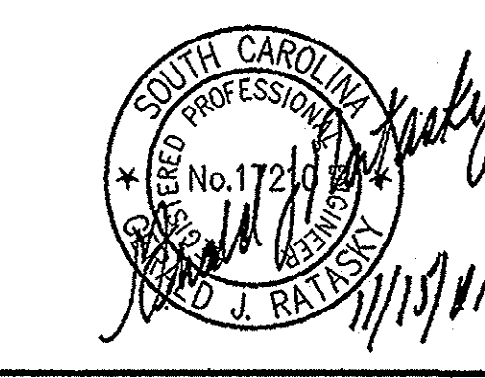
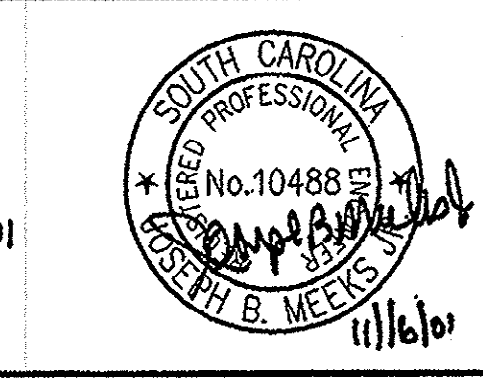
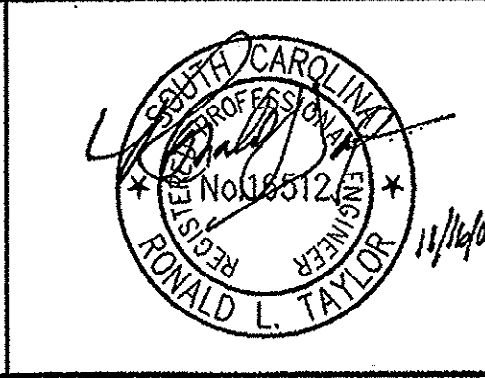
35-004-026

GENERAL NOTES:

1. FIBER OPTIC CONNECTORS AND TERMINATIONS WILL BE PROVIDED BY THE OWNER.
2. EXCEPT AS NOTED, FIBER OPTIC CABLE AND ASSOCIATED CONDUIT SHALL BE FURNISHED AND INSTALLED UNDER DIVISION 16 BY THE ELECTRICAL SUBCONTRACTOR.



DESIGNED	DBE
DRAWN	CMG
CHECKED	JBM
PROJ. ENGR.	JBM
DATE	11/16/01
BY	JBM
APPROVED	
NO.	
1	CONSTRUCTION
2	REGULATORY APPROVAL
3	ISSUED FOR



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

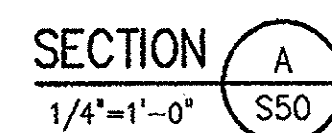
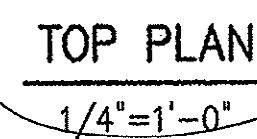
GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

INSTRUMENTATION
CONTROL SYSTEM BLOCK DIAGRAM

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	11
	H&S FLAT FILE NO.	56

35-004-027

1. FOR LOCATION, SIZE, AND TYPE OF PIPE PENETRATIONS, SEE MECHANICAL DRAWINGS. COORDINATE PIPE PENETRATIONS WITH MANUFACTURER OF SCREENING AND GRIT REMOVAL FACILITY.
2. FOR EQUIPMENT PAD LOCATIONS AND GEOMETRY, SEE MECHANICAL DRAWINGS AND COORDINATE WITH MANUFACTURER OF SCREENING AND GRIT REMOVAL FACILITY. FOR EQUIPMENT PAD REINFORCEMENT, SEE DETAIL 0336100.
3. GRIT COLLECTOR CENTER WELL SHALL BE SIZED SUCH THAT A MINIMUM OF SIX INCHES OF NON-SHRINK GROUT CAN BE PLACED BETWEEN CIRCULAR WALL OF GRIT COLLECTOR CENTER WELL AND CONCRETE WALL. COORDINATE LOCATION OF GRIT COLLECTOR CENTER WELL WITH MECHANICAL DRAWINGS AND MANUFACTURER OF SCREENING AND GRIT REMOVAL FACILITY.
4. ALL PIPES BELOW SLAB FOR SCREENING AND GRIT REMOVAL FACILITY SHALL BE ENCASED WITH CLASS "B" CONCRETE A MINIMUM OF 12" ALL AROUND THE PIPE.
5. COORDINATE LOCATION OF CONTRACTION JOINTS WITH MANUFACTURER OF SCREENING AND GRIT REMOVAL FACILITY. CONTRACTION JOINTS SHALL NOT BE LOCATED DIRECTLY BENEATH A SUPPORT OR BASE PLATE FOR ANY COMPONENT OF FACILITY. FOR TYPICAL CONTRACTION JOINT, SEE DETAIL 0325101.

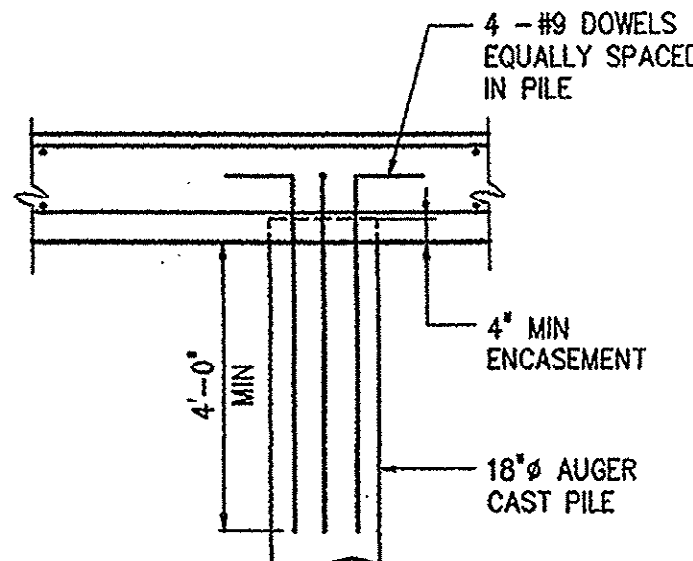


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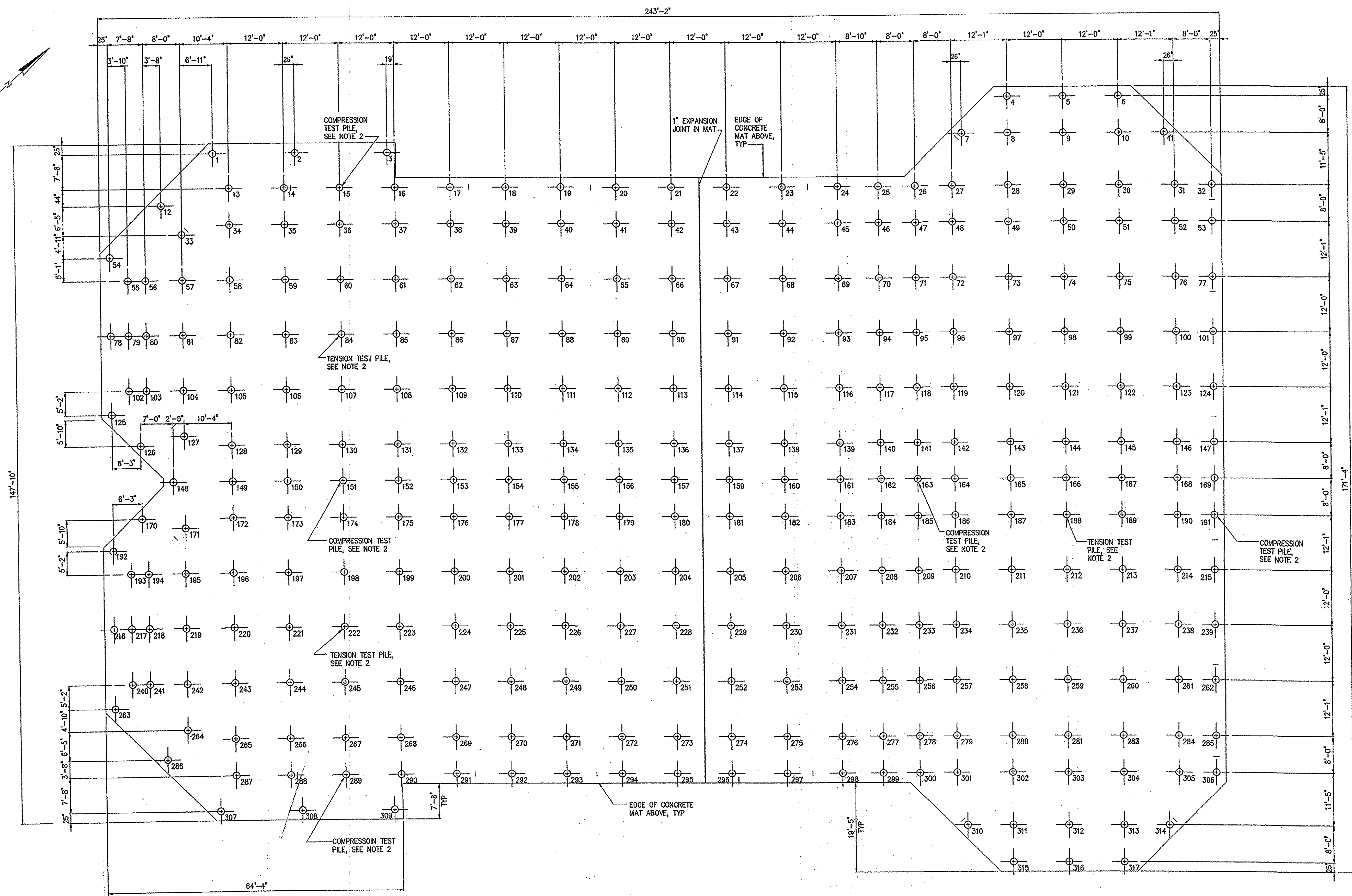
NOTES:

- 1 ALL PILES SHALL BE EIGHTEEN (18) INCH DIAMETER AUGER CAST PRESSURE-INJECTED GROUT PILES. PILES SHALL BE INSTALLED AS REQUIRED TO DEVELOP A MINIMUM VERTICAL DOWNWARD WORKING LOAD OF 90 TONS (180 TONS ULTIMATE CAPACITY) AND A MINIMUM UPLIFT WORKING LOAD OF 30 TONS (60 TONS ULTIMATE CAPACITY). PILES SHALL BE EMBEDDED A MINIMUM OF THIRTY (30) FEET BELOW BOTTOM OF CONCRETE MAT.
- 2 A MINIMUM OF FIVE (5) PILES SHALL BE TESTED IN COMPRESSION IN ACCORDANCE WITH SPECIFICATIONS. THREE (3) ADDITIONAL PILES SHALL BE TESTED IN TENSION IN ACCORDANCE WITH SPECIFICATIONS.
- 3 PILES SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SPECIFICATION 02263.
- 4 PILES SHALL BE EXTENDED A MINIMUM OF FOUR (4) INCHES INTO MAT FOUNDATION. FOR TYPICAL CONNECTION OF AUGER CAST PILES TO CONCRETE MAT, SEE DETAIL 1/S100.



NOTES: REINFORCING SHOWN IS REQUIRED IN ALL PILES.

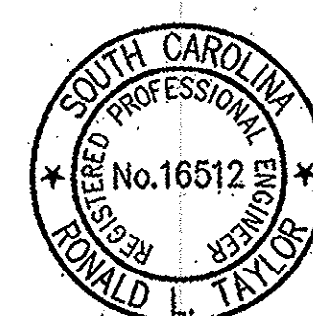
DETAIL 1
3/8"=1'-0" S100



FOUNDATION PLAN

3/32"=1'-0"

					DESIGNED	CTP
					DRAWN	ASC
					CHECKED	
3	DIMENSIONS REVISED	4-19-02			PROJ. ENGR.	JBM
2	CONSTRUCTION	11-16-01				
1	REGULATORY APPROVAL	8-31-01				
NO.	ISSUED FOR	DATE	BY		APPROVED	



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

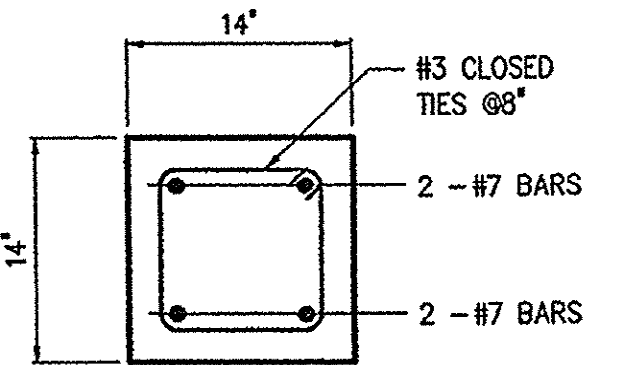
4 MGD TRIPLE DITCH AERATION BASIN
STRUCTURAL
PILE PLAN AND DETAIL

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	S100
	H&S FLAT FILE NO.	56

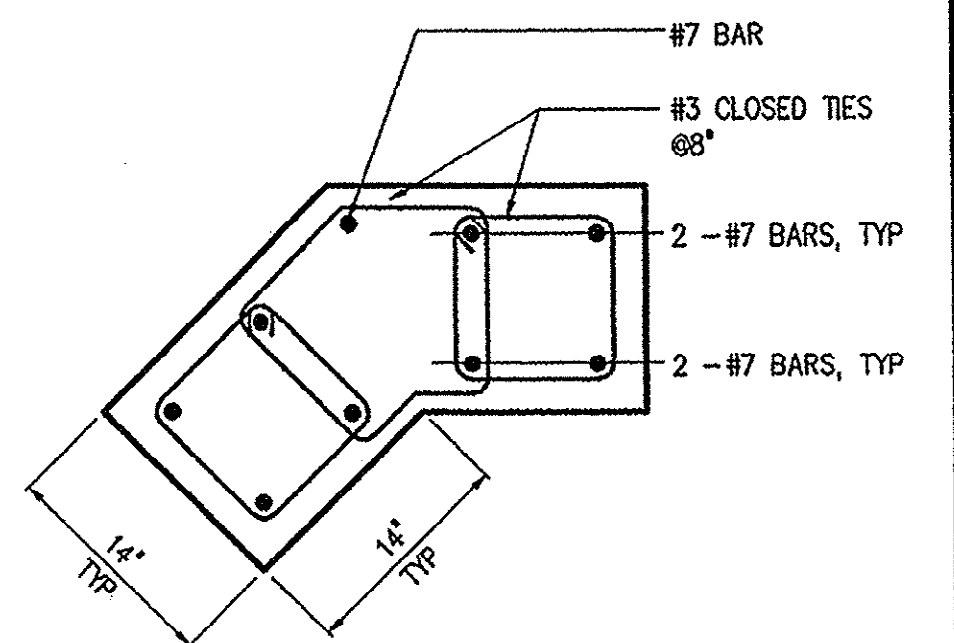
35-004-029

NOTES:

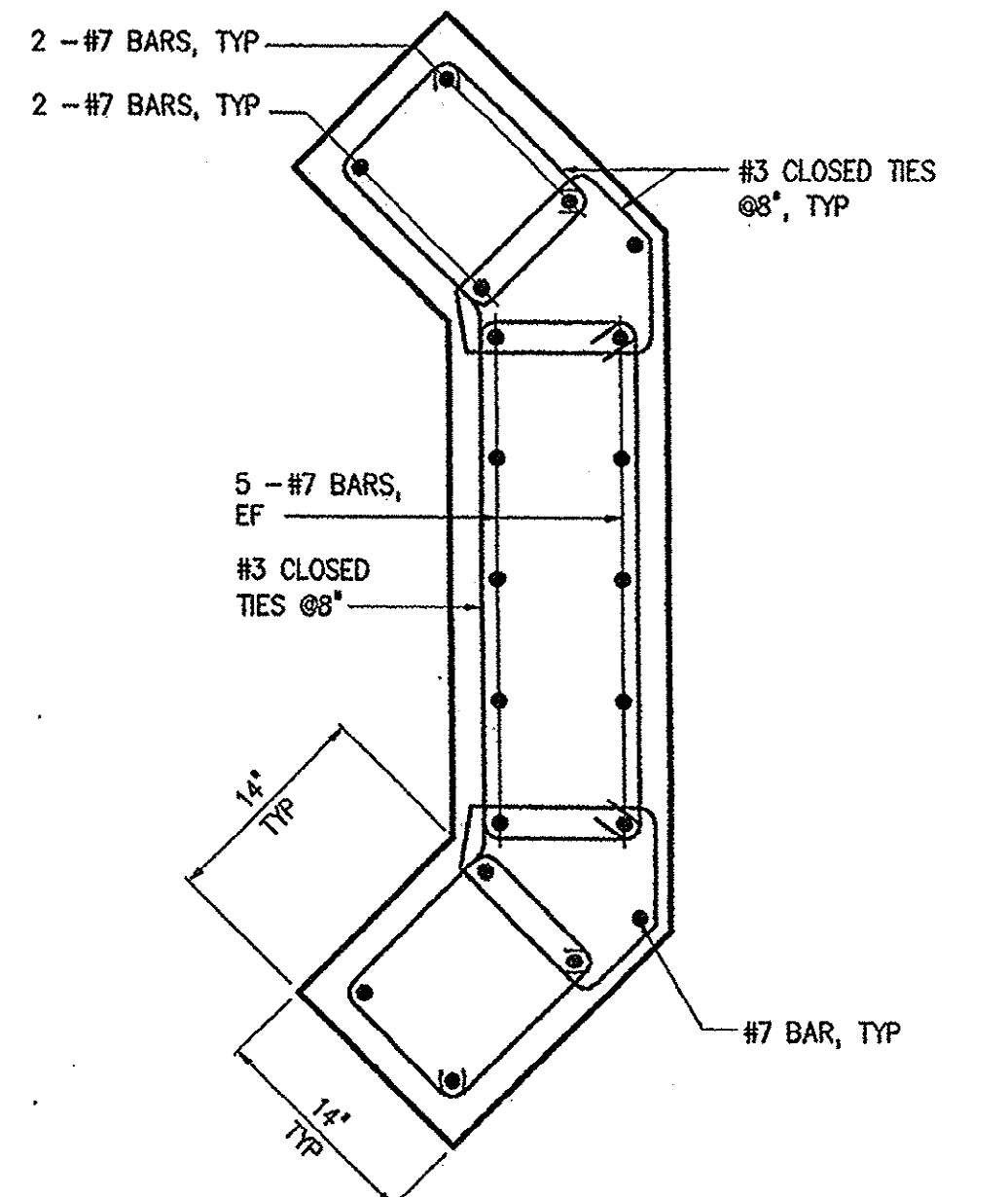
- 1 AUGER CAST PRESSURE-INJECTED GROUT PILES ARE NOT SHOWN FOR CLARITY. SEE DRAWING S100 FOR PILE LOCATIONS.
- 2 FOR TYPICAL COLUMN GEOMETRY AND REINFORCEMENT. SEE DETAIL 1/S101 FOR COLUMN ELEVATION, SEE 0331800.
- 3 ALL PIPES BENEATH SLAB OF AERATION BASIN SHALL BE ENCASED WITH CLASS A CONCRETE WITH A MINIMUM 12" CONCRETE ALL AROUND PIPE. PROVIDE #5@8" U-BAR DOWELS IN THE ENCASEMENT TO TIE THE ENCASEMENT INTO THE CONCRETE MAT. U-BAR SHALL SPAN BENEATH PIPE WITH LEGS OF U-BAR EXTENDING UP INTO MAT ON EACH SIDE OF PIPE. LEGS SHALL EMBED IN TOP SLAB TO ELEVATION OF TOP MAT OF REINFORCING STEEL AND TERMINATE WITH A STANDARD 90° HOOK.



TYPE 1 (8 TOTAL)



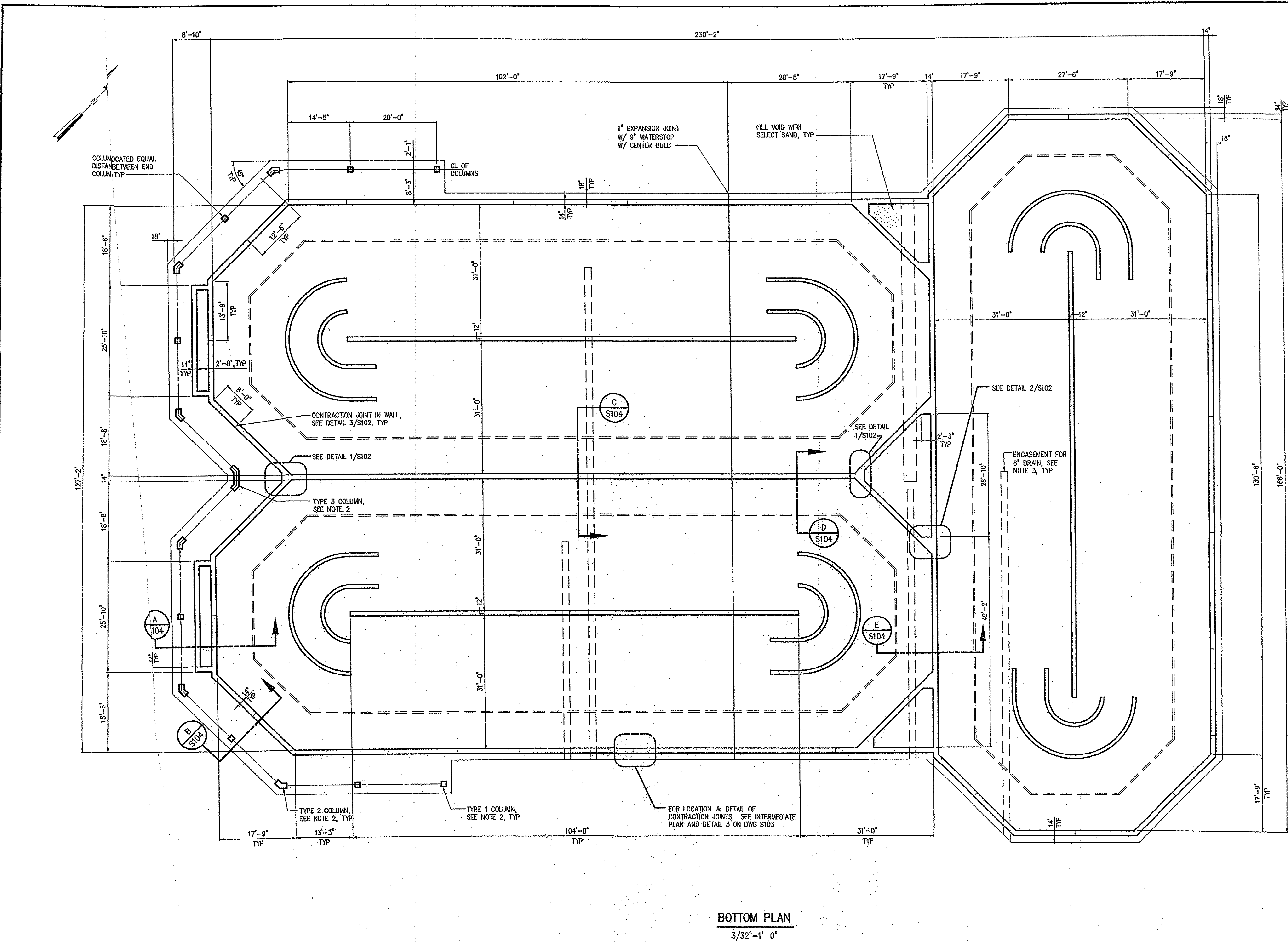
TYPE 2 (6 TOTAL)



TYPE 3 (1 TOTAL)

TYPICAL COLUMNS

DETAIL 1
1"=1'-0" S101



BOTTOM PLAN

3/32"=1'-0"

DESIGNED	CTP
DRAWN	ASC
CHECKED	
PROJ. ENGR.	JBM
ISSUED FOR	DATE
NO.	BY
1	APPROVED
2	
3	



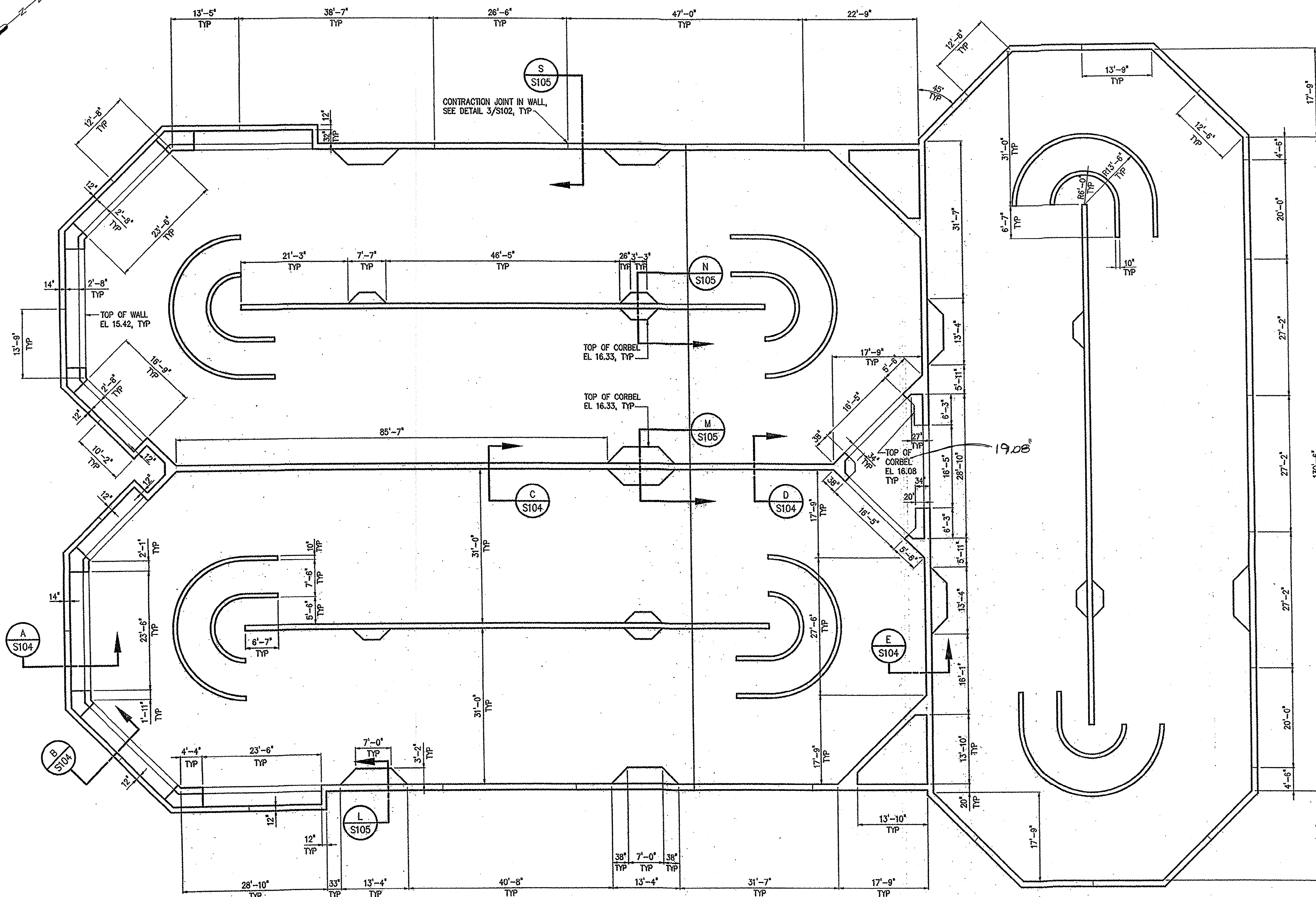
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Environmental Engineers & Scientists
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SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

4 MGD TRIPLE DITCH AERATION BASIN
STRUCTURAL
BOTTOM PLAN AND DETAIL

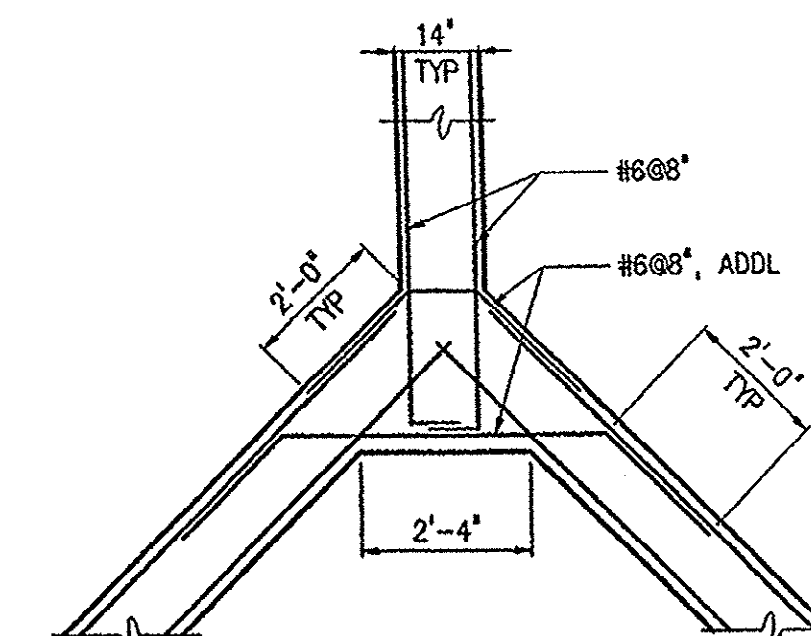
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	S101
	H & S FLAT FILE NO.	56

35-004-030



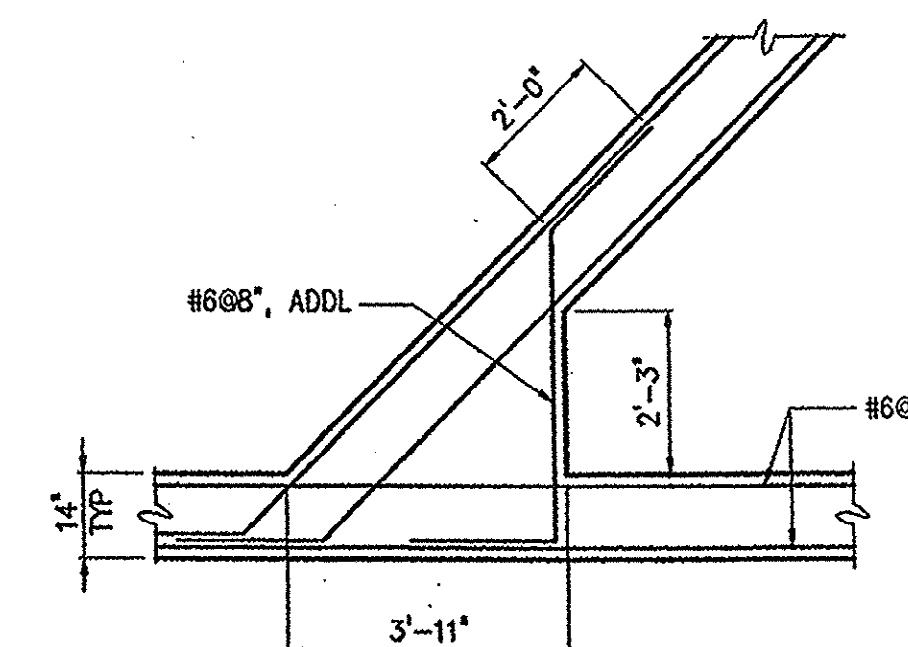
INTERMEDIATE PLAN (EL 16.50)

3/32"=1'-0"



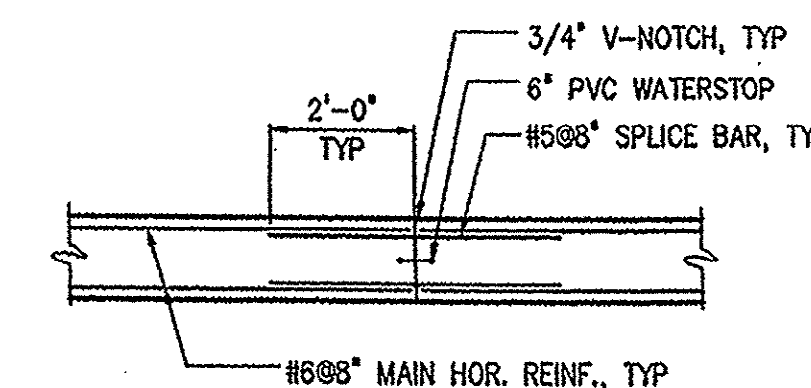
NOTE: VERTICAL REINFORCEMENT NOT SHOWN

DETAIL 1
3/8"=1'-0" S101



NOTE: VERTICAL REINFORCEMENT NOT SHOWN

DETAIL 2
3/8"=1'-0" S101

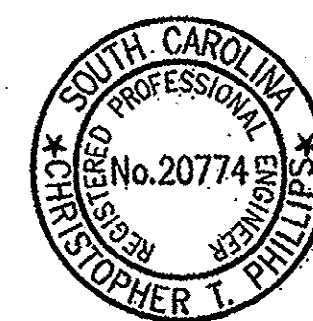
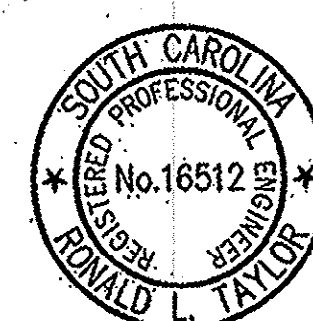


TYPICAL EXTERIOR WALL CONTRACTION JOINT

NOTE: WALL CONSTRUCTION JOINTS MAY BE LOCATED AT CONTRACTION JOINT LOCATIONS AT CONTRACTOR'S OPTION.

DETAIL 3
3/8"=1'-0" S102

DESIGNED	CTP
DRAWN	ASC
CHECKED	
PROJ. ENGR.	JBM
APPROVED	
NO.	
3	DIMENSIONS REVISED 4-19-02
2	CONSTRUCTION 11-16-01
1	REGULATORY APPROVAL 8-31-01
	ISSUED FOR DATE BY

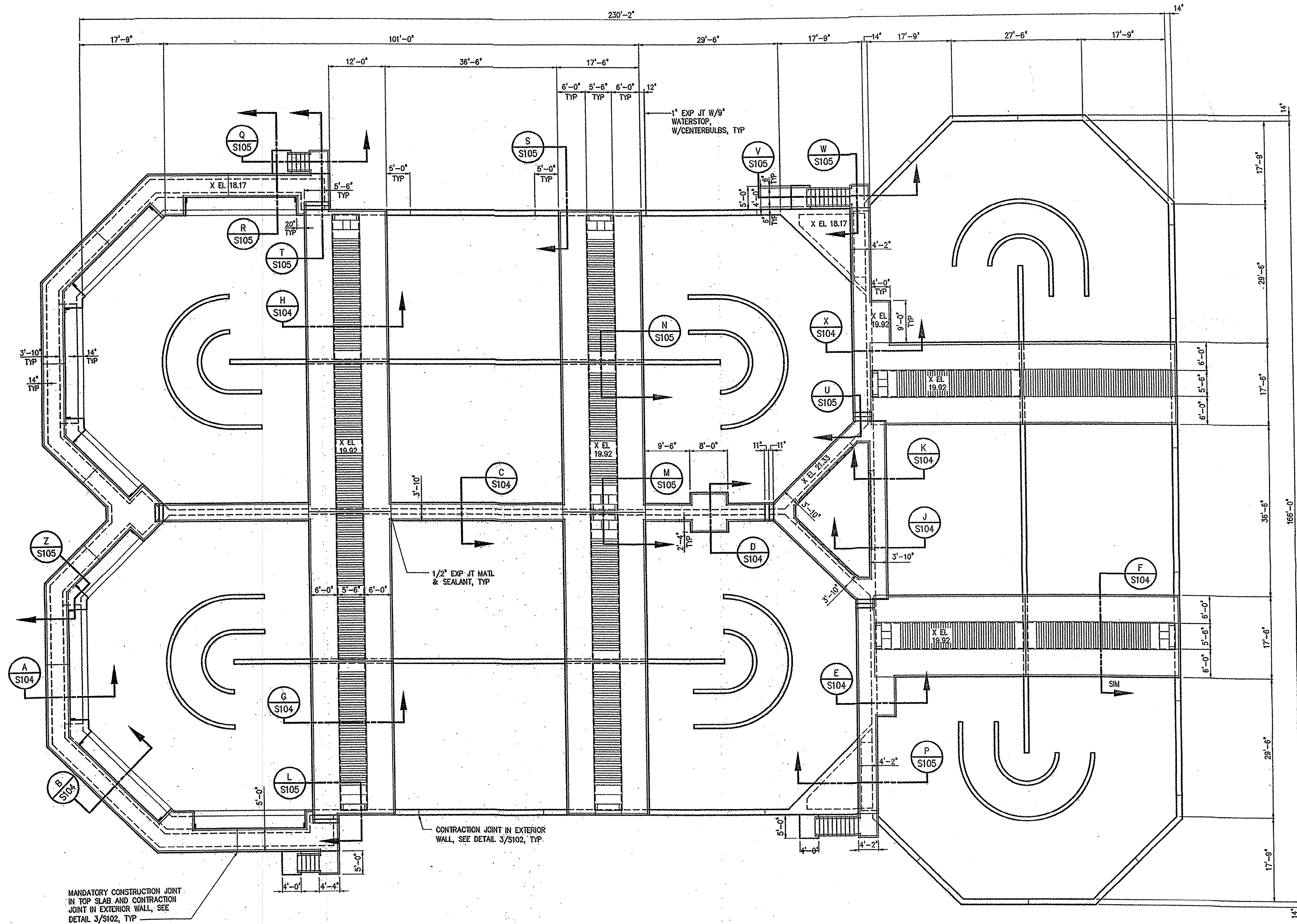


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Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

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4.0 MGD EXPANSION AND UPGRADE

4 MGD TRIPLE DITCH AERATION BASIN
STRUCTURAL
INTERMEDIATE PLAN AND DETAILS

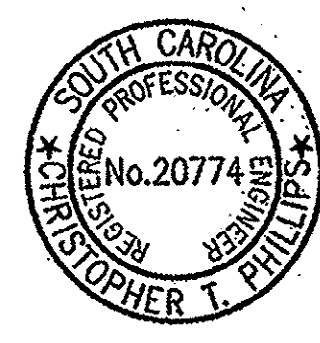
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001
H & S JOB NUMBER	30631
CONTRACT NUMBER	1
DRAWING NUMBER	S102
H & S FLAT FILE NO.	56



TOP PLAN
3/32"=1'-0"

NO.	DATE	BY	APPROVED
3	4-19-02		
2	11-16-01		
1	8-31-01		
	ISSUED FOR		

DESIGNED: CTP
DRAWN: ASC
CHECKED: JBM
PROJ. ENGR. JBM



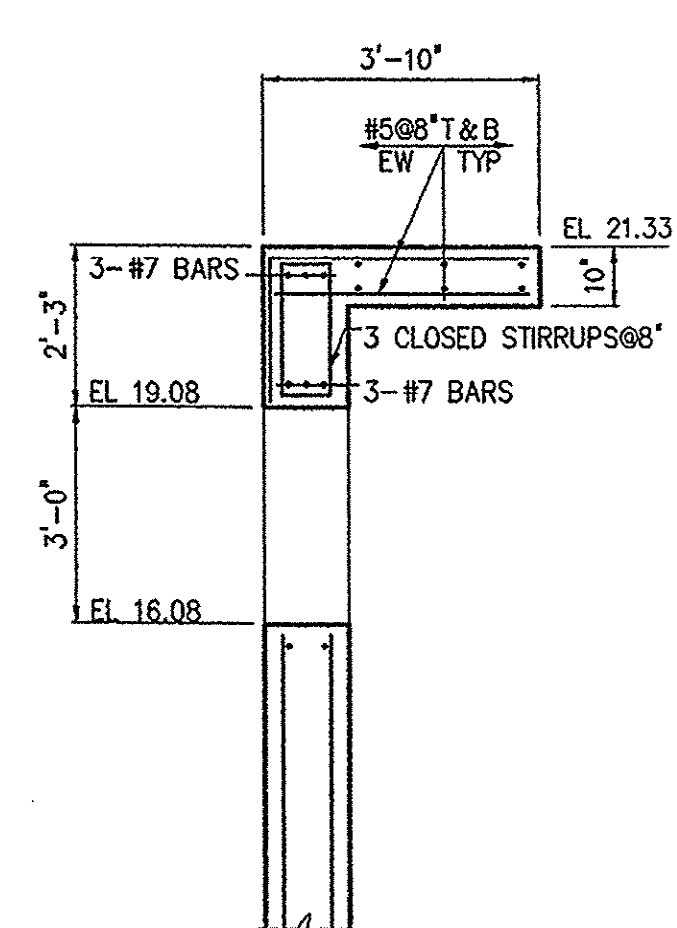
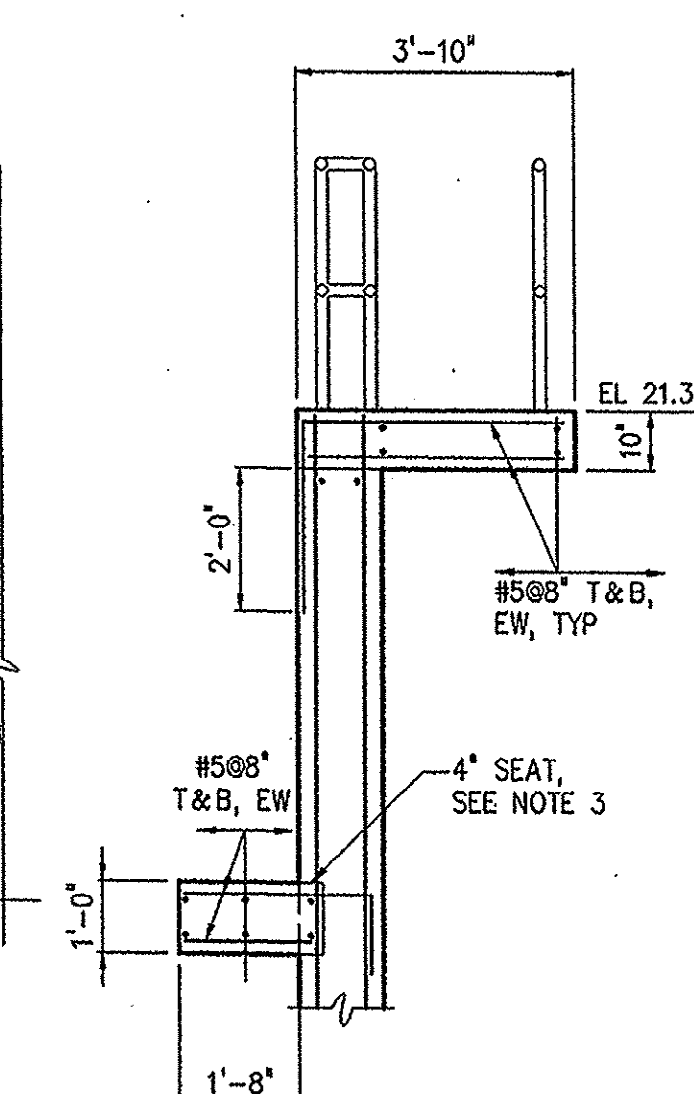
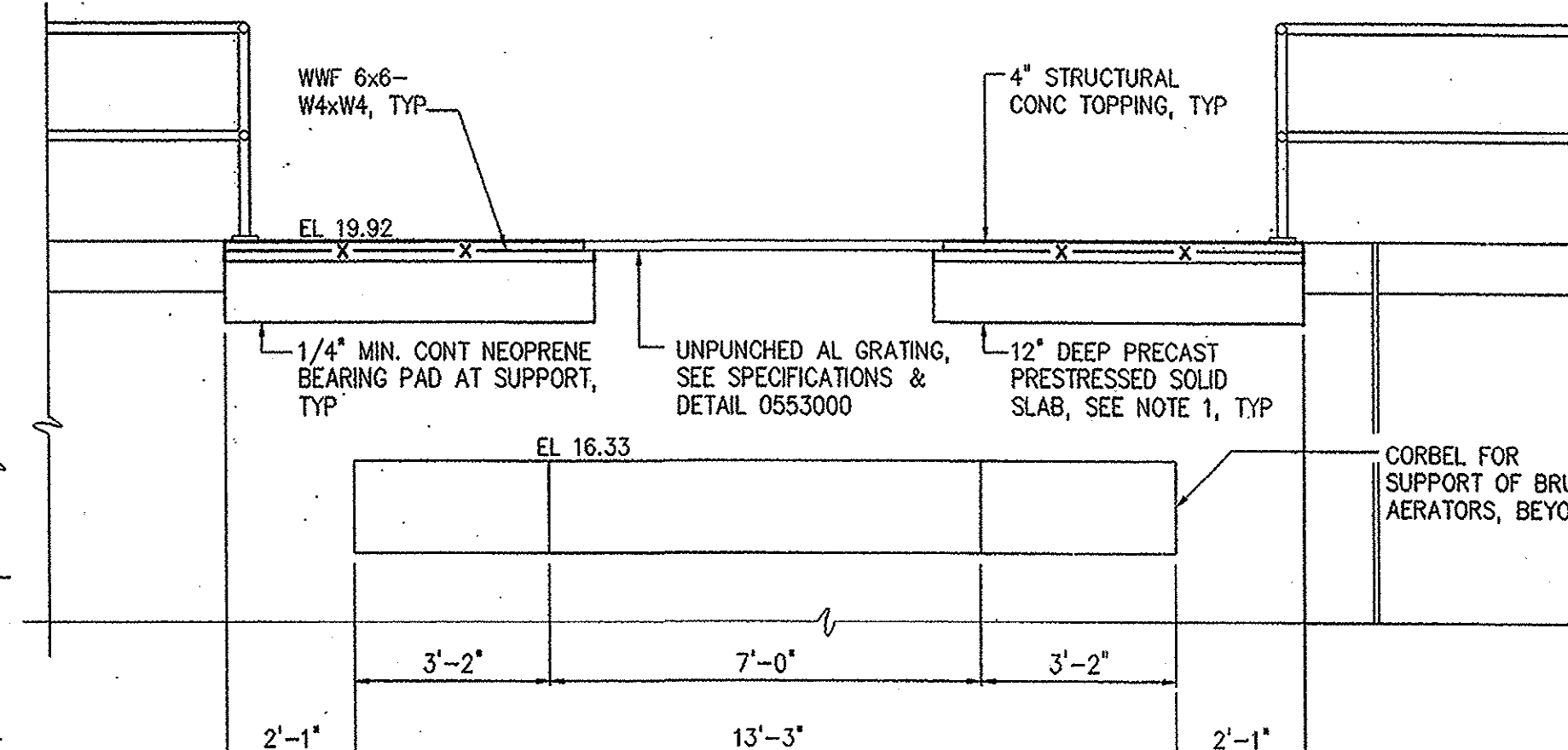
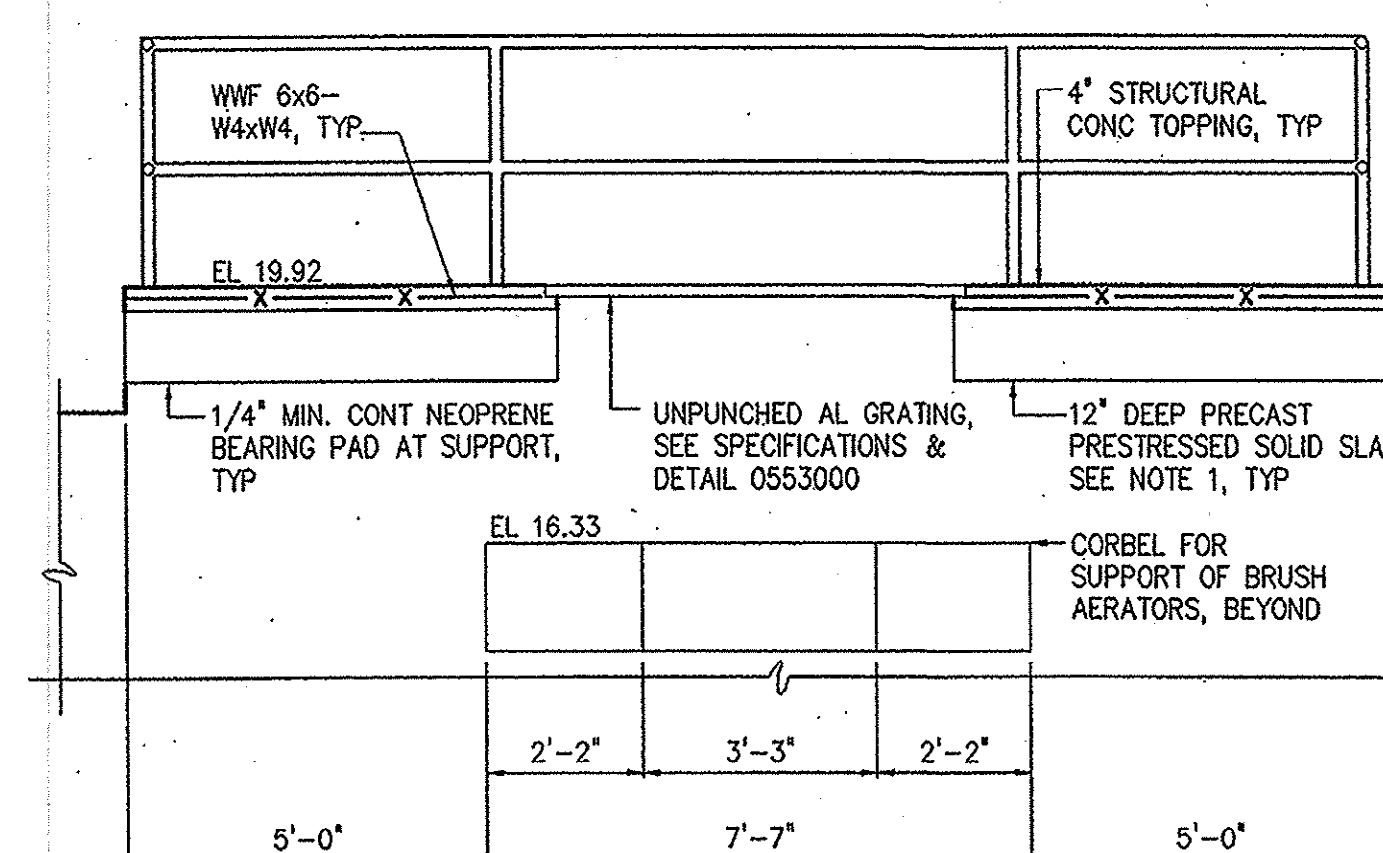
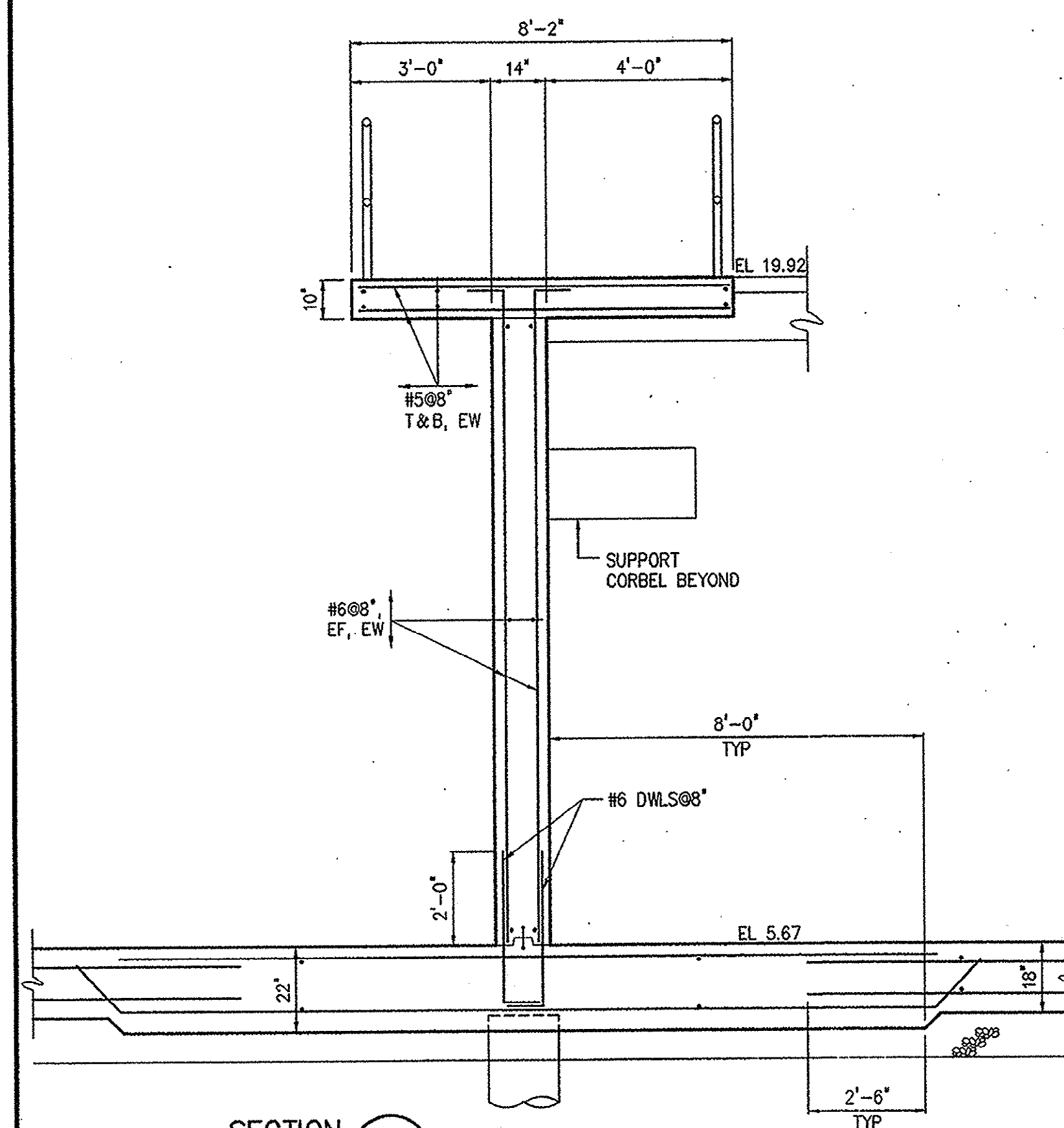
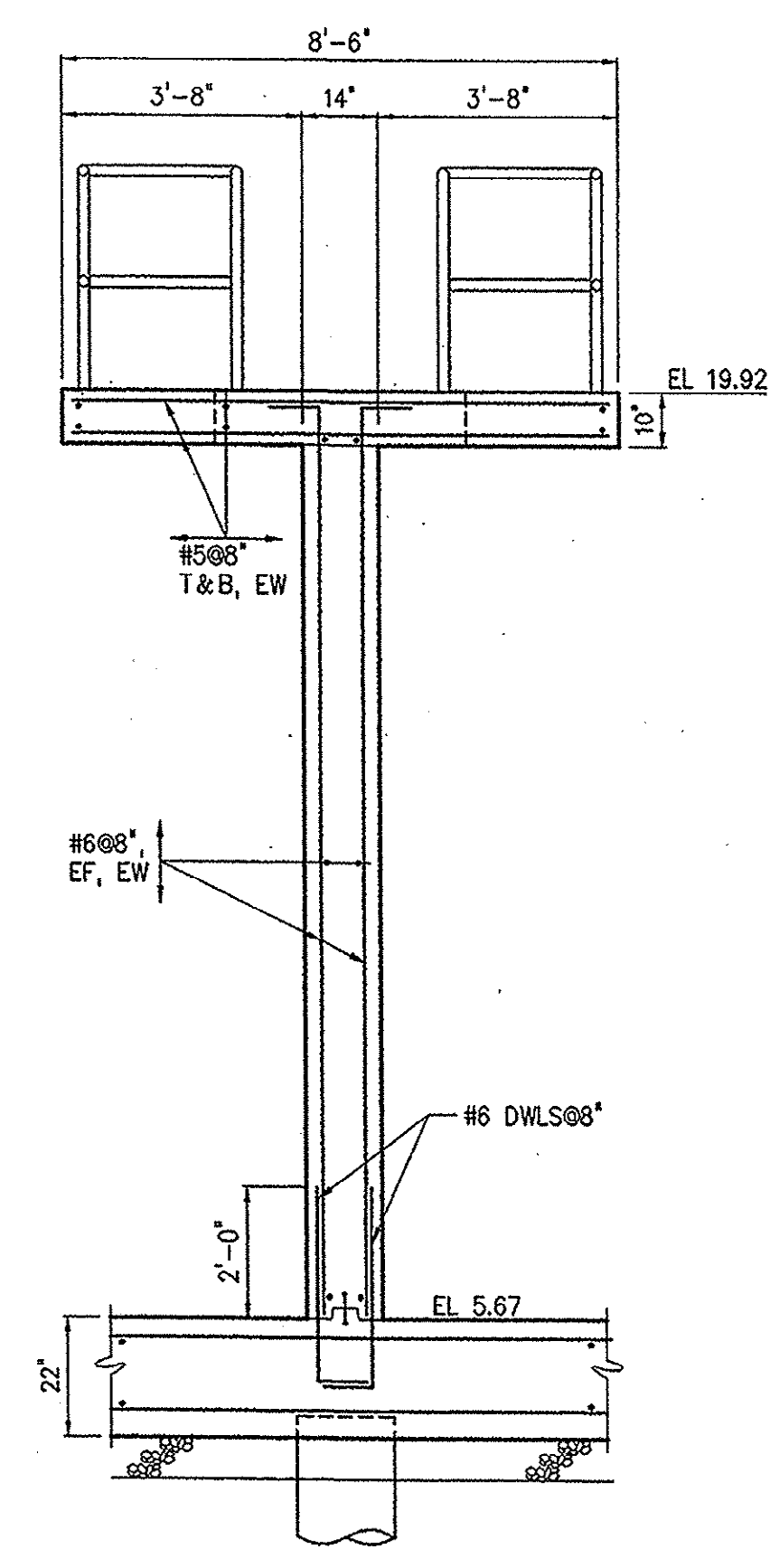
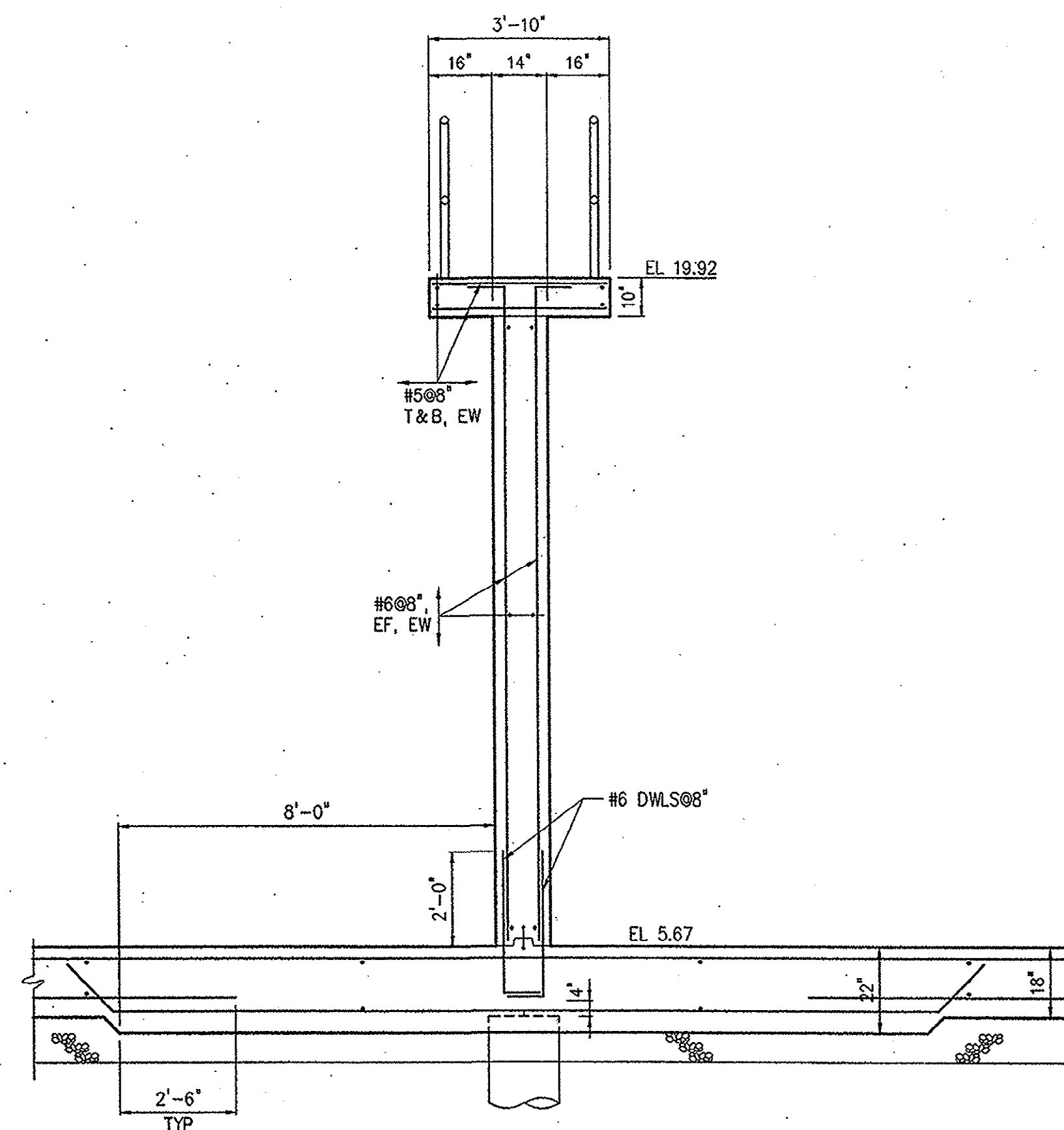
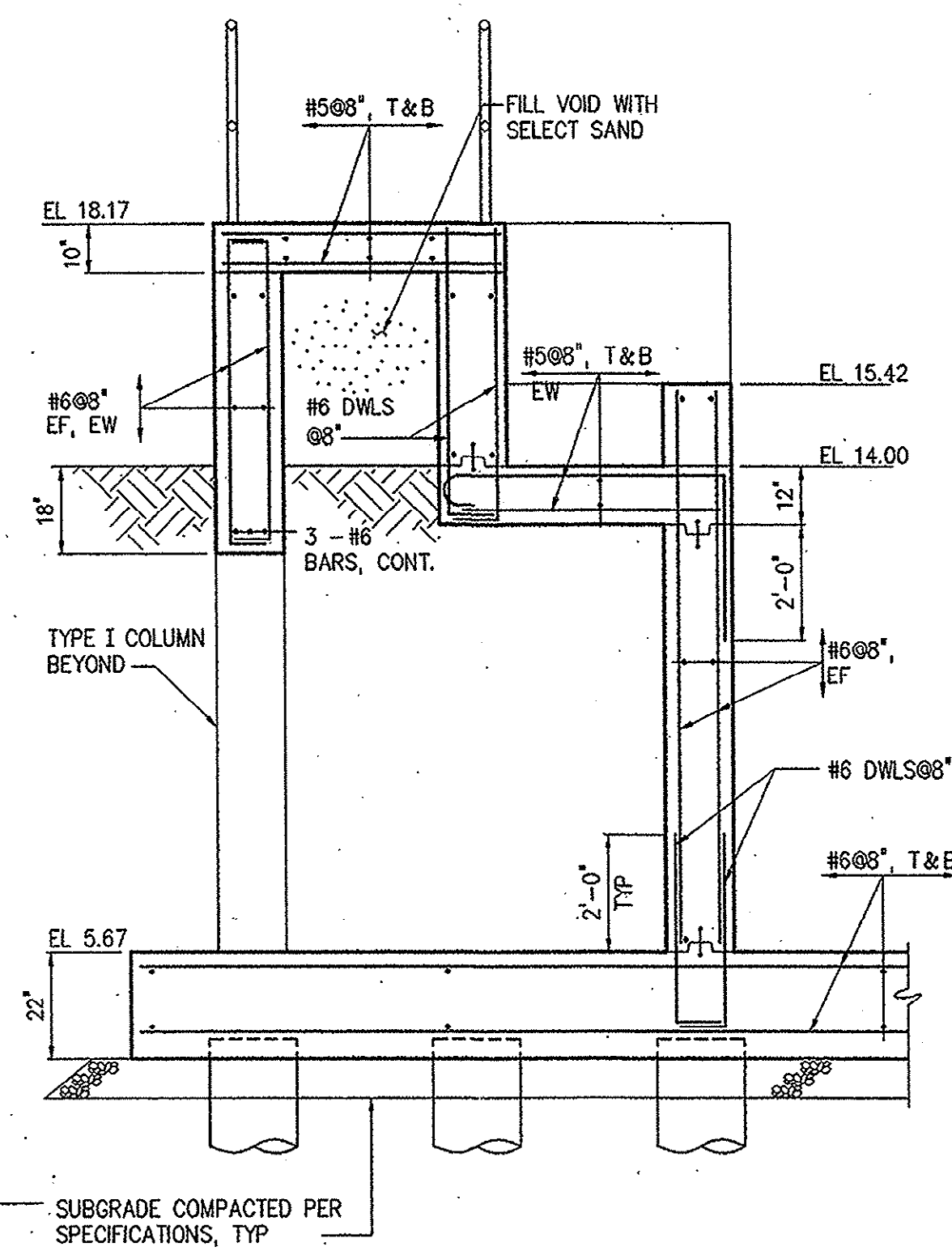
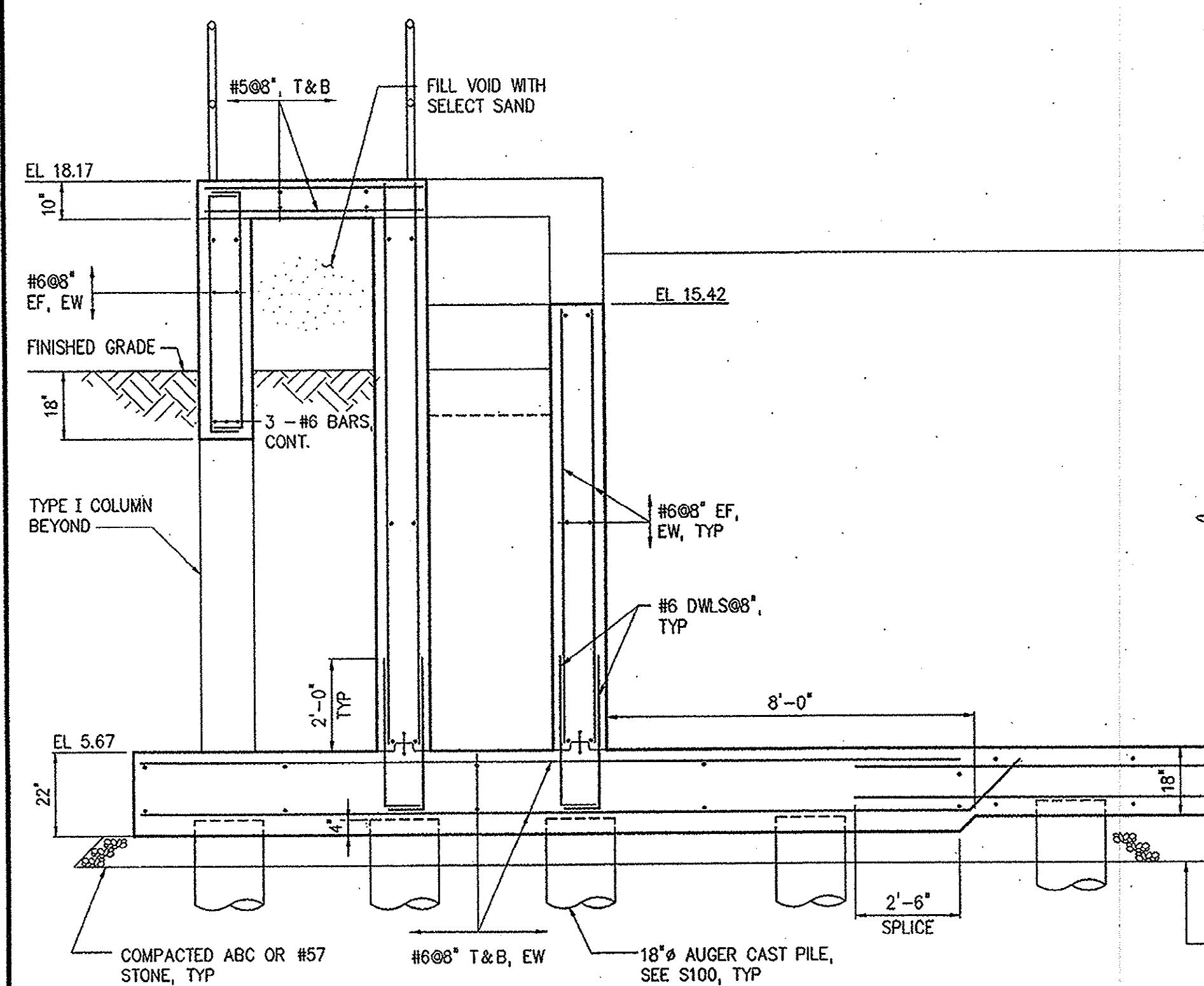
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4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

4 MGD TRIPLE DITCH AERATION BASIN
STRUCTURAL
TOP PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE: AUGUST 2001
H & S JOB NUMBER: 30631	CONTRACT NUMBER: 1
DRAWING NUMBER: S103	H&S FILE NO. 56

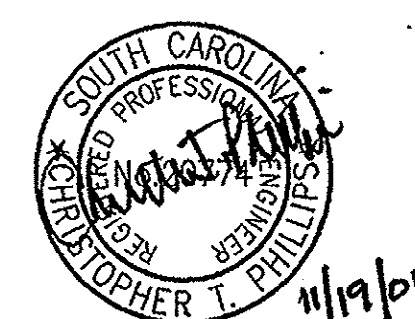
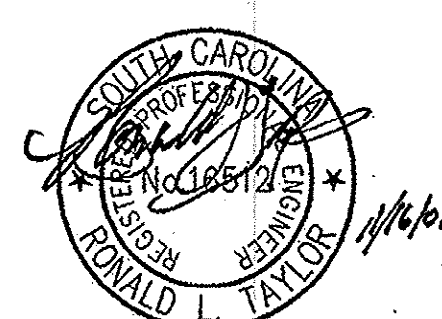
35-004-032



- NOTES:

- 1 PRECAST PRESTRESSED SOLID SLABS SHALL BE DESIGNED BY PRECAST SLAB MANUFACTURER AS PER SPECIFICATION SECTION 03415.
- 2 FOR TYPICAL SUBGRADE PREPARATION, SEE SECTION A/S104.
- 3 VERTICAL REINFORCEMENT IN WALL SHALL NOT BE INTERRUPTED THROUGH BLOCKOUT FOR SEAT.

					DESIGNED	CTP
					DRAWN	ASC
					CHECKED	CTP
					PROJ. ENGR.	JBM
2	CONSTRUCTION	11/16/01	JBM			
1	REGULATORY APPROVAL	8-31-01	JBM			
NO	ISSUED FOR	DATE	BY		APPROVED	<i>[Signature]</i>



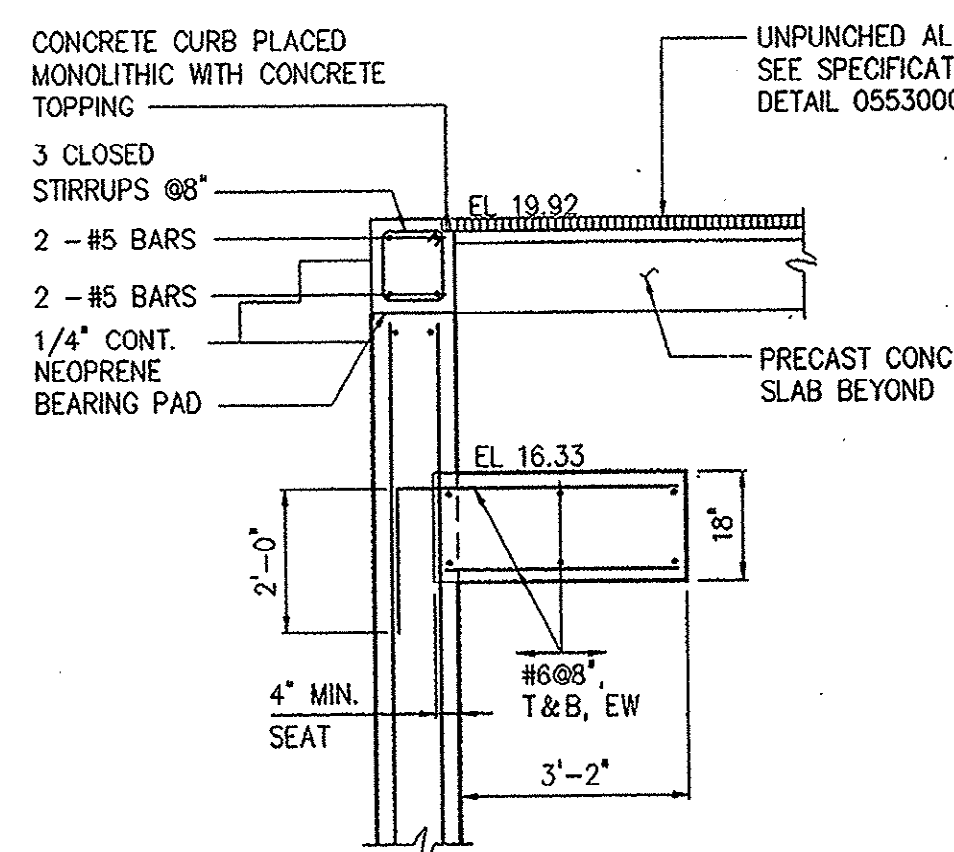
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GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA

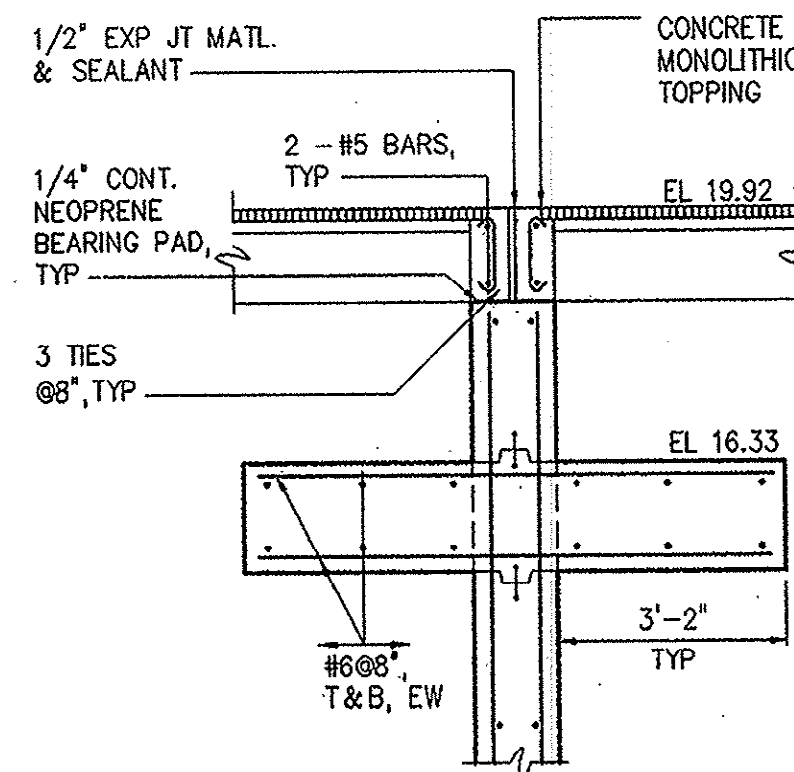
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

4 MGD TRIPLE DITCH AERATION BASIN
STRUCTURAL
SECTIONS

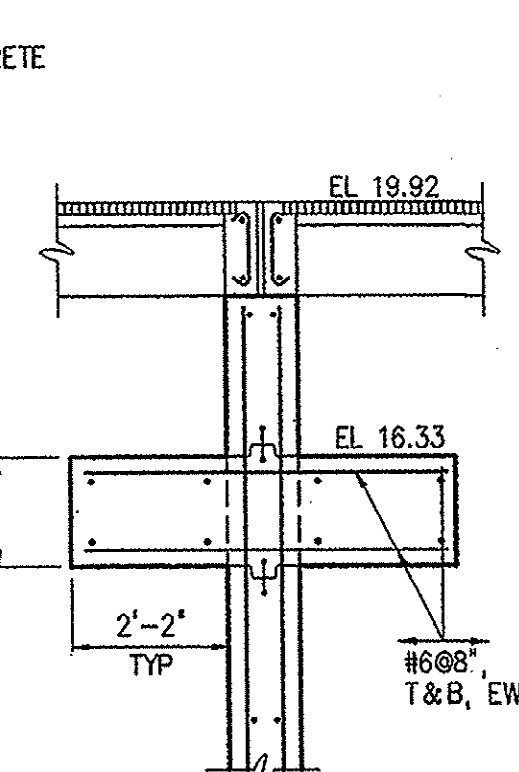
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001	
	H & S JOB NUMBER 30631	
	CONTRACT NUMBER 1	DRAWING NUMBER S104
	H & S FLAT FILE NO. 56	



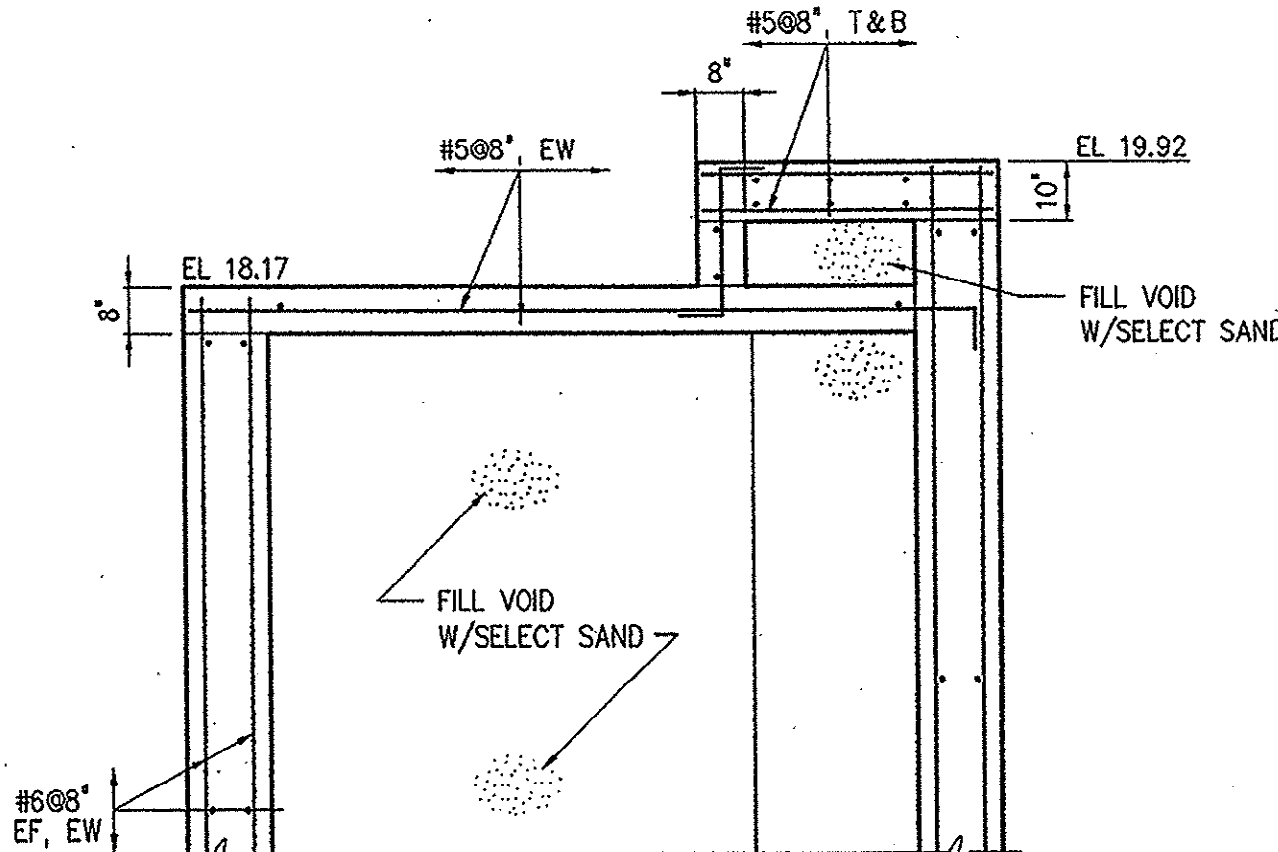
SECTION L
3/8\"=1'-0\" S102



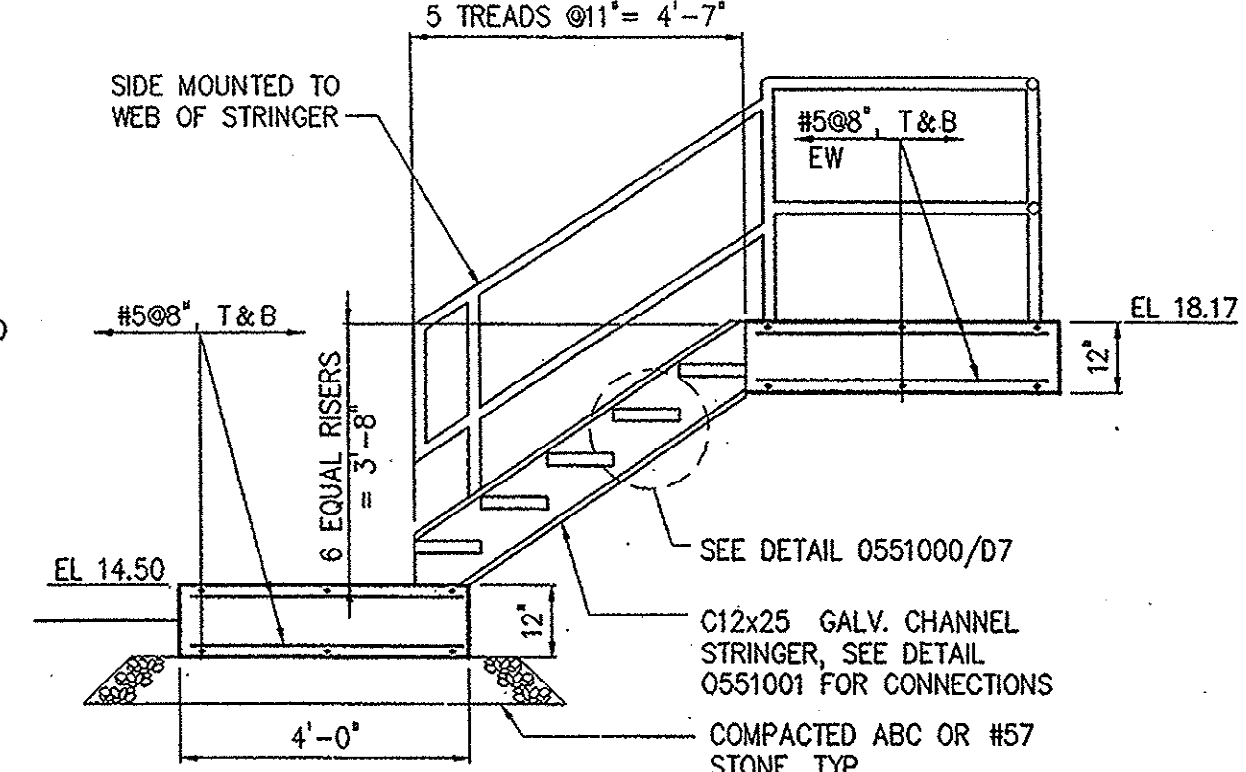
SECTION M
3/8\"=1'-0\" S102



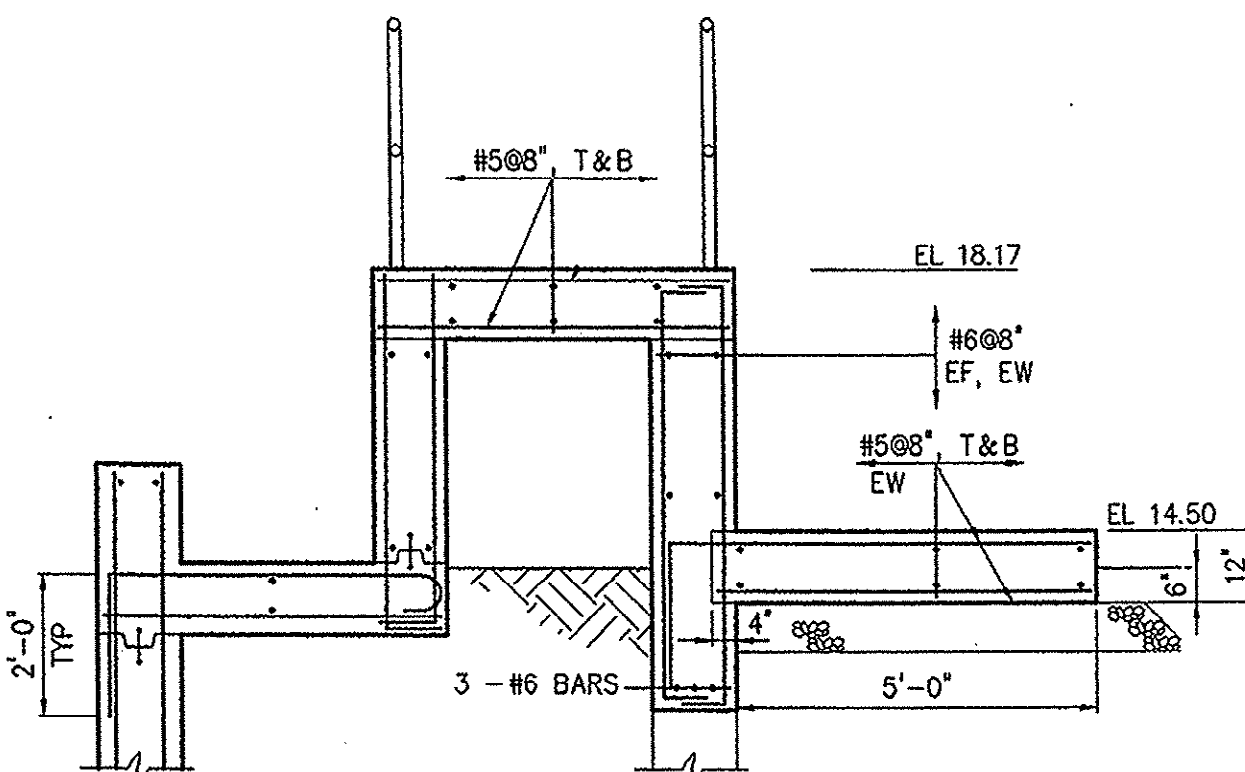
SECTION N
3/8\"=1'-0\" S102



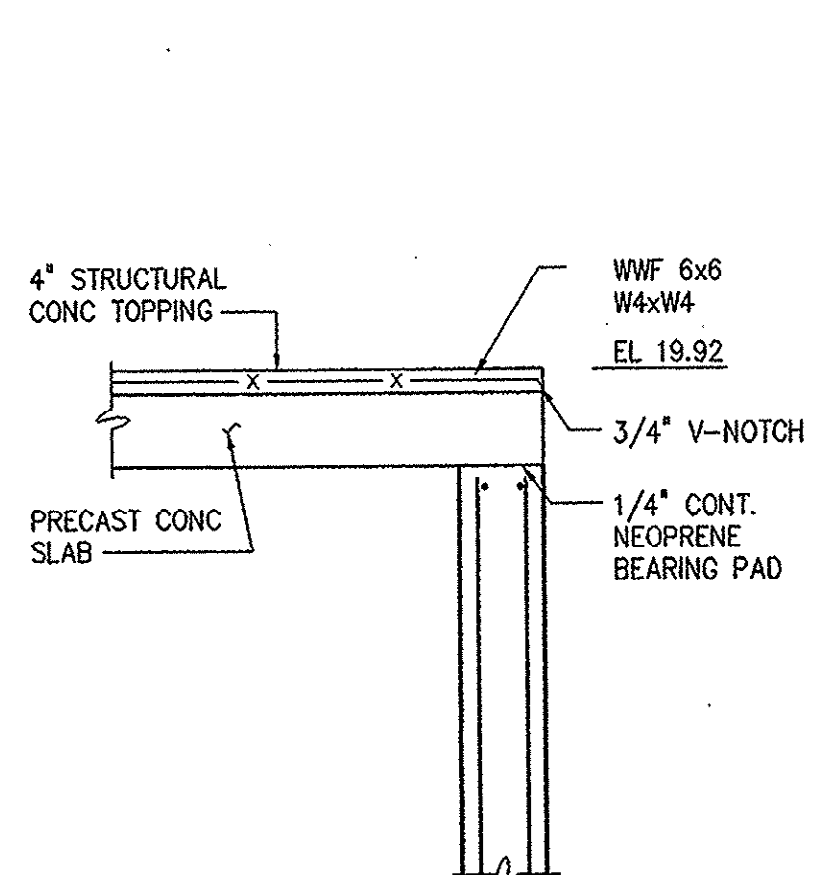
SECTION P
3/8\"=1'-0\" S103



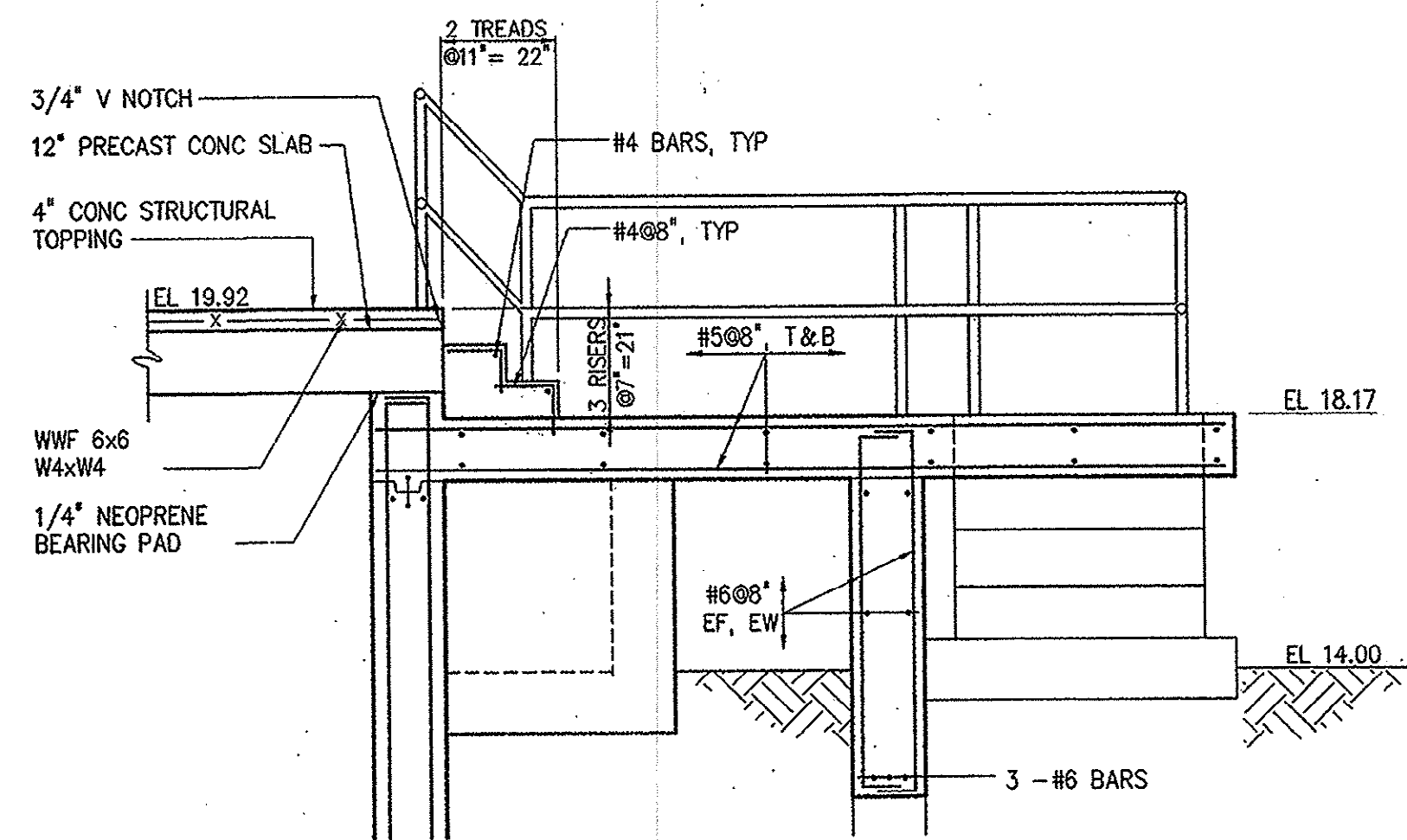
SECTION Q
3/8\"=1'-0\" S103



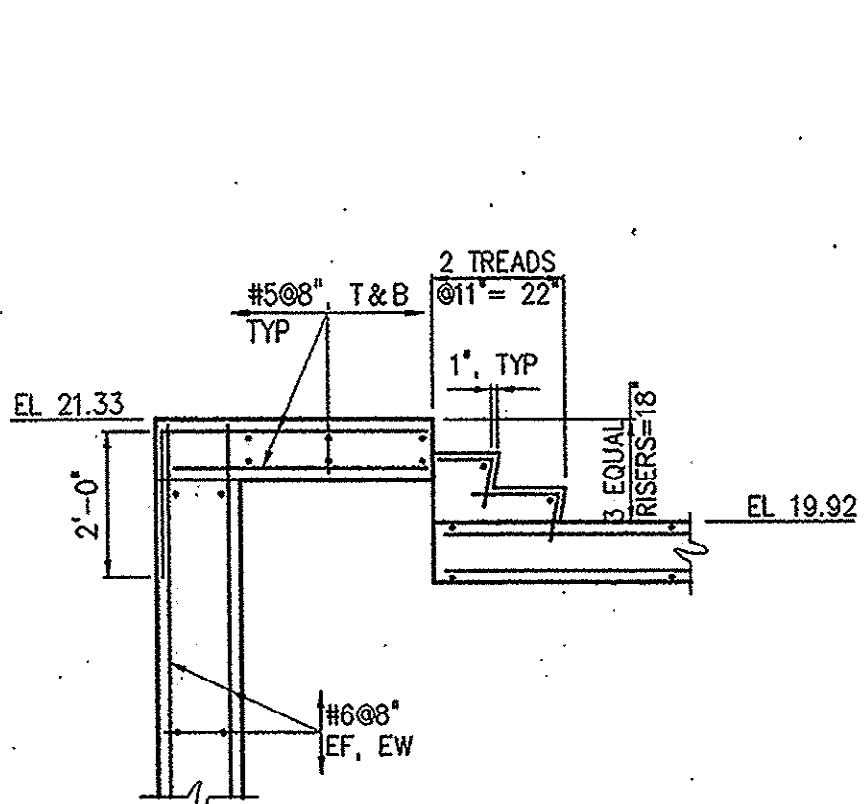
SECTION R
3/8\"=1'-0\" S103



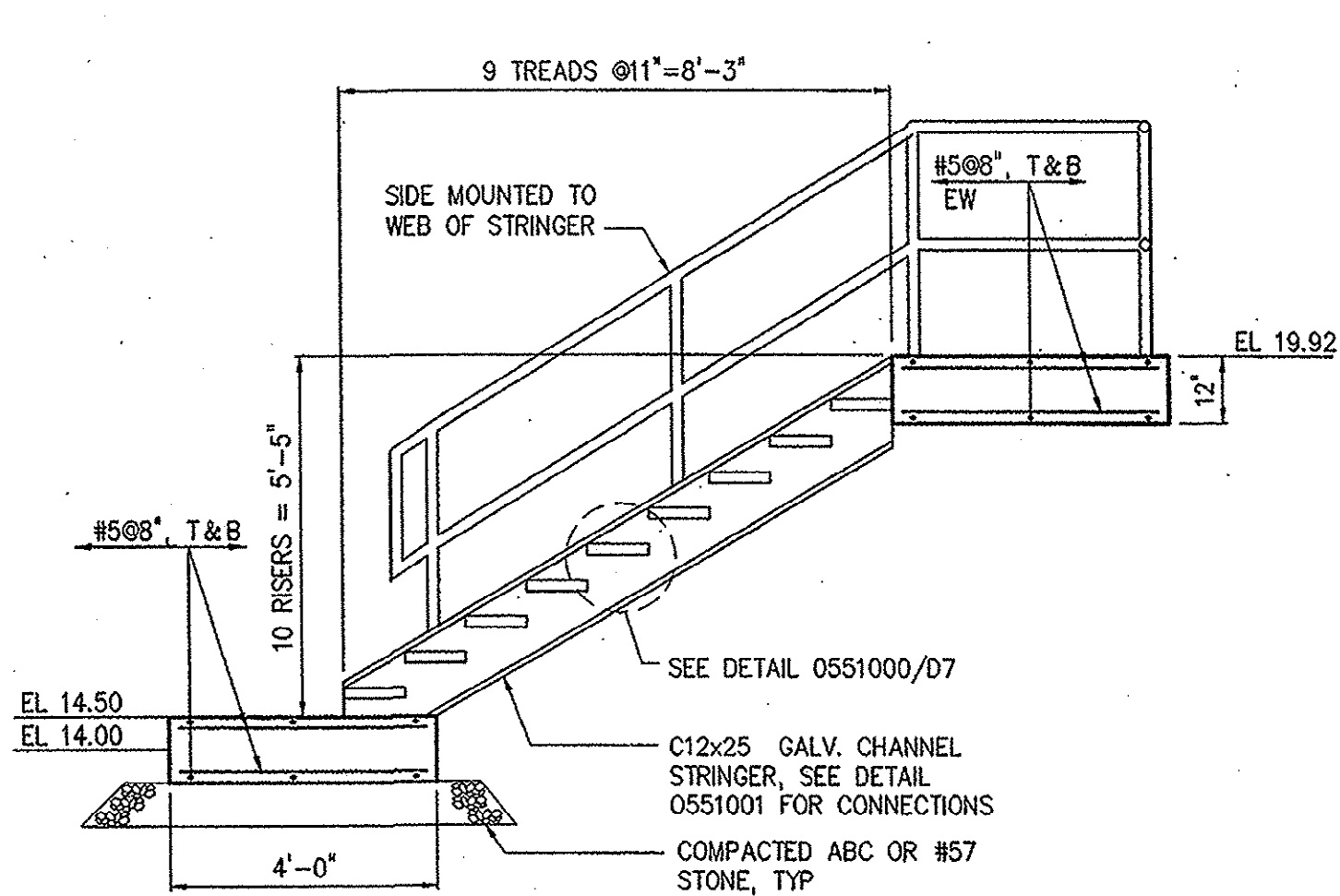
SECTION S
3/8\"=1'-0\" S103



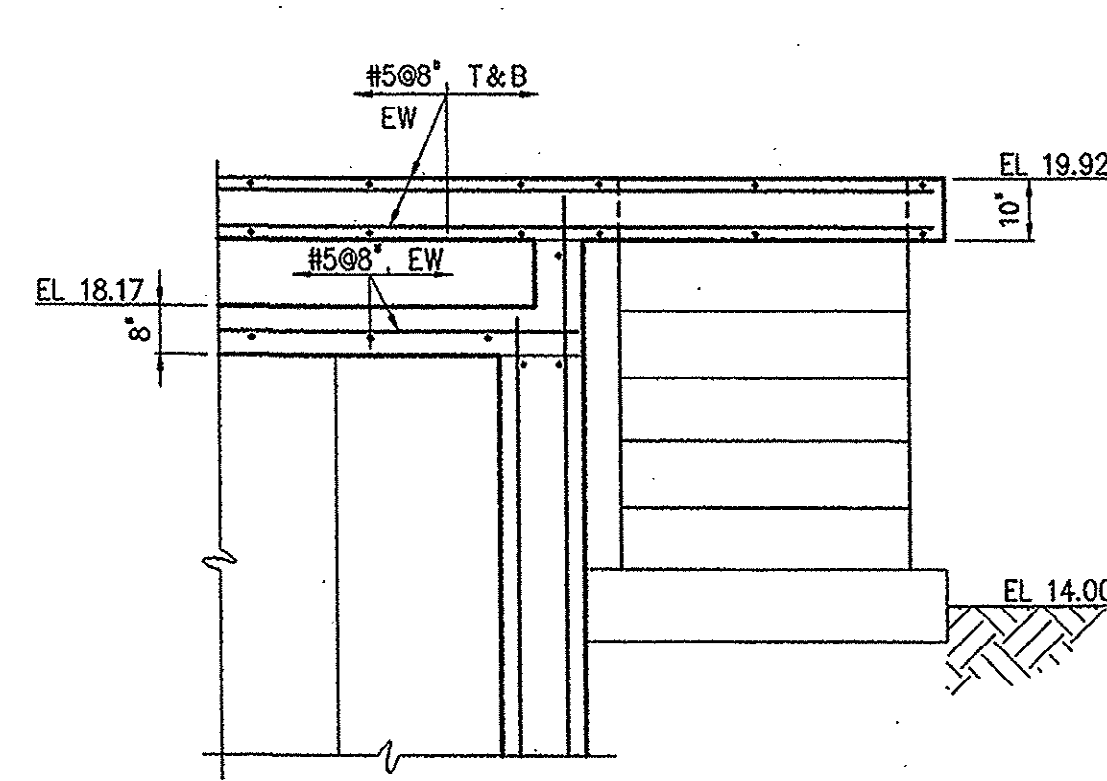
SECTION T
3/8\"=1'-0\" S103



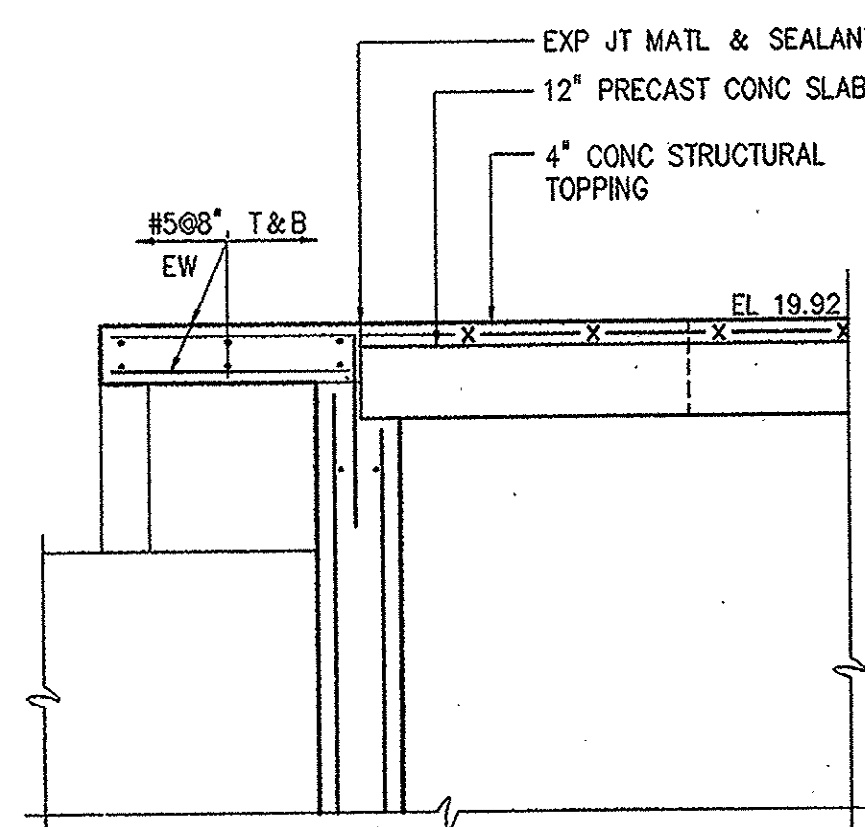
SECTION U
3/8\"=1'-0\" S103



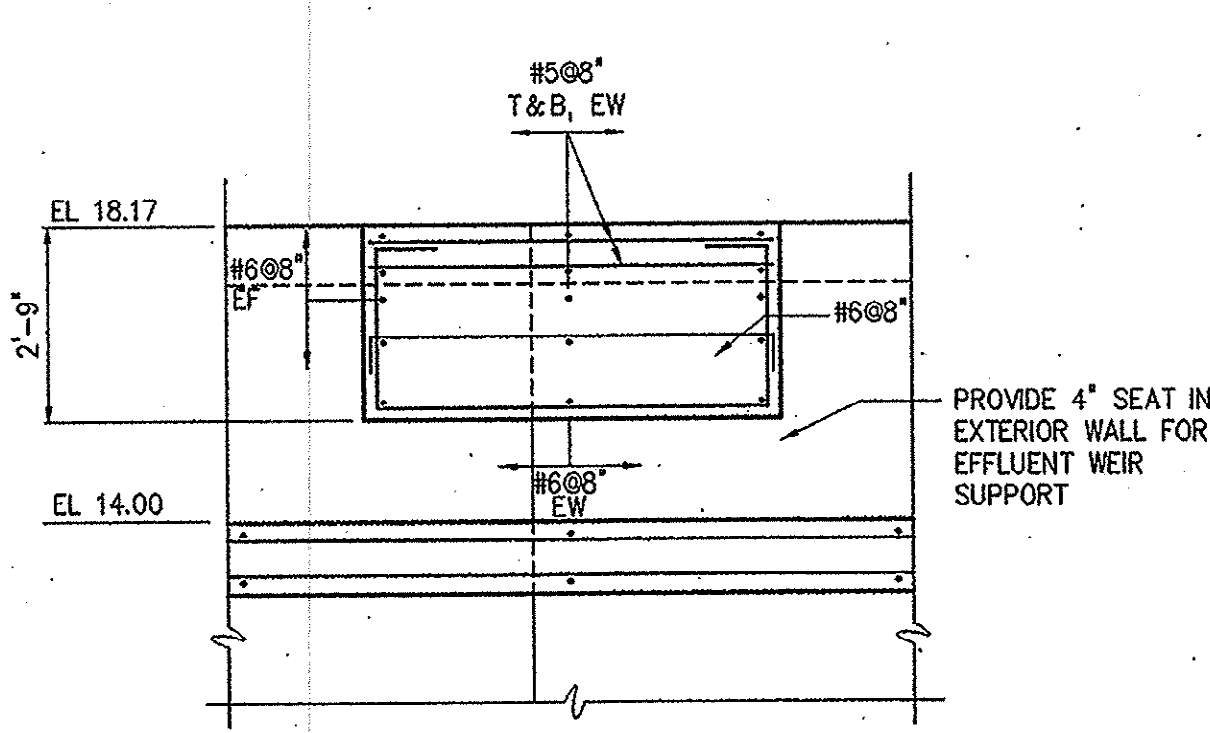
SECTION V
3/8\"=1'-0\" S103



SECTION W
3/8\"=1'-0\" S103

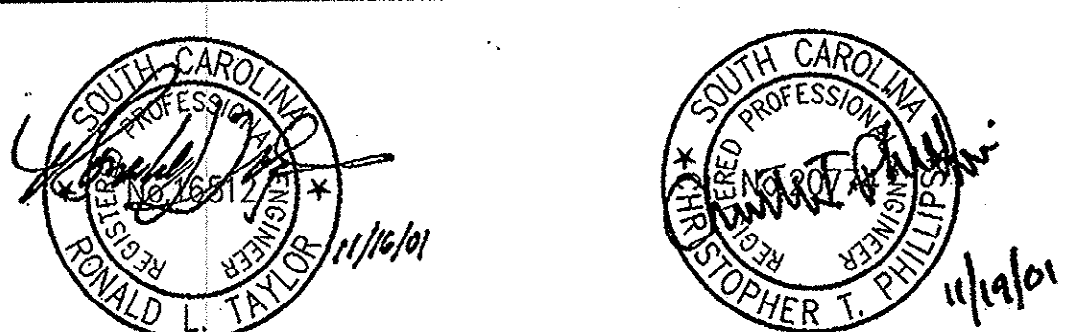


SECTION Y
3/8\"=1'-0\" S103



SECTION Z
3/8\"=1'-0\" S103

DESIGNED	CTP
DRAWN	ASC
CHECKED	CTP
PROJ. ENGR.	JBM
APPROVED	RLT
NO.	1
CONSTRUCTION	11/16/01
REGULATORY APPROVAL	8-31-01
ISSUED FOR	DATE
BY	BY



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GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

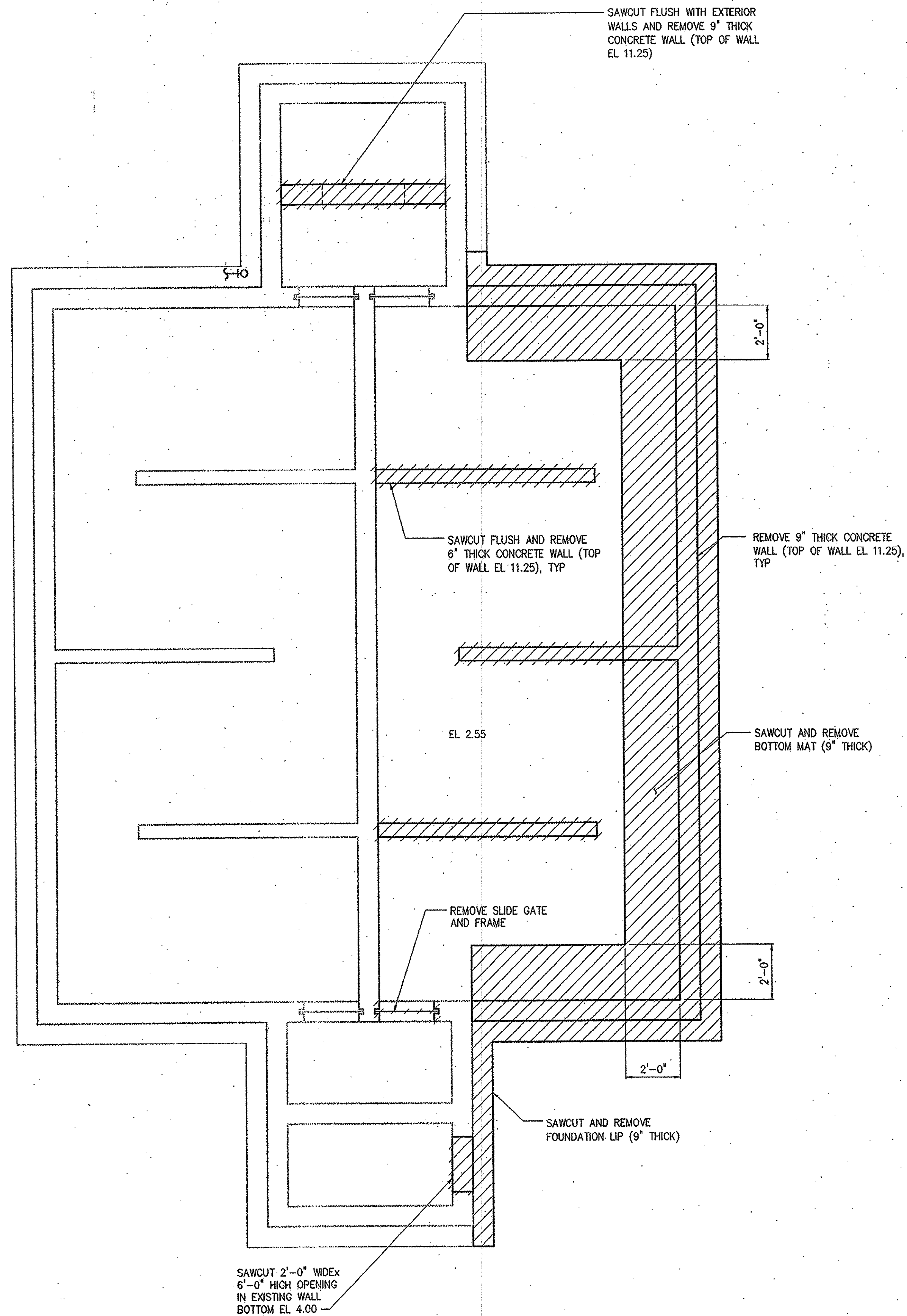
4 MGD TRIPLE DITCH AERATION BASIN
STRUCTURAL
SECTIONS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	S105
	H&S FLAT FILE NO.	56

35-004-034

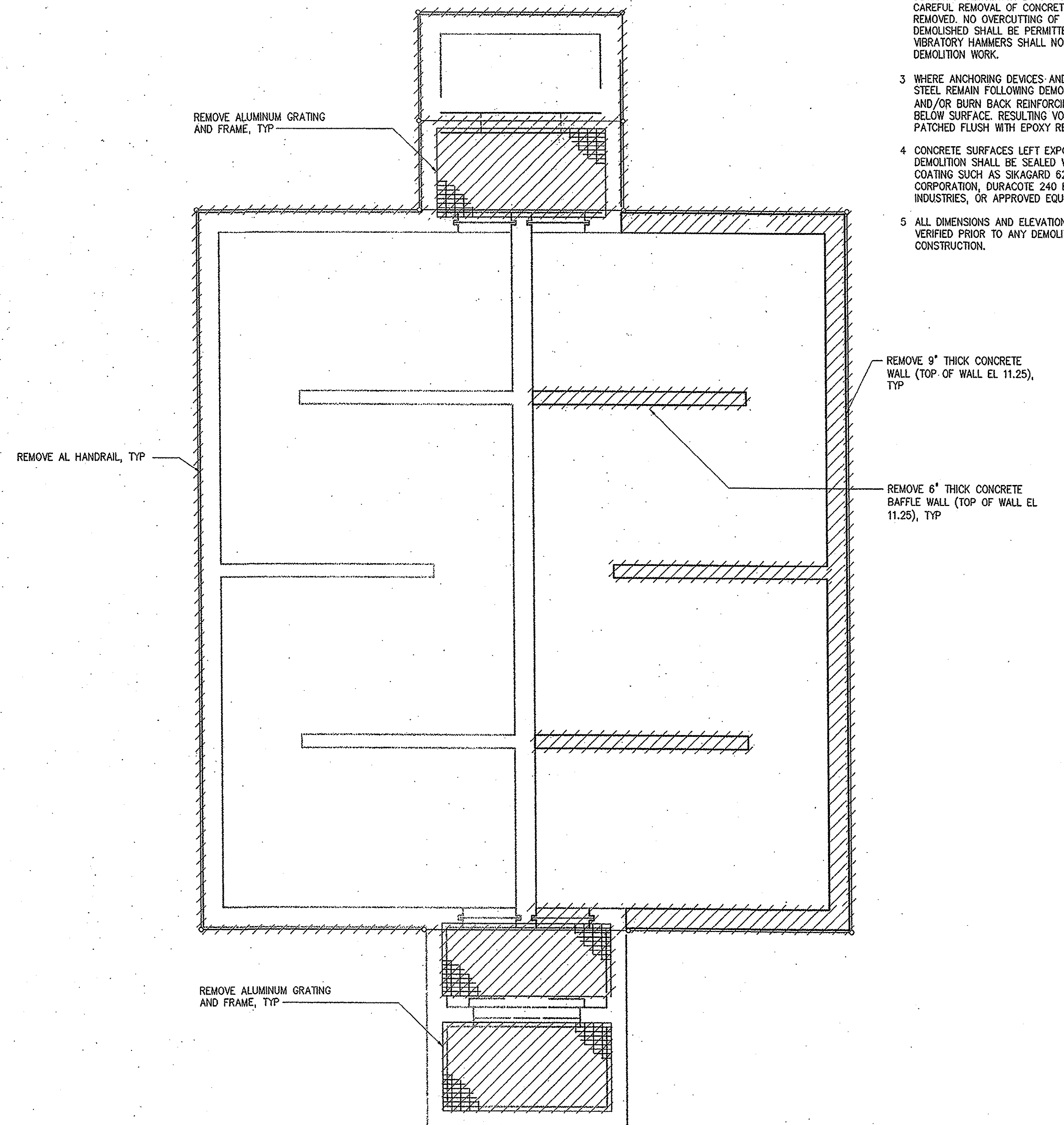
NOTES:

- 1 FOR DEMOLITION SEQUENCING REFER TO SPECIFICATION SECTION 01520, MAINTENANCE OF PLANT OPERATIONS DURING CONSTRUCTION.
- 2 ALL CONCRETE DEMOLITION SHOWN SHALL BE SELECTIVE DEMOLITION BY SAWCUTTING AND CAREFUL REMOVAL OF CONCRETE SHOWN TO BE REMOVED. NO OVERCUTTING OF AREAS TO BE DEMOLISHED SHALL BE PERMITTED. EXPLOSIVES AND VIBRATORY HAMMERS SHALL NOT BE USED FOR DEMOLITION WORK.
- 3 WHERE ANCHORING DEVICES AND/OR REINFORCING STEEL REMAIN FOLLOWING DEMOLITION, REMOVE AND/OR BURN BACK REINFORCING STEEL 1/2" MIN. BELOW SURFACE. RESULTING VOID SHALL BE PATCHED FLUSH WITH EPOXY RESIN BINDER.
- 4 CONCRETE SURFACES LEFT EXPOSED FOLLOWING DEMOLITION SHALL BE SEALED WITH EPOXY RESIN COATING SUCH AS SIKAGARD 62 BY SIKA CORPORATION, DURACOTE 240 BY TAMMS INDUSTRIES, OR APPROVED EQUAL.
- 5 ALL DIMENSIONS AND ELEVATIONS SHALL BE FIELD VERIFIED PRIOR TO ANY DEMOLITION OR CONSTRUCTION.



DEMOLITION - BOTTOM PLAN

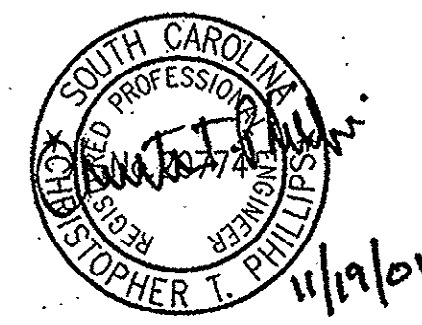
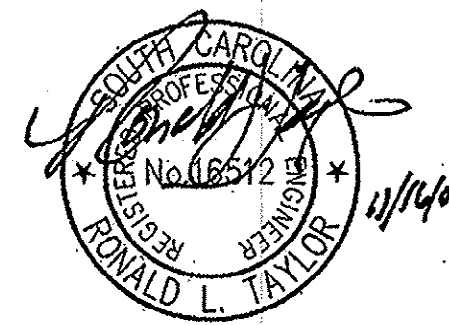
3/8" = 1'-0"



DEMOLITION - TOP PLAN

3/8" = 1'-0"

DESIGNED	CTP
DRAWN	ASC
CHECKED	CSP
PROJ. ENGR.	JBM
NO.	2
CONSTRUCTION	11/10/01
REGULATORY APPROVAL	8-31-01
ISSUED FOR	DATE
BY	APPROVED



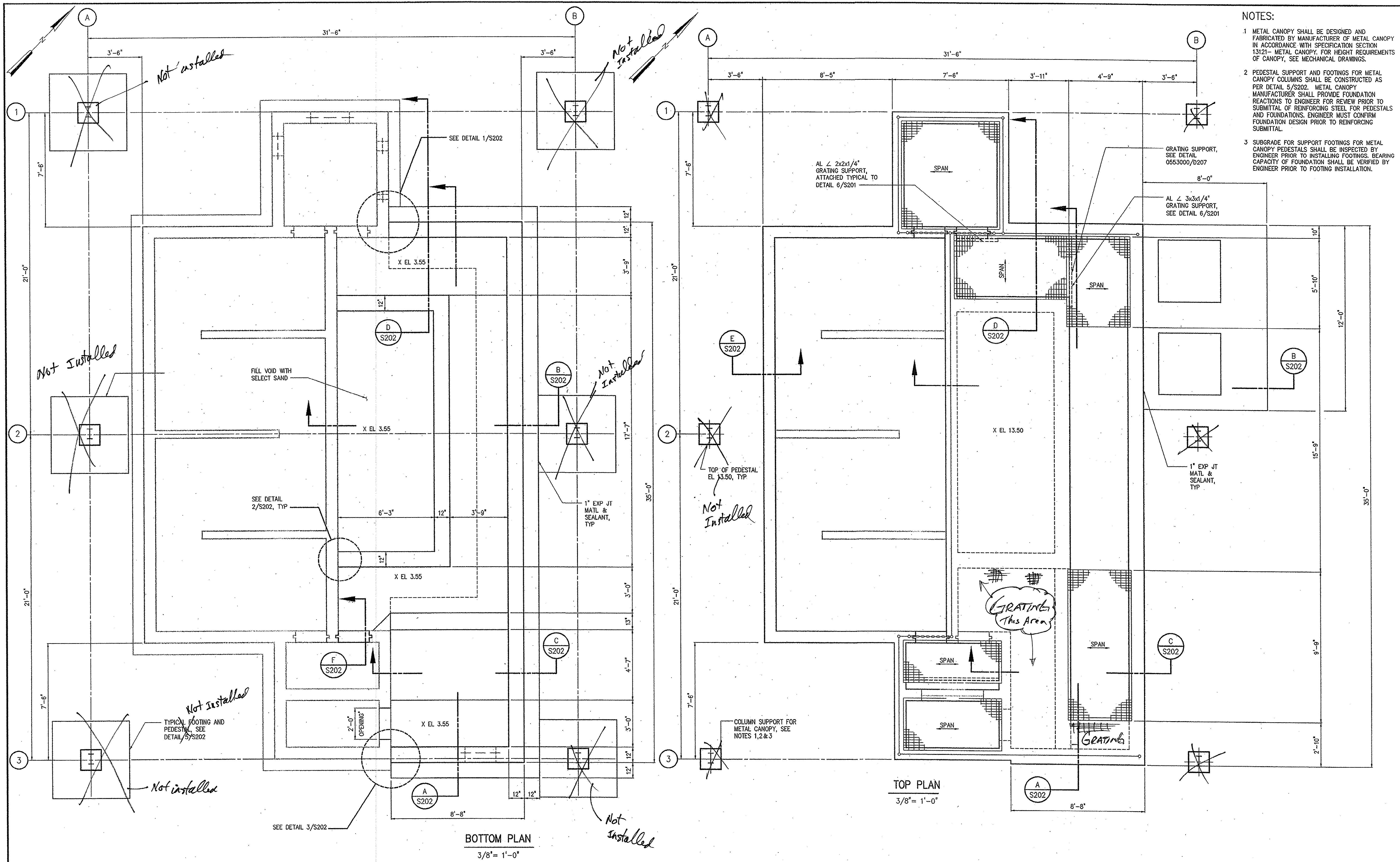
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GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

UV DISINFECTION TANK
STRUCTURAL
DEMOLITION PLANS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	S200
	H & S FLAT FILE NO.	56

35-004-035

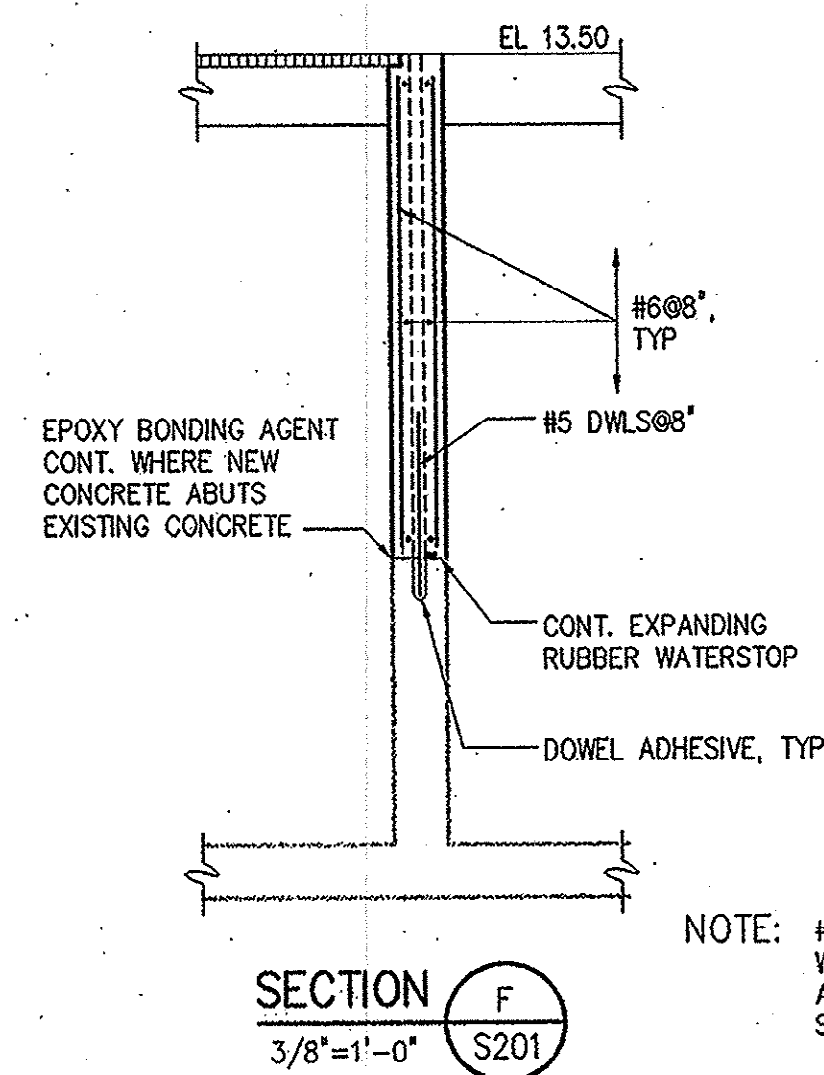
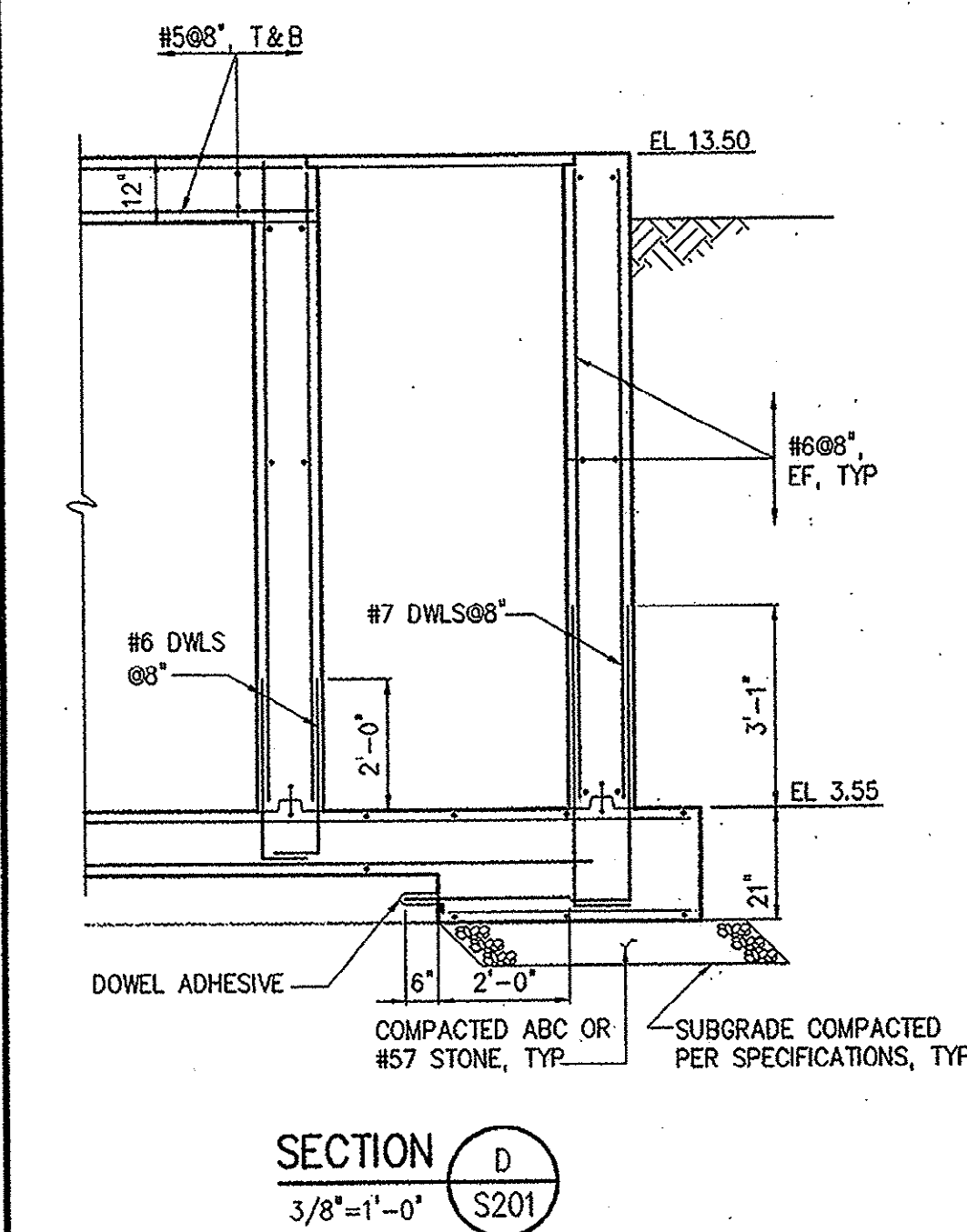
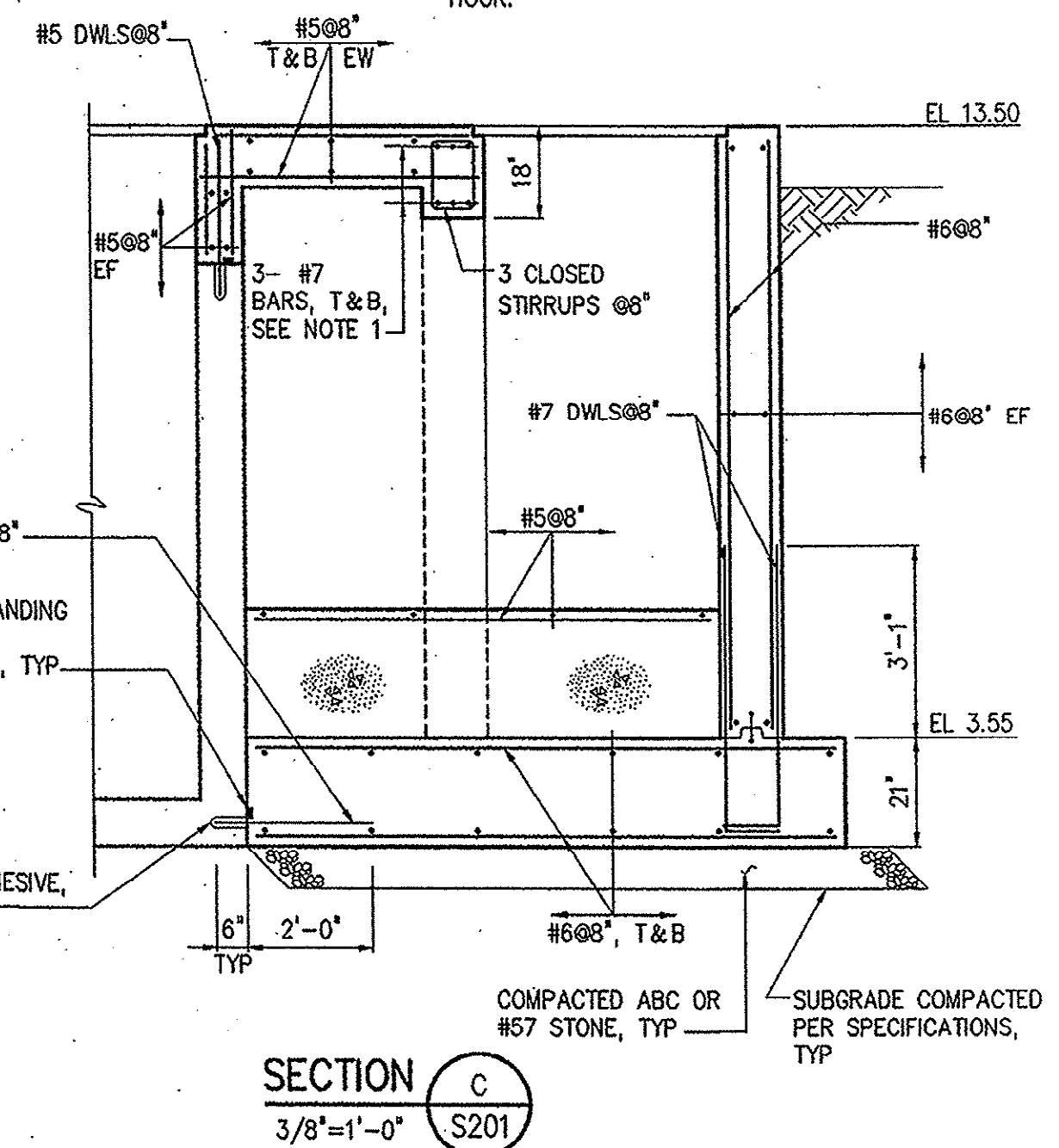
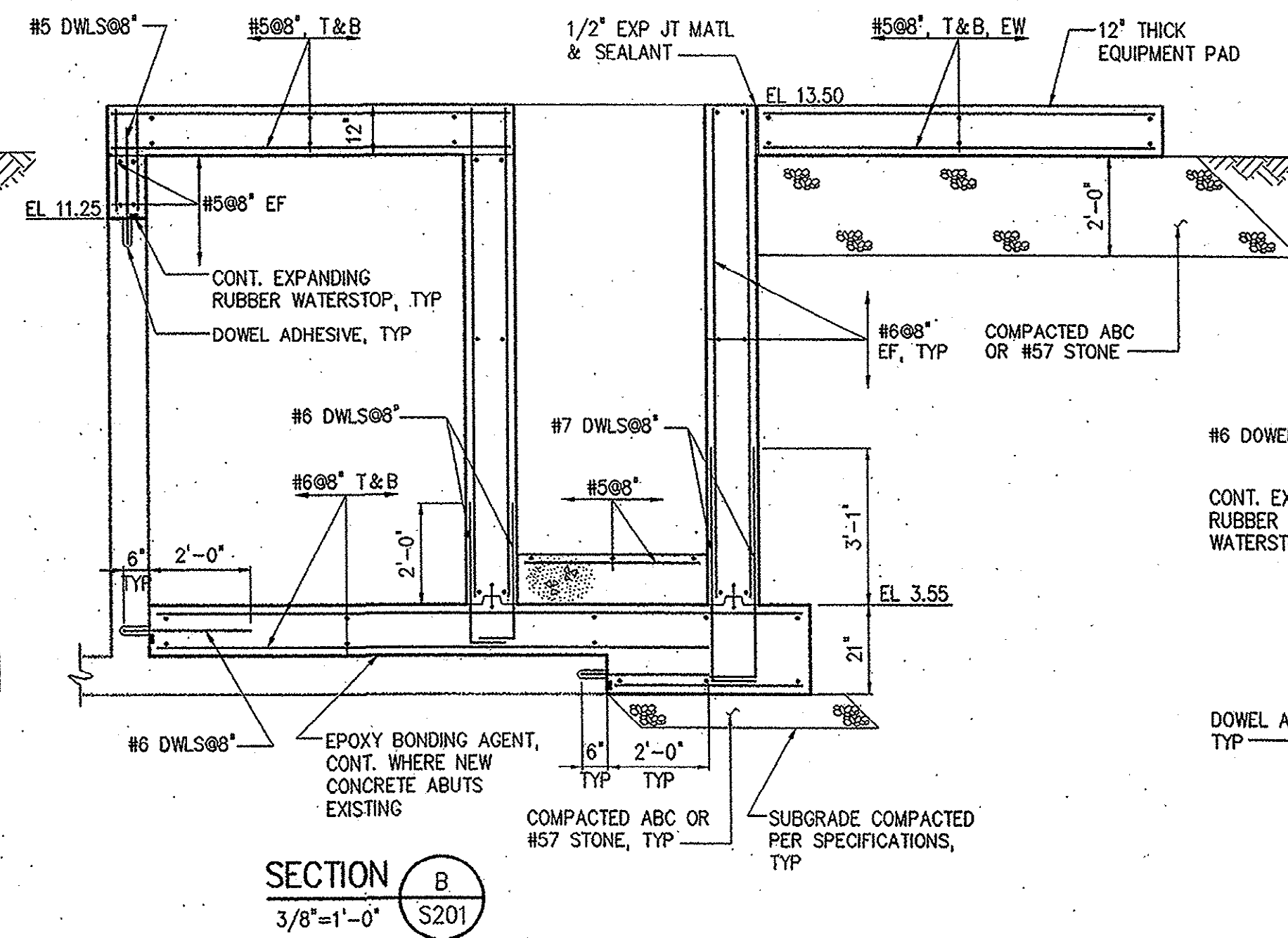
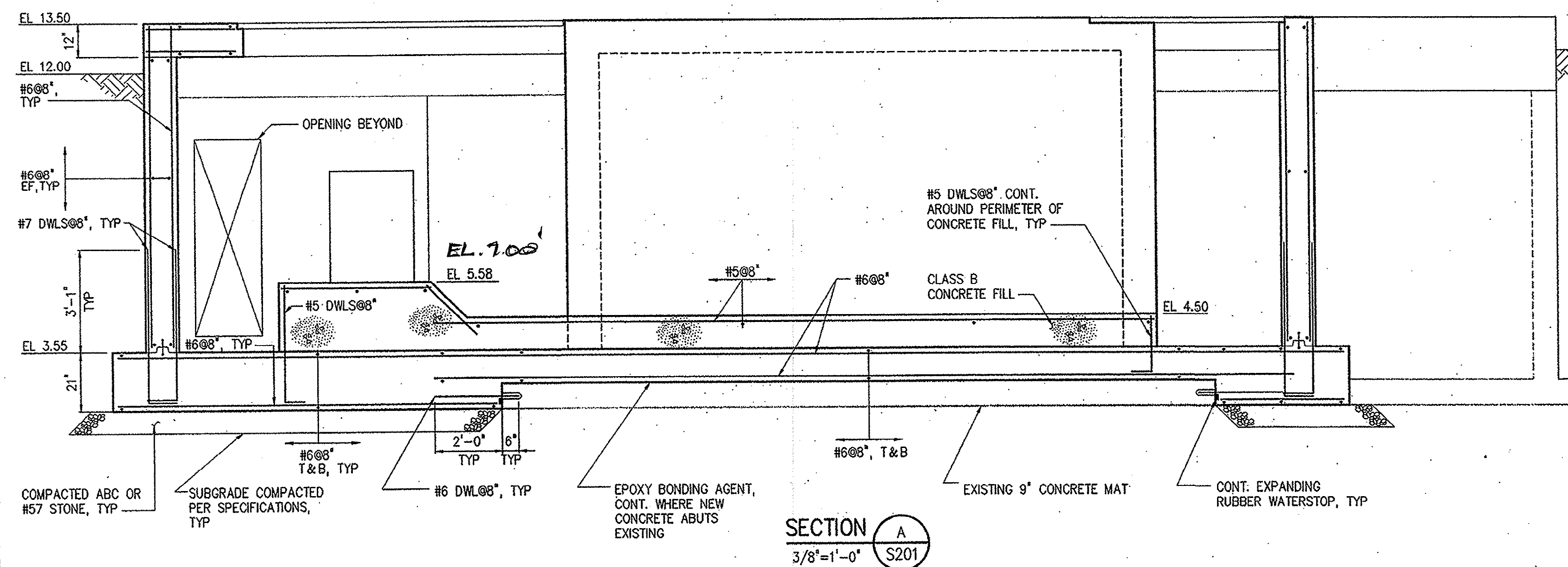


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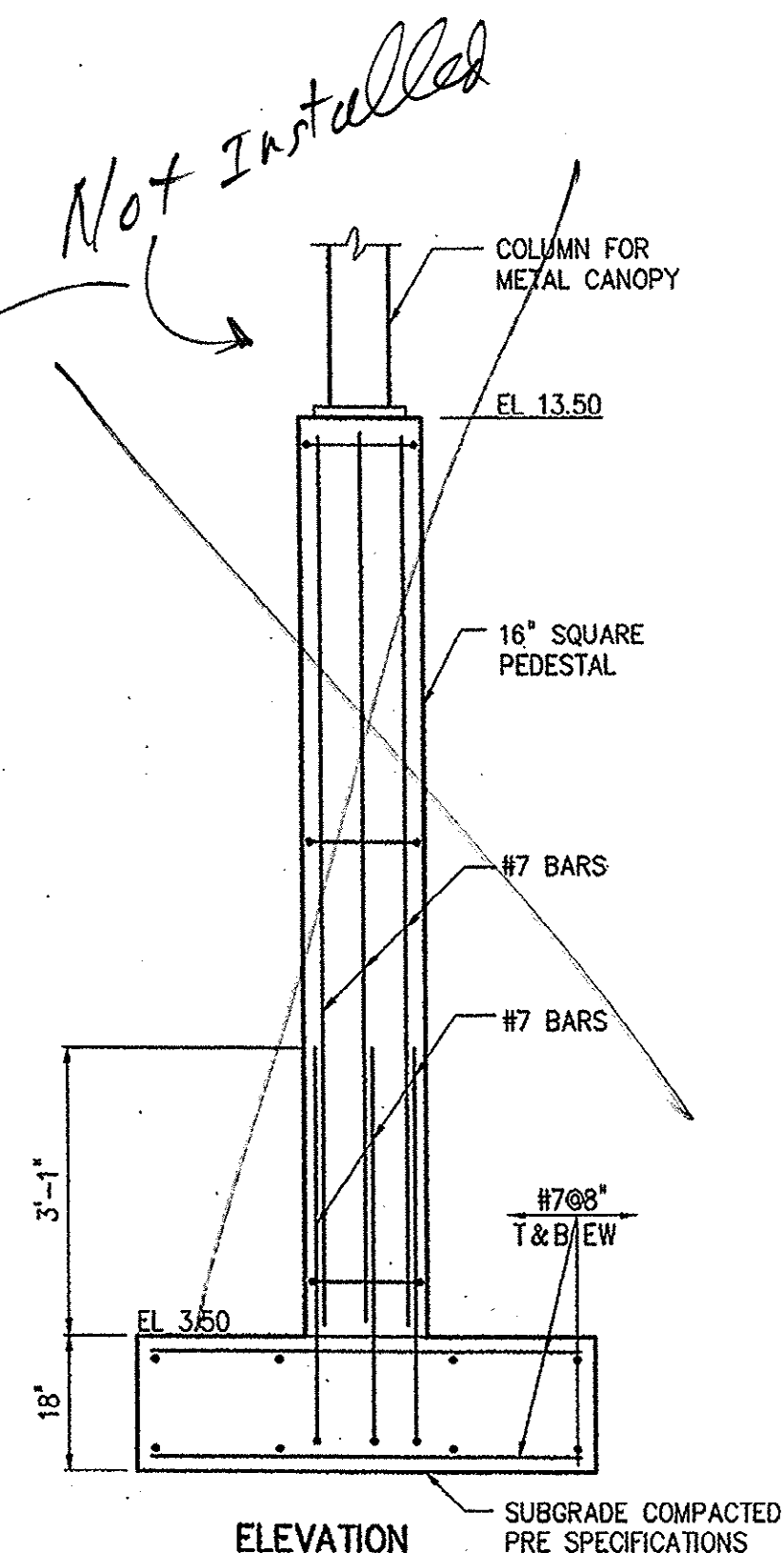
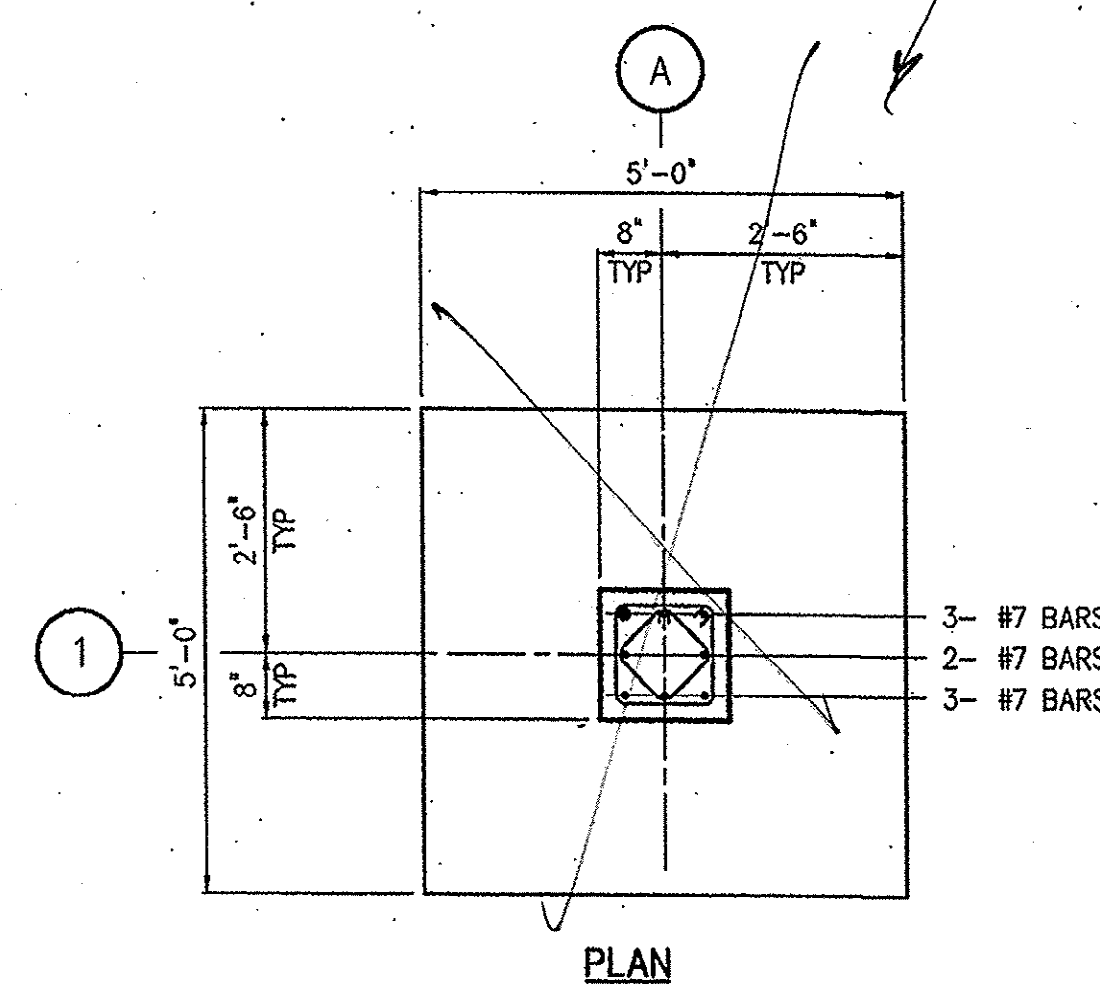
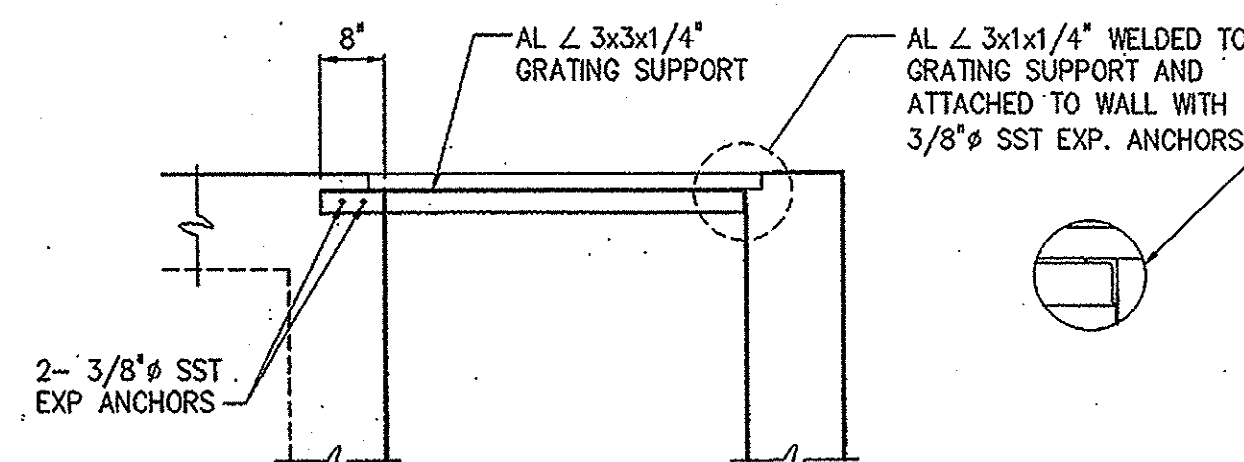
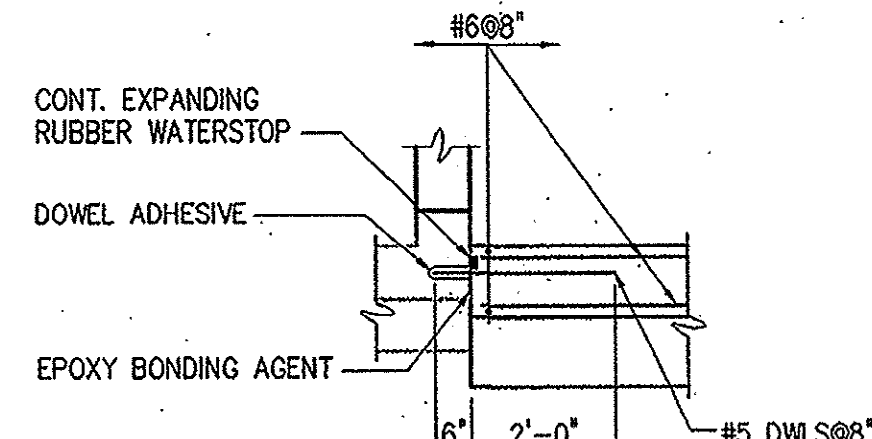
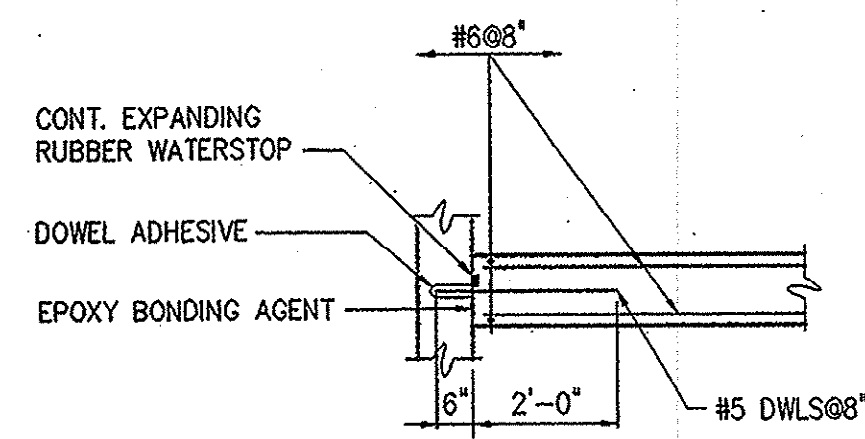
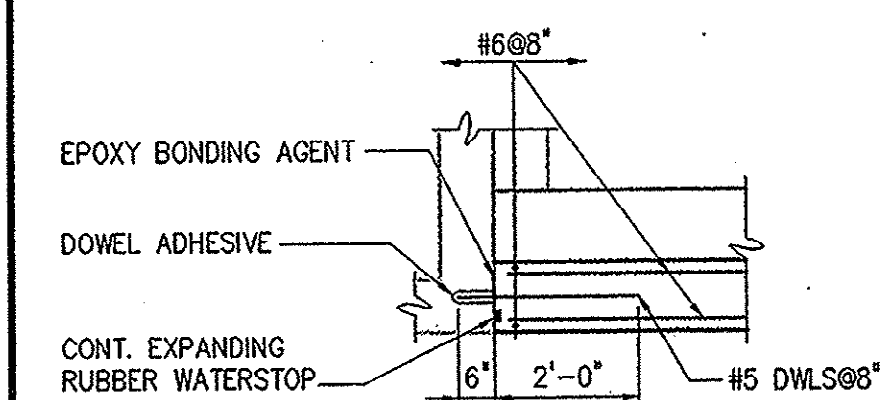
33-004-031

NOTES:

1 #7 BARS IN BEAM SHALL EXTEND 10" MIN. INTO WALL AT EACH END AND TERMINATE WITH A STANDARD 90° HOOK.



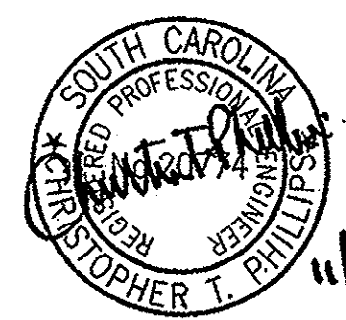
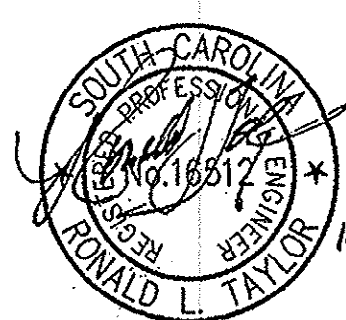
NOTE: #5 DOWELS AND EXPANDING RUBBER WATERSTOPS SHALL BE CONTINUOUS ACROSS BOTTOM AND UP BOTH SIDES OF OPENING.



TYPICAL CANOPY SUPPORT PEDESTAL & FOOTING

DETAIL 5 1/2"=1'-0" S201

DESIGNED	CTP
DRAWN	ASC
CHECKED	CTP
PROJ. ENGR.	JBM
APPROVED	
NO.	
CONSTRUCTION	8-31-01
REGULATORY APPROVAL	8-31-01
ISSUED FOR	DATE
BY	APPROVED



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

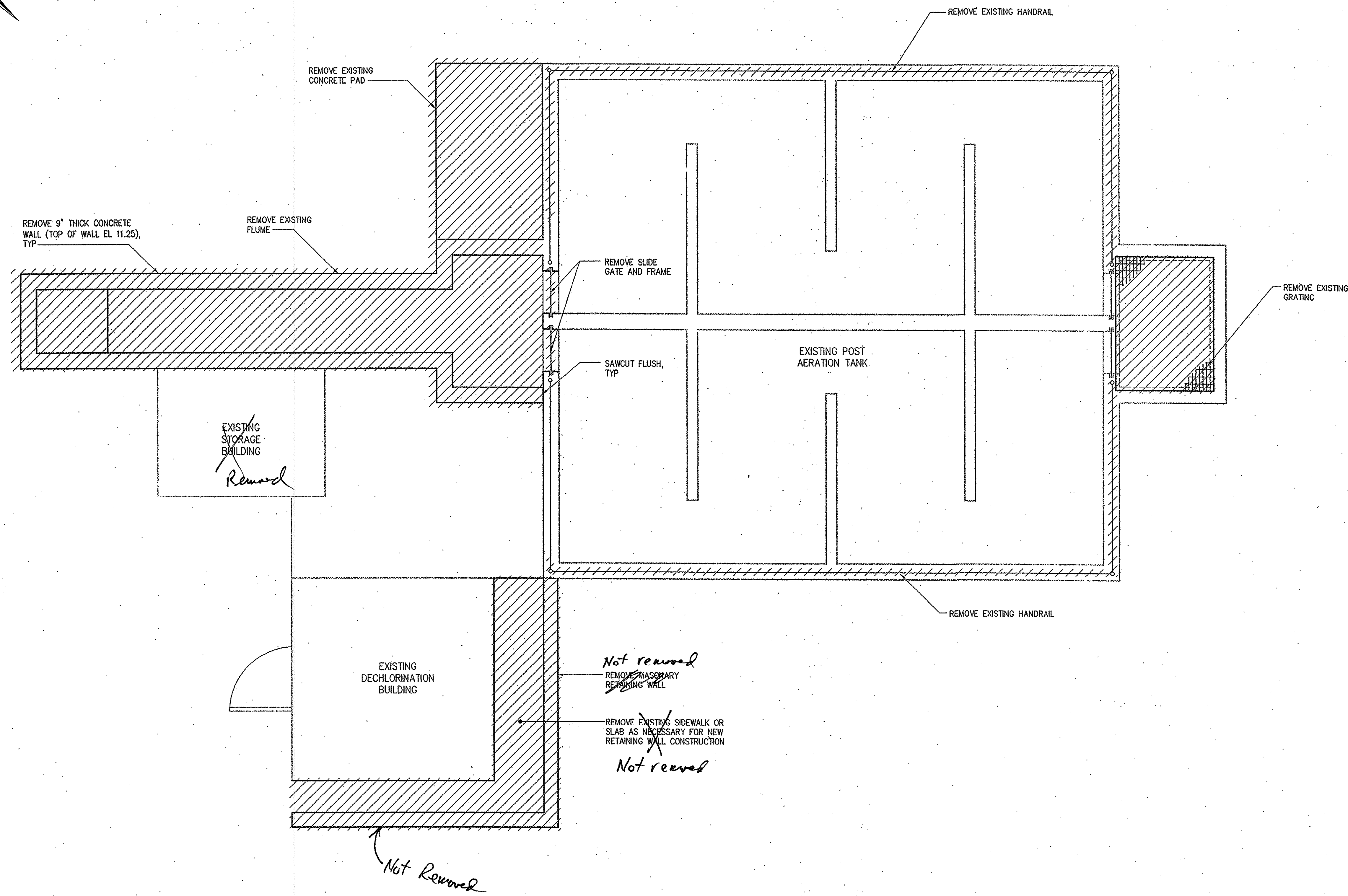
UV DISINFECTION TANK
STRUCTURAL
SECTIONS AND DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	S202
	H & S FLAT FILE NO.	56

35-004-037

NOTES:

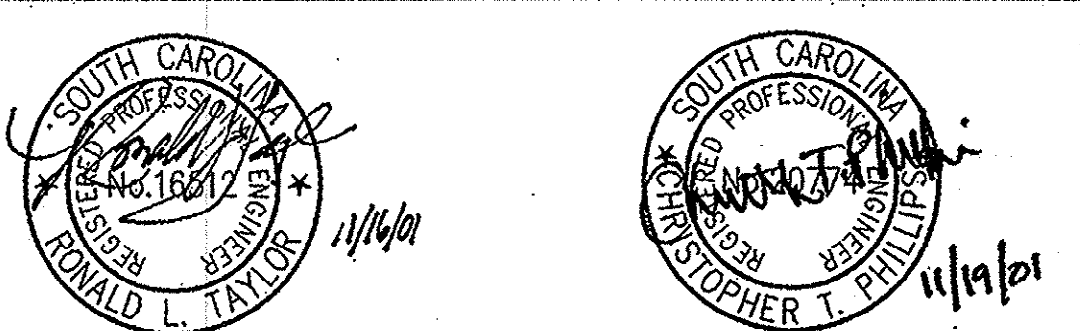
- 1 FOR DEMOLITION SEQUENCING REFER TO SPECIFICATION SECTION 01520, MAINTENANCE OF PLANT OPERATIONS DURING CONSTRUCTION.
- 2 ALL CONCRETE DEMOLITION SHOWN SHALL BE SELECTIVE DEMOLITION BY SAWCUTTING AND CAREFUL REMOVAL OF CONCRETE SHOWN TO BE REMOVED. NO OVERCUTTING OF AREAS TO BE DEMOLISHED SHALL BE PERMITTED. EXPLOSIVES AND VIBRATORY HAMMERS SHALL NOT BE USED FOR DEMOLITION WORK.
- 3 WHERE ANCHORING DEVICES AND/OR REINFORCING STEEL REMAIN FOLLOWING DEMOLITION, REMOVE AND/OR BURN BACK REINFORCING STEEL 1/2" MIN. BELOW SURFACE. RESULTING VOID SHALL BE PATCHED FLUSH WITH EPOXY RESIN BINDER.
- 4 CONCRETE SURFACES LEFT EXPOSED FOLLOWING DEMOLITION SHALL BE SEALED WITH EPOXY RESIN COATING SUCH AS SIKAGARD 62 BY SIKA CORPORATION, DURACOTE 240 BY TAMMS INDUSTRIES, OR APPROVED EQUAL.
- 5 ALL DIMENSIONS AND ELEVATIONS SHALL BE FIELD VERIFIED PRIOR TO ANY DEMOLITION OR CONSTRUCTION.



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

DESIGNED	CTP
DRAWN	ASC
CHECKED	CTP
PROJ. ENGR.	JBM
DATE	11/16/01
BY	JBM
APPROVED	[Signature]

2	CONSTRUCTION	11/16/01	JBM
1	REGULATORY APPROVAL	8-31-01	JBM
NO.	ISSUED FOR	DATE	BY

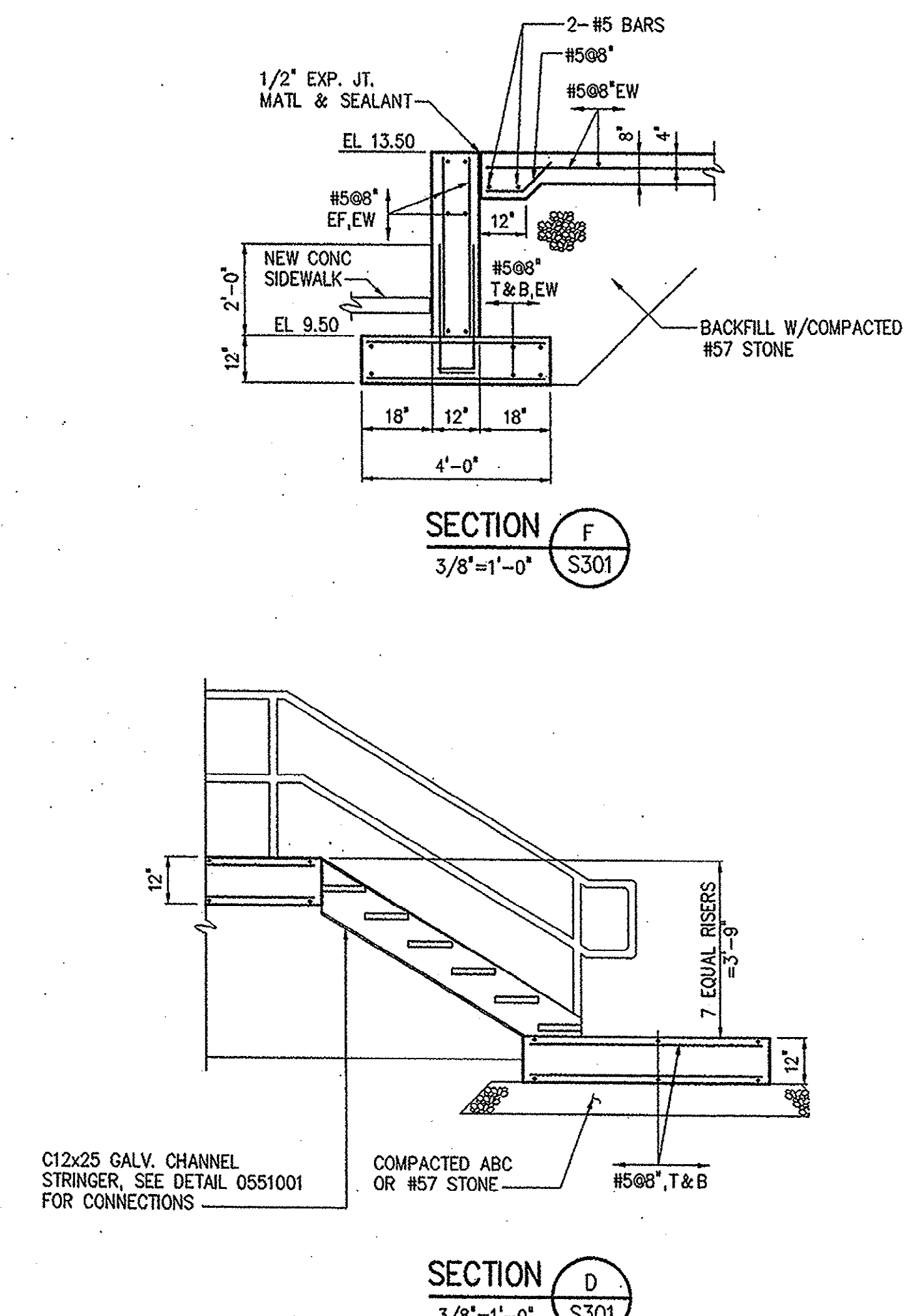
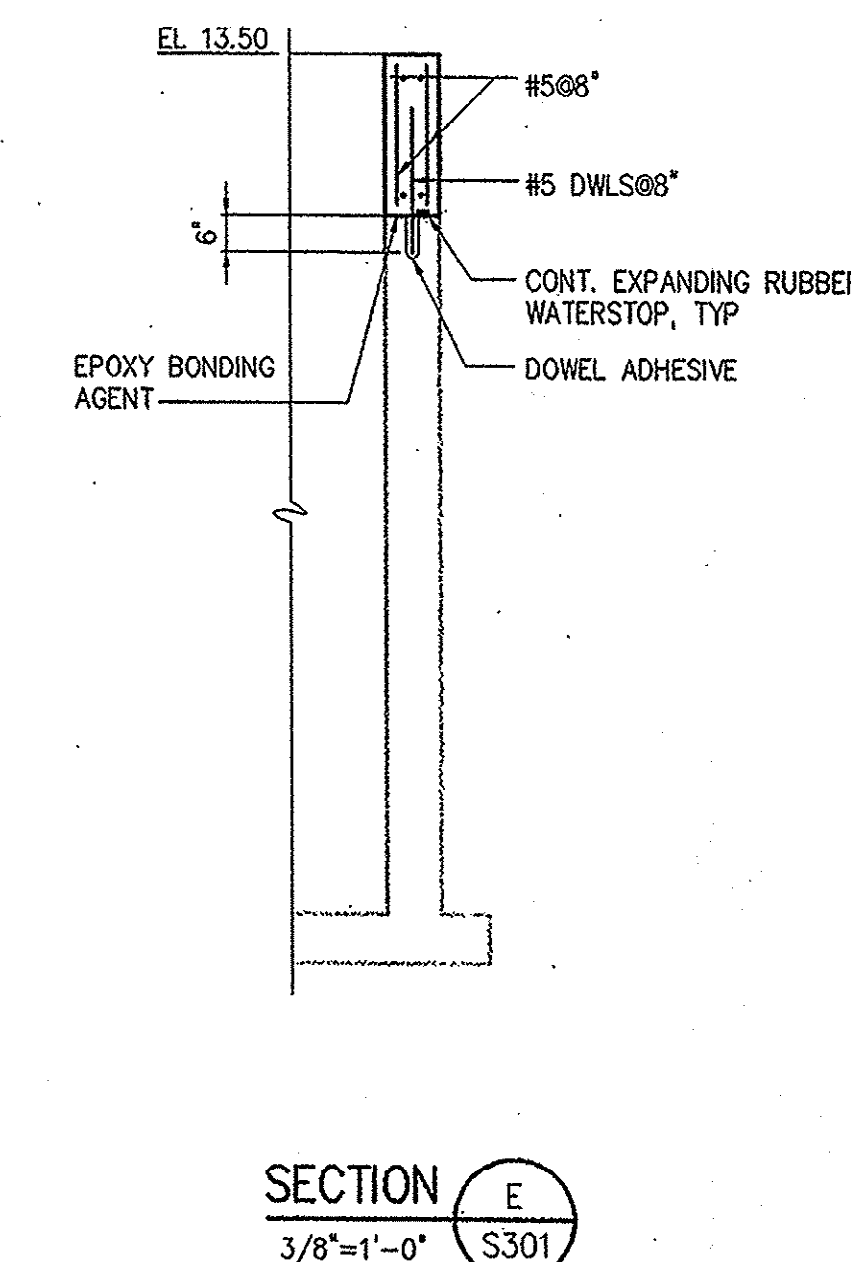
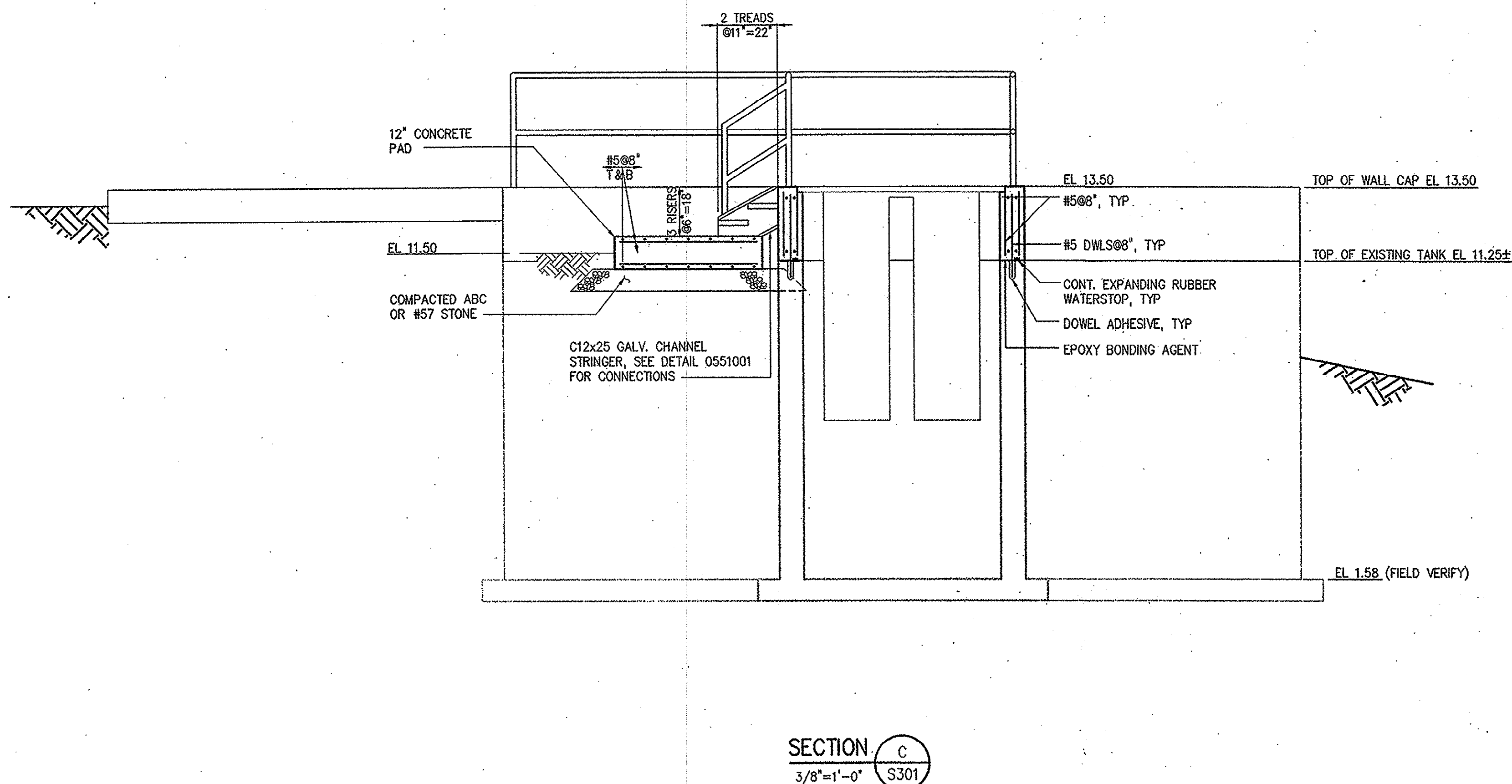
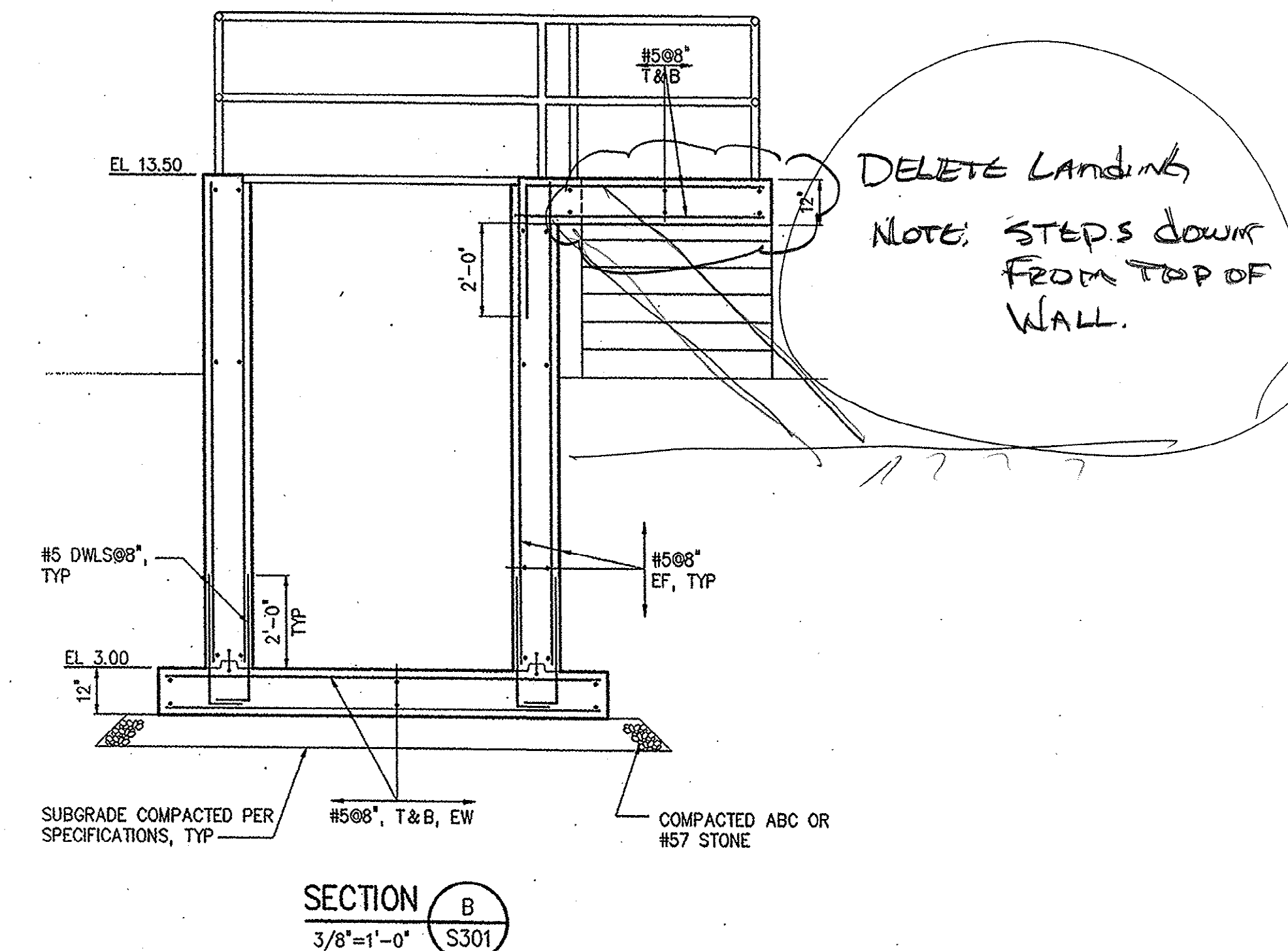
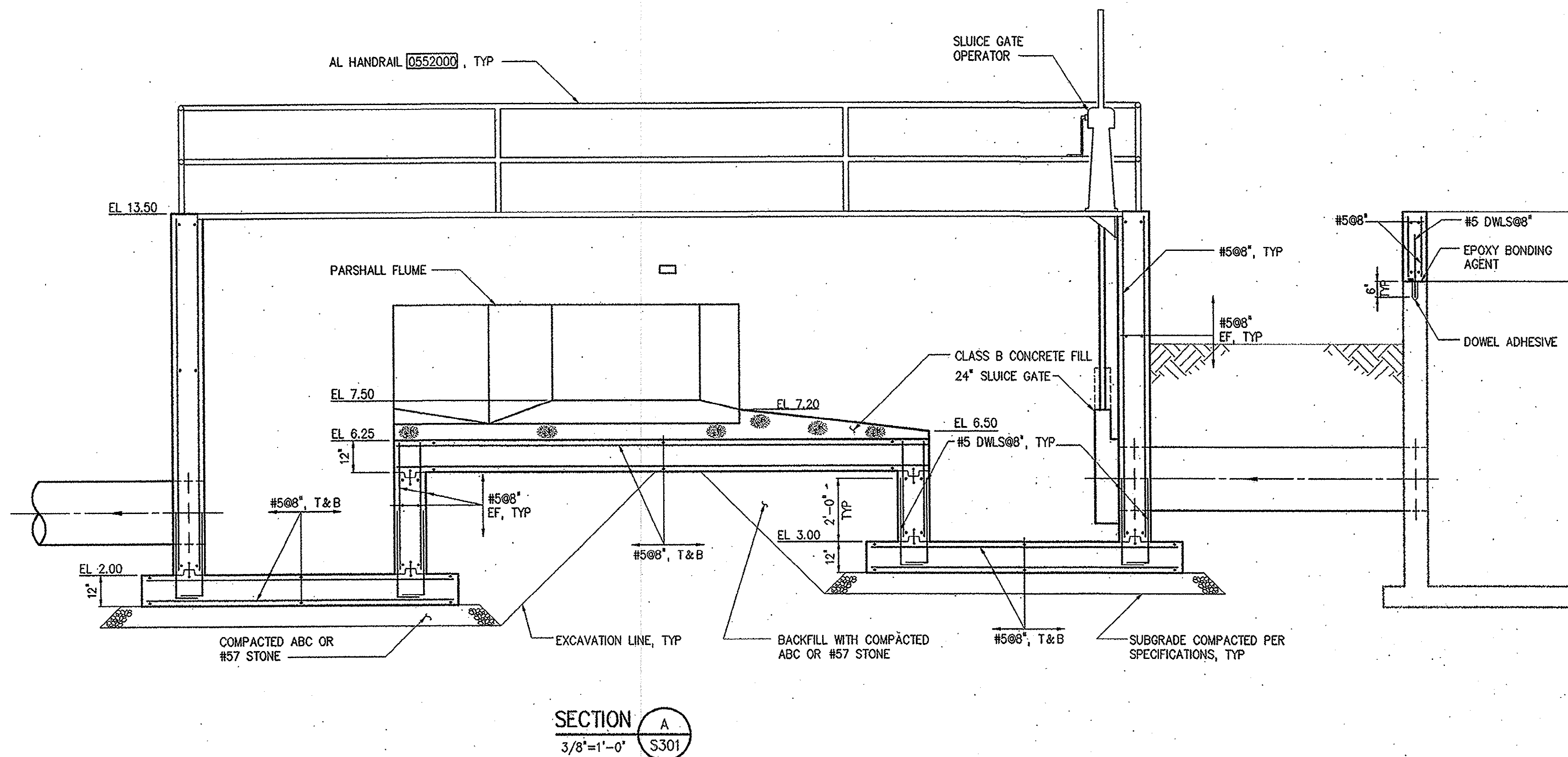


HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

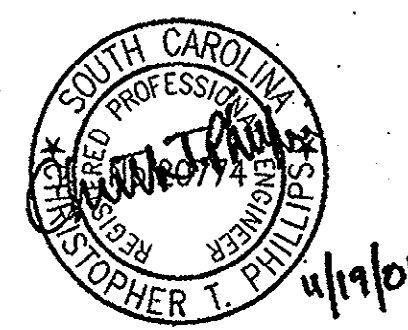
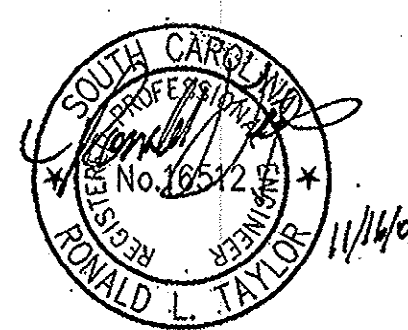
GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

POST AERATION TANK MODIFICATIONS
STRUCTURAL
DEMOLITION PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	S300
	H&S FILE NO.	56



DESIGNED	CTP
DRAWN	ASC
CHECKED	JBM
PROJ. ENGR.	JBM
APPROVED	RJ
NO.	1
ISSUED FOR	CONSTRUCTION
DATE	8-31-01
BY	JBM



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

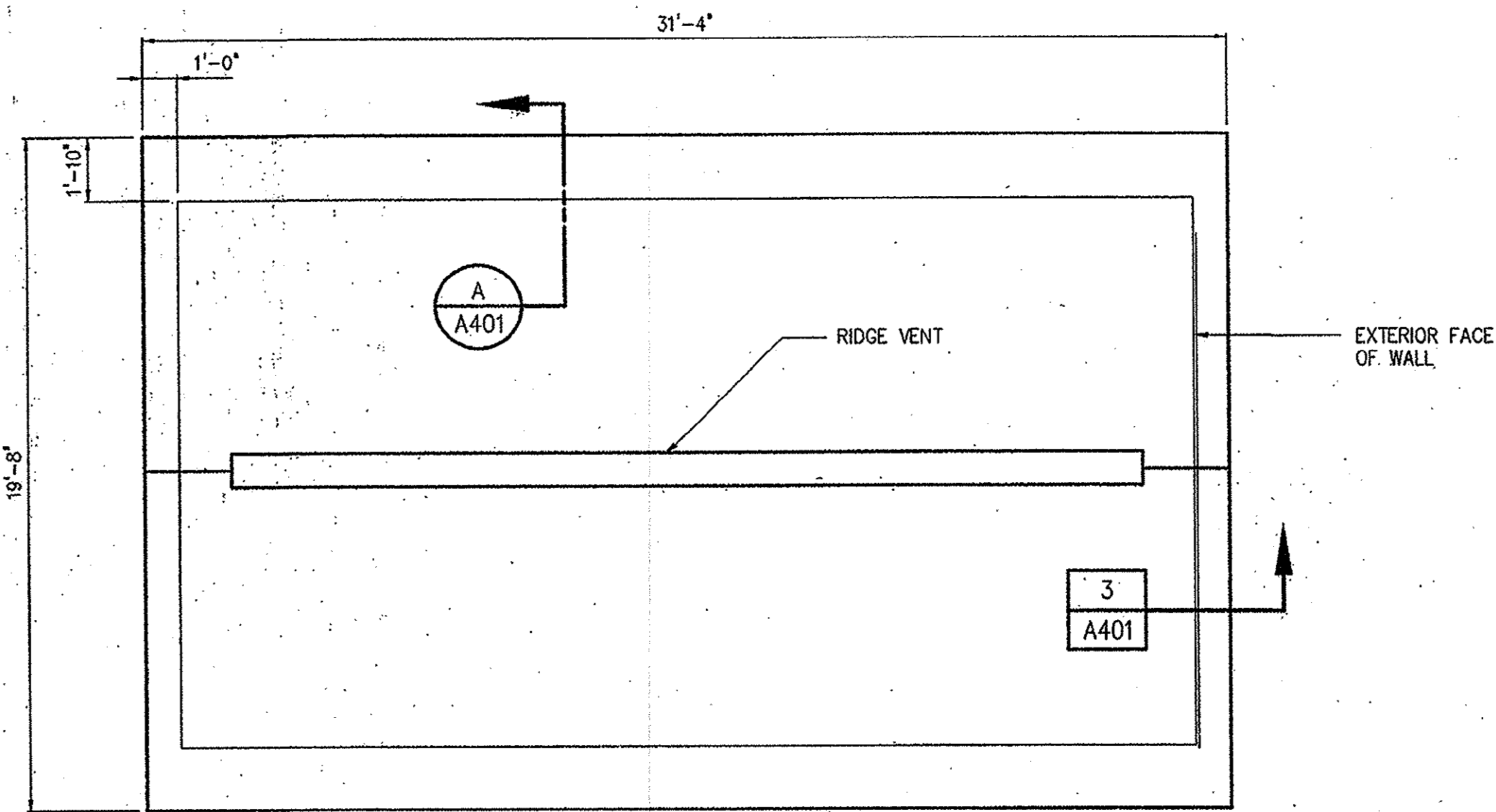
GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

POST AERATION TANK MODIFICATIONS
STRUCTURAL
SECTIONS

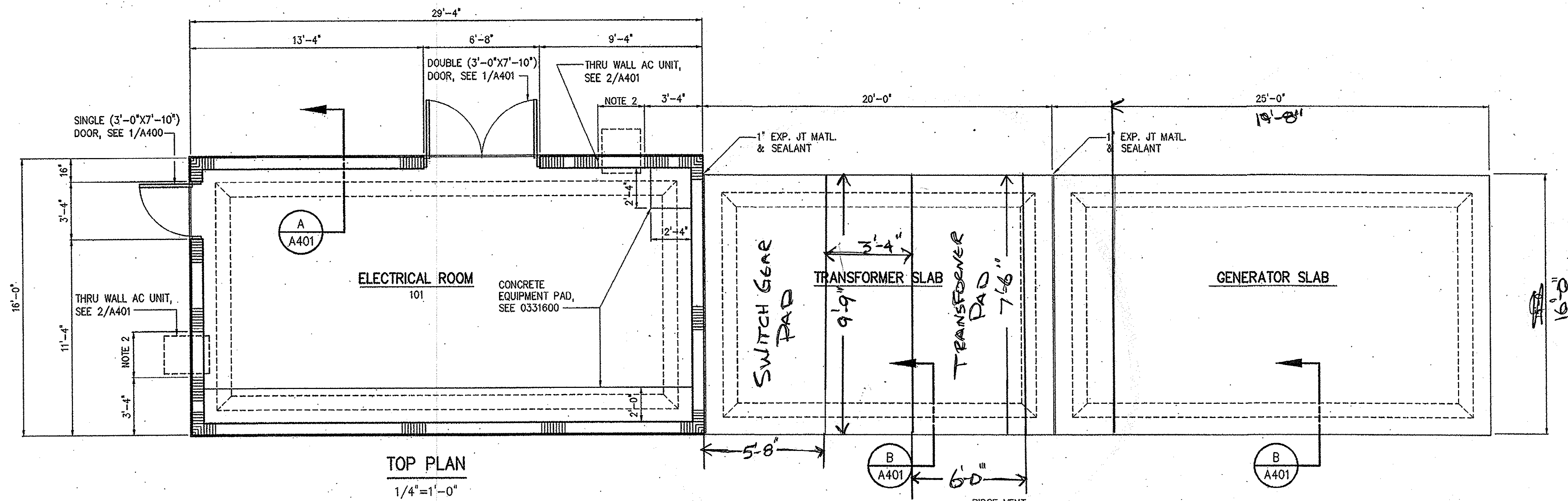
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
H & S JOB NUMBER	30631	
CONTRACT NUMBER	1	DRAWING NUMBER
		S302
H & S FILE NO. 56.		

NOTES:

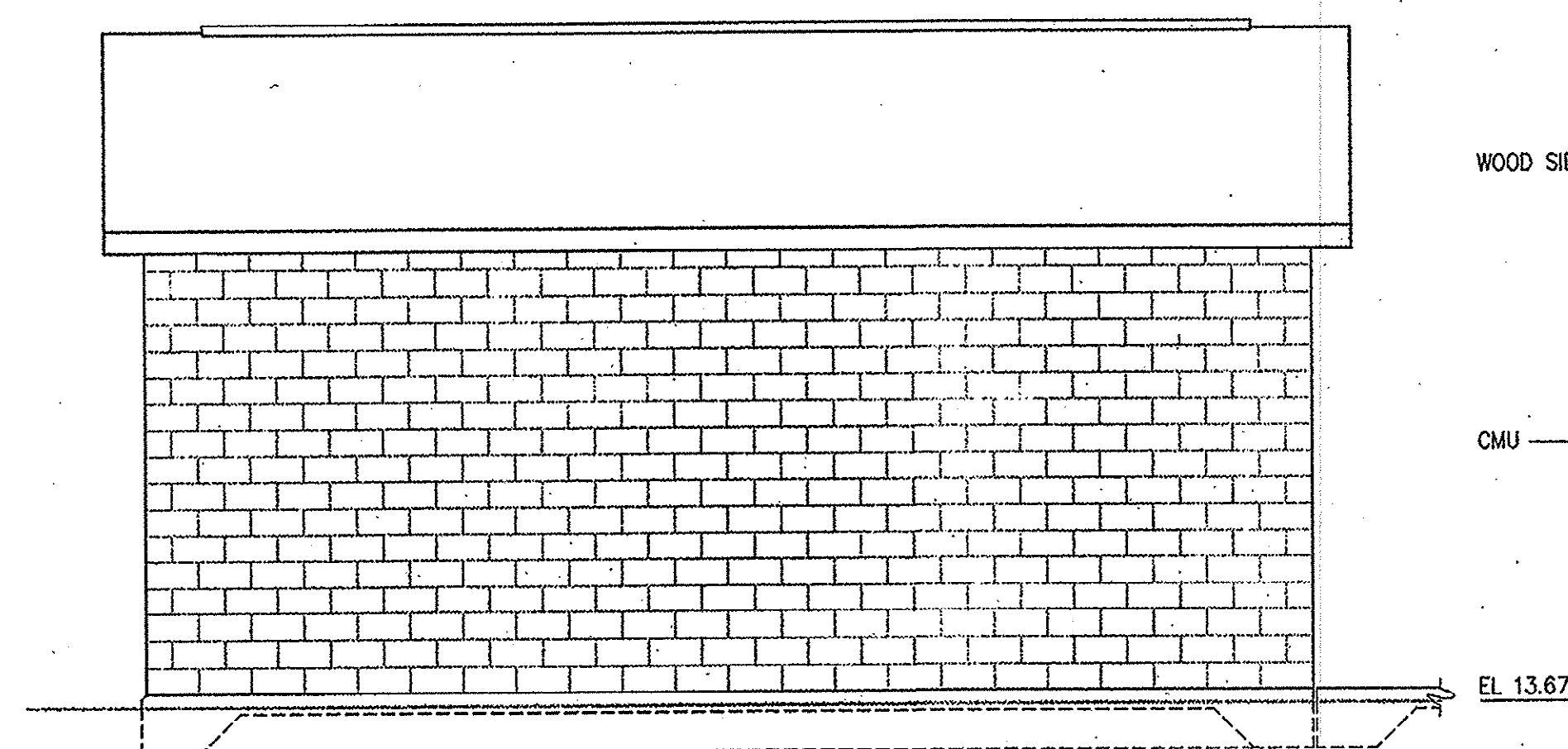
- SEE 5/A401 FOR ATTIC ACCESS HATCH IN CEILING. COORDINATE LOCATION WITH STRU AND ELEC EQUIPMENT.
- PROVIDE OPENING IN ACCORDANCE WITH AIR CONDITIONER MANUFACTURER'S OPENING REQUIREMENT.
- ELECTRICAL BUILDING PLAN DIMENSIONS ARE TAKEN FROM OUTSIDE FACE OF MASONRY WALL.



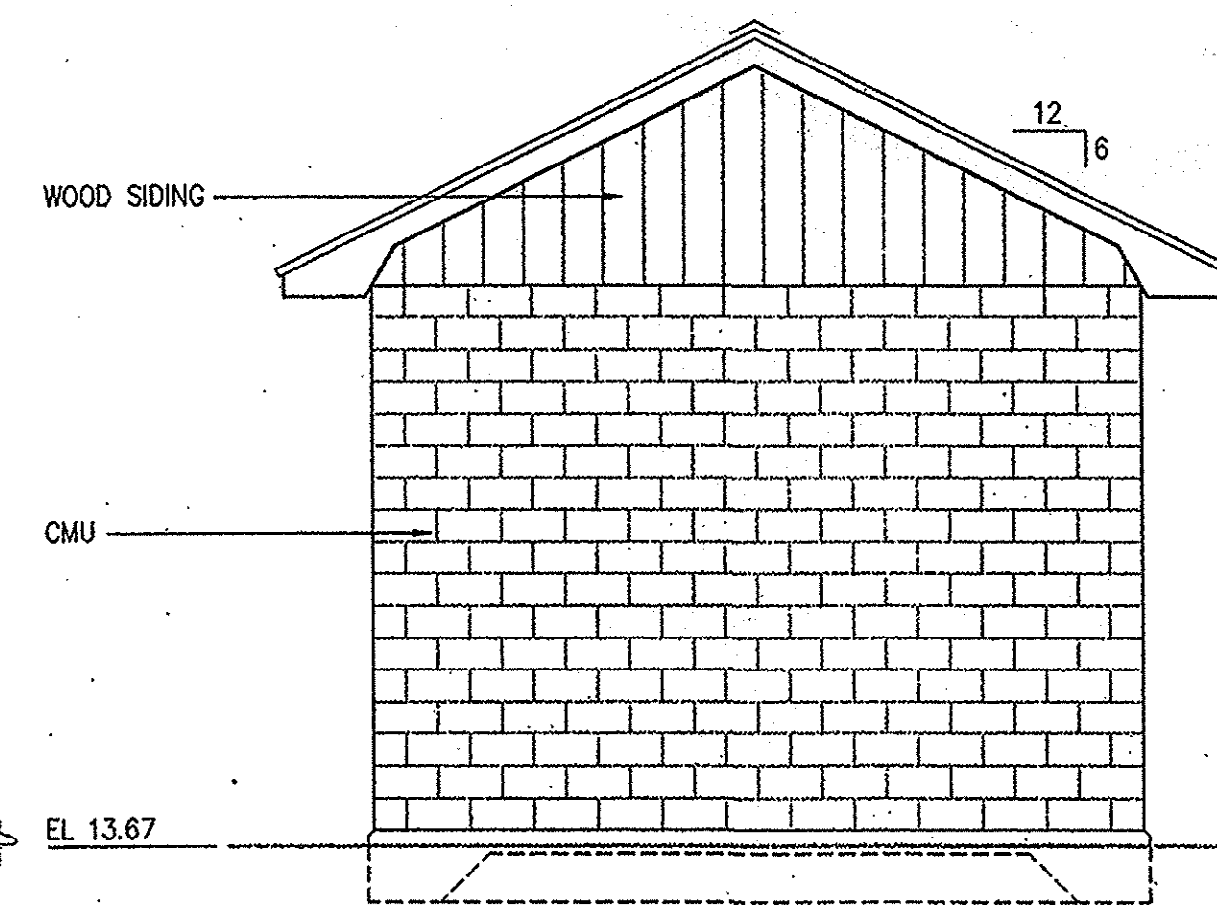
ROOF PLAN
1/4"=1'-0"



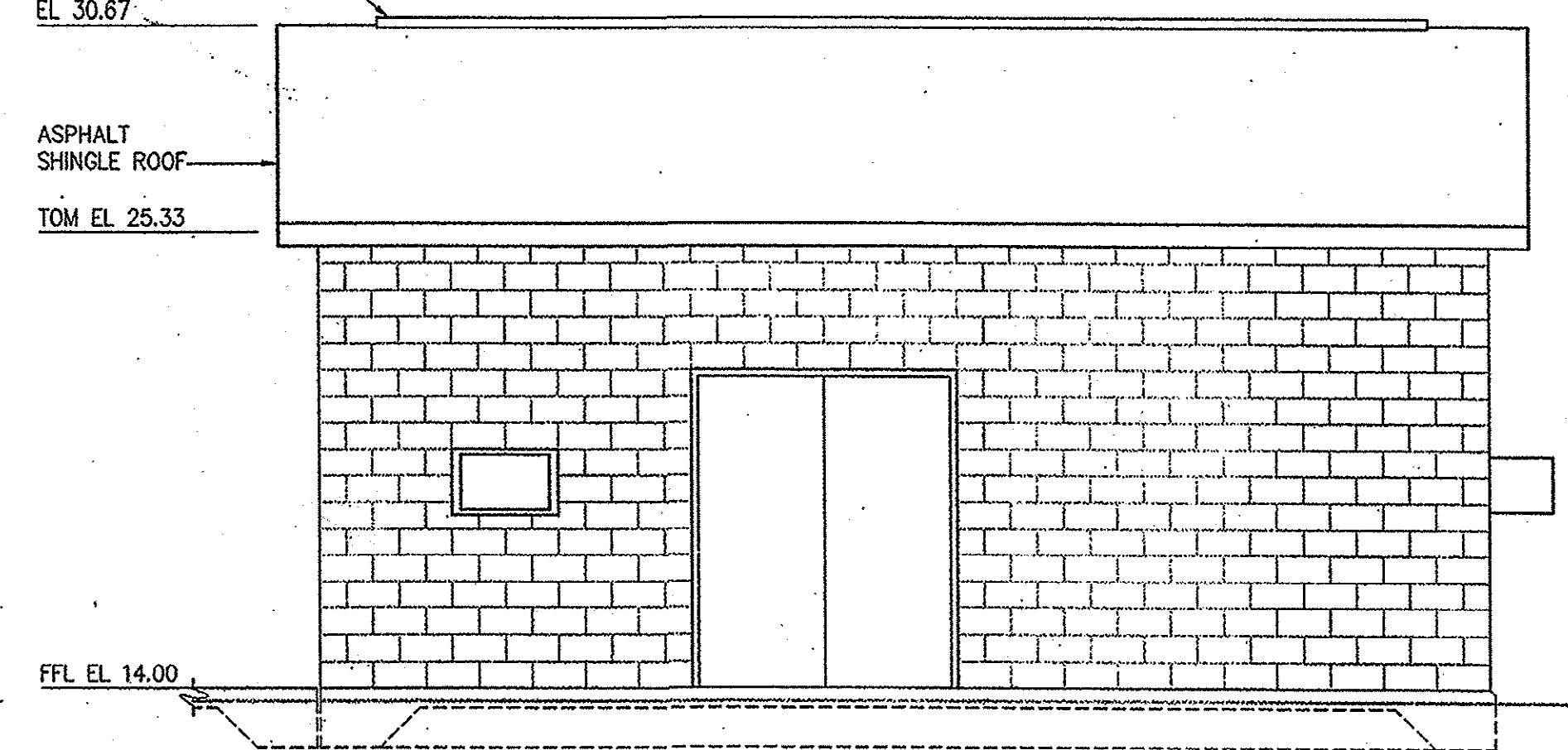
TOP PLAN
1/4"=1'-0"



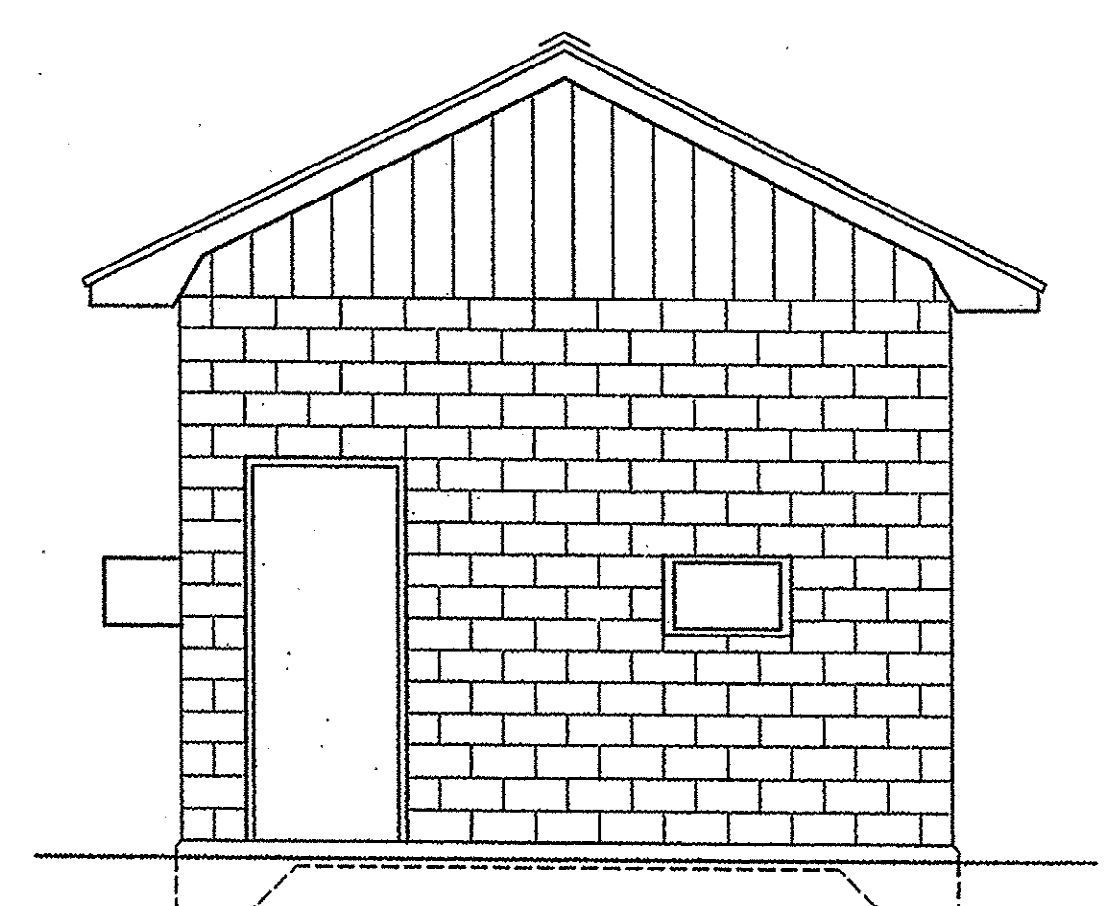
SOUTH ELEVATION
1/4"=1'-0"



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



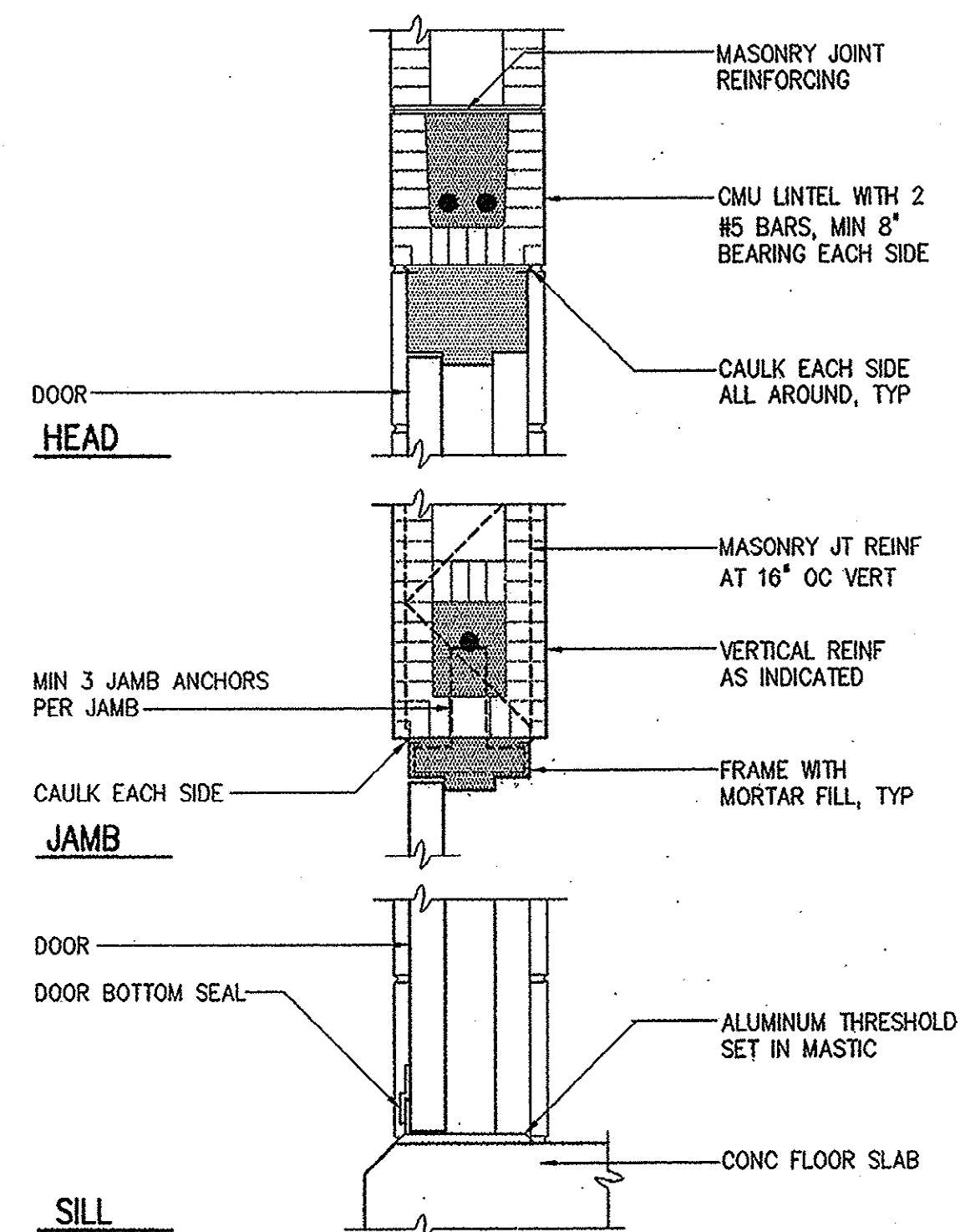
NORTH ELEVATION
1/4"=1'-0"



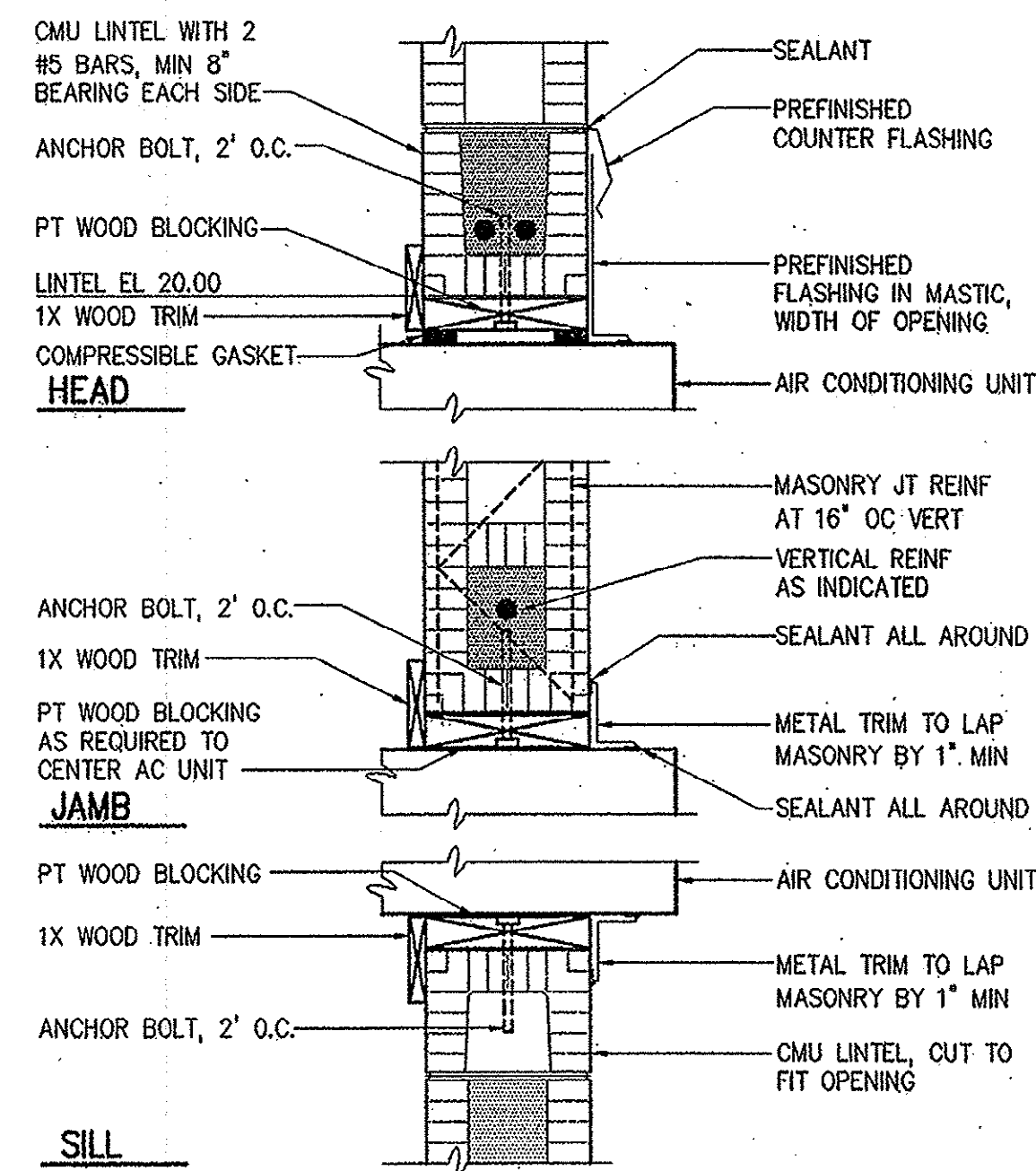
WEST ELEVATION
1/4"=1'-0"

DESIGNED: WHR DRAWN: MMM CHECKED: JEM PROJ. ENGR: JBM APPROVED: [Signature]	DATE: 8-31-01 BY: JEM	DESIGNED: WHR DRAWN: MMM CHECKED: JEM PROJ. ENGR: JBM APPROVED: [Signature]	HAZEN AND SAWYER Environmental Engineers & Scientists 4011 WestChase Blvd, Raleigh, North Carolina 27607	GRAND STRAND WATER AND SEWER AUTHORITY SOUTH CAROLINA CONWAY WWTP 4.0 MGD EXPANSION AND UPGRADE	NEW ELECTRICAL BUILDING ARCHITECTURAL PLAN AND ELEVATIONS	THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING. DATE: AUGUST 2001 H & S JOB NUMBER: 30631 CONTRACT NUMBER: 1 DRAWING NUMBER: A400 H&S FLAT FILE NO. 56
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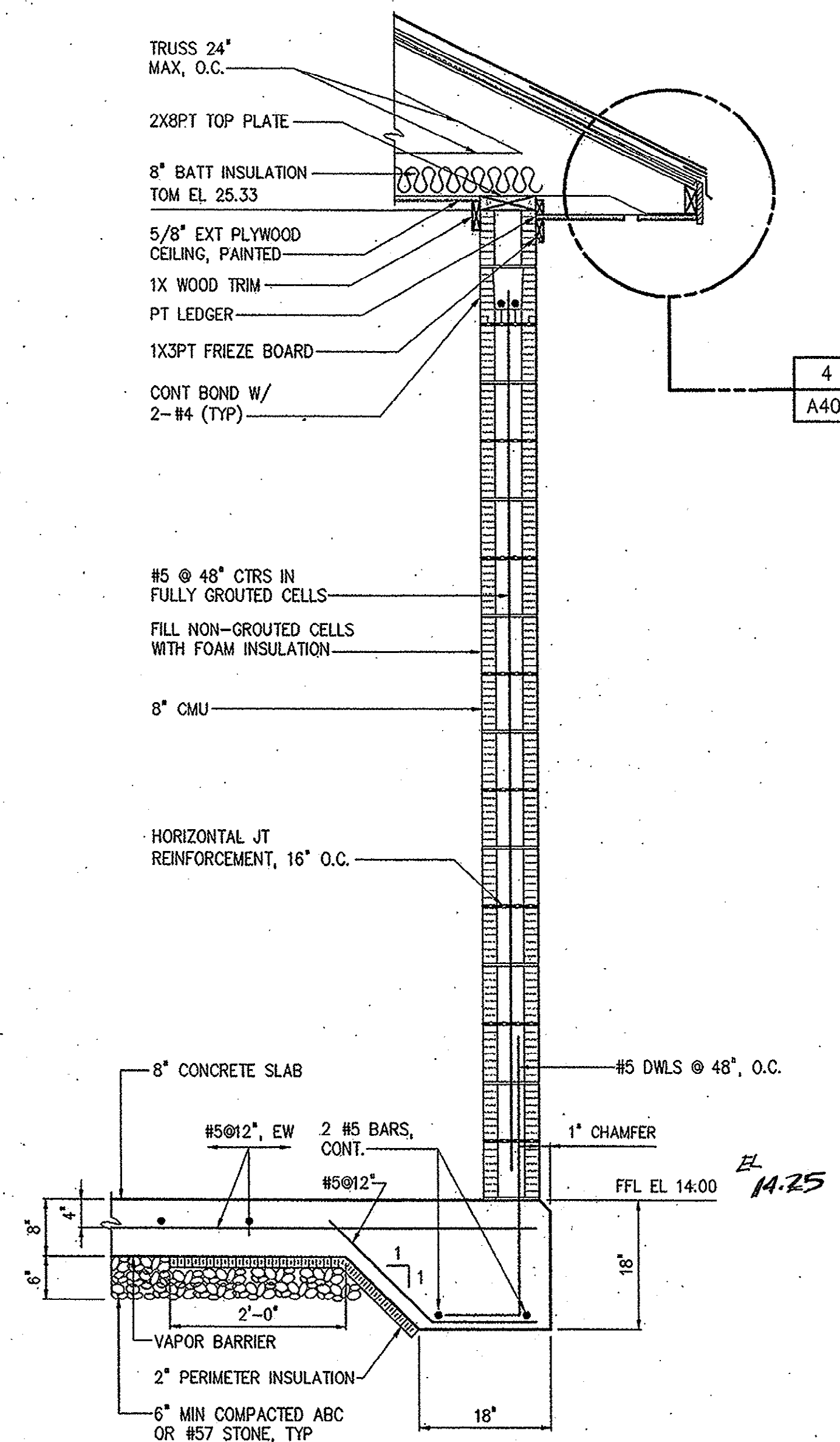
35-009-041



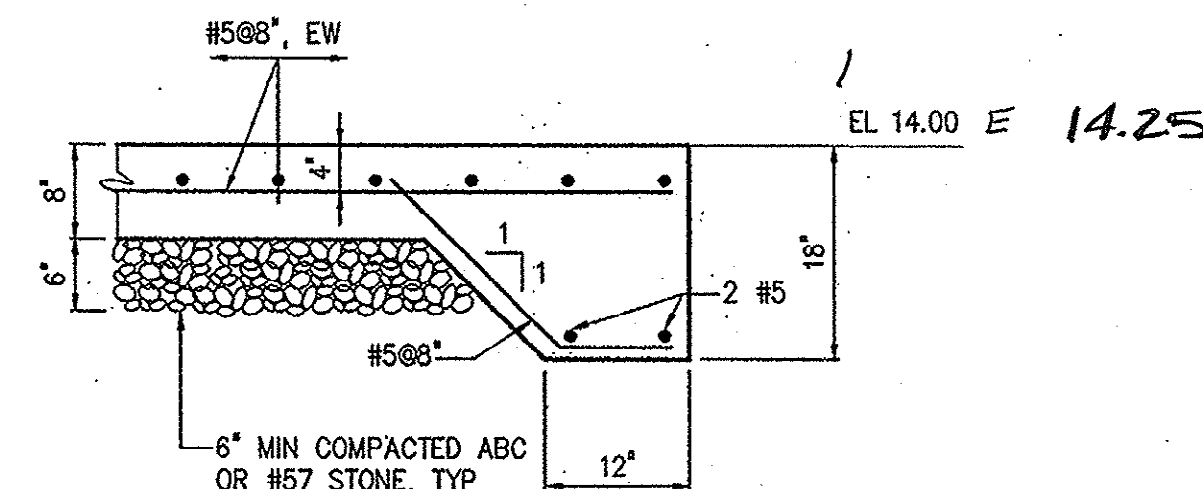
HEAD, JAMB, AND SILL
EXTERIOR DOOR IN MASONRY
DETAIL 1
1 1/2"=1'-0" A400



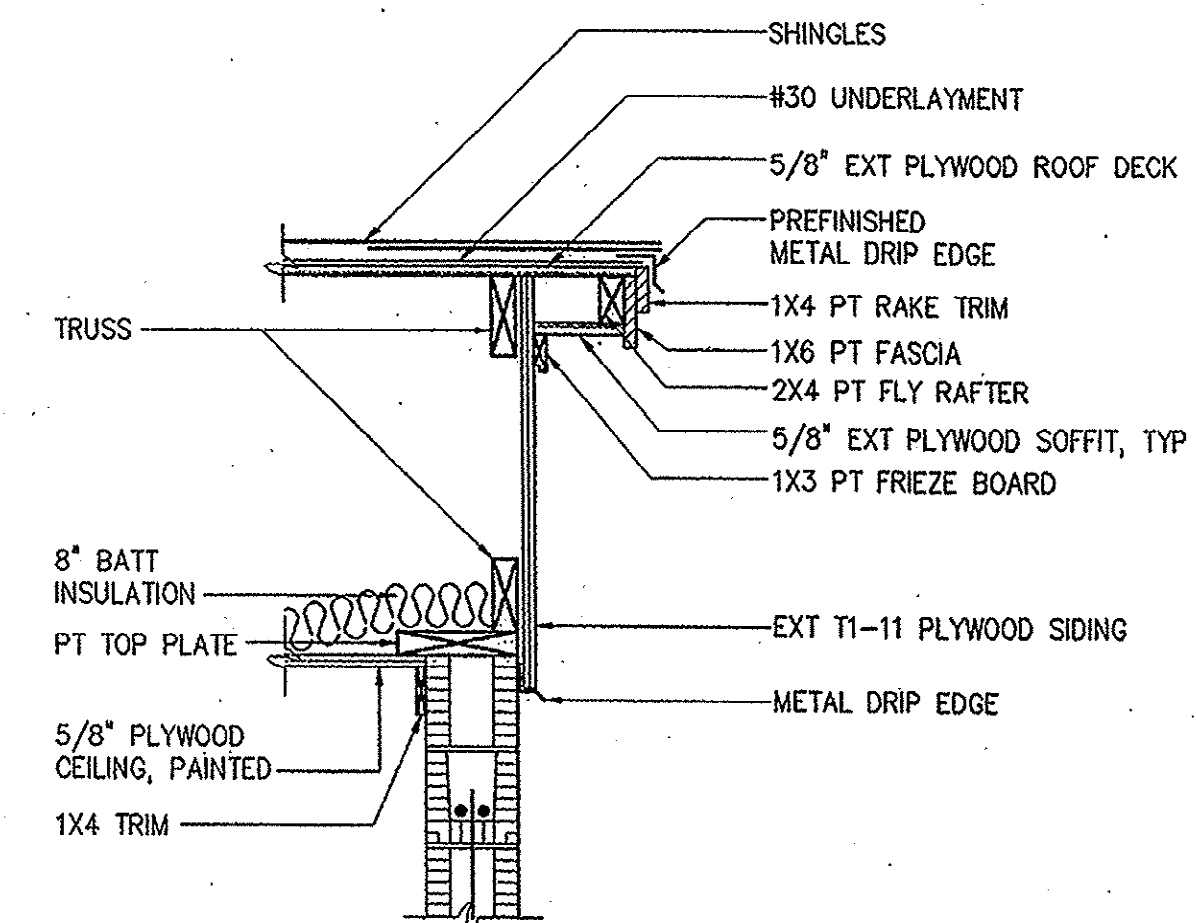
HEAD, JAMB, AND SILL
AIR CONDITIONING UNIT
DETAIL 2
1 1/2"=1'-0" A400



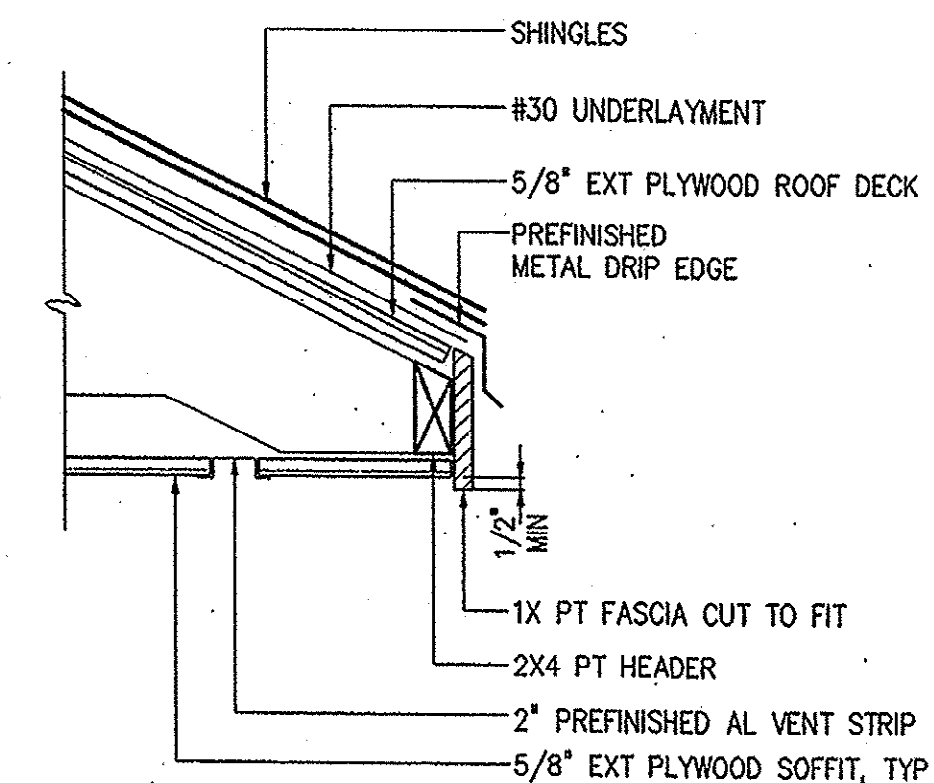
WALL AT EAVE
SECTION A
3/4"=1'-0" A400



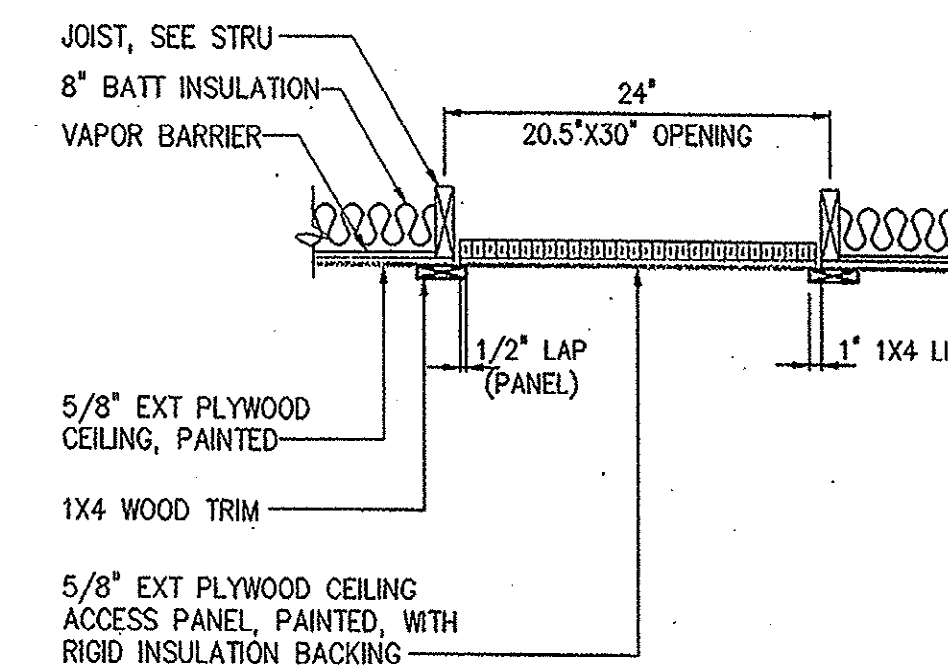
TYPICAL EXTERIOR
SLAB ON GRADE
SECTION B
3/4"=1'-0" A400



ROOF
AT RAKE
DETAIL 3
3/4"=1'-0" A401



ROOF
AT EAVE
DETAIL 4
1 1/2"=1'-0" A401

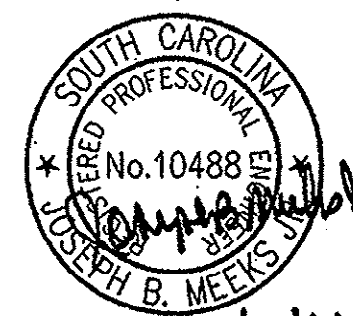
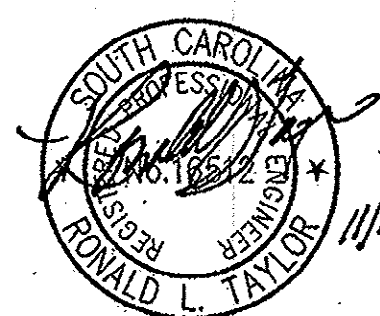


CEILING
ACCESS HATCH
DETAIL 5
1 1/2"=1'-0" A401

NOTES:

- MASONRY VERTICAL REINFORCEMENT SHALL BE PLACED IN FULLY GROUTED CELLS AT 48" MAX, O.C. AND ADJACENT TO ALL OPENINGS AND CORNERS.

DESIGNED	WHR
DRAWN	MMM
CHECKED	JBM
PROJ. ENGR.	JBM
APPROVED	JBM
NO.	1
CONSTRUCTION	11/16/01
REGULATORY APPROVAL	8-31-01
ISSUED FOR	DATE

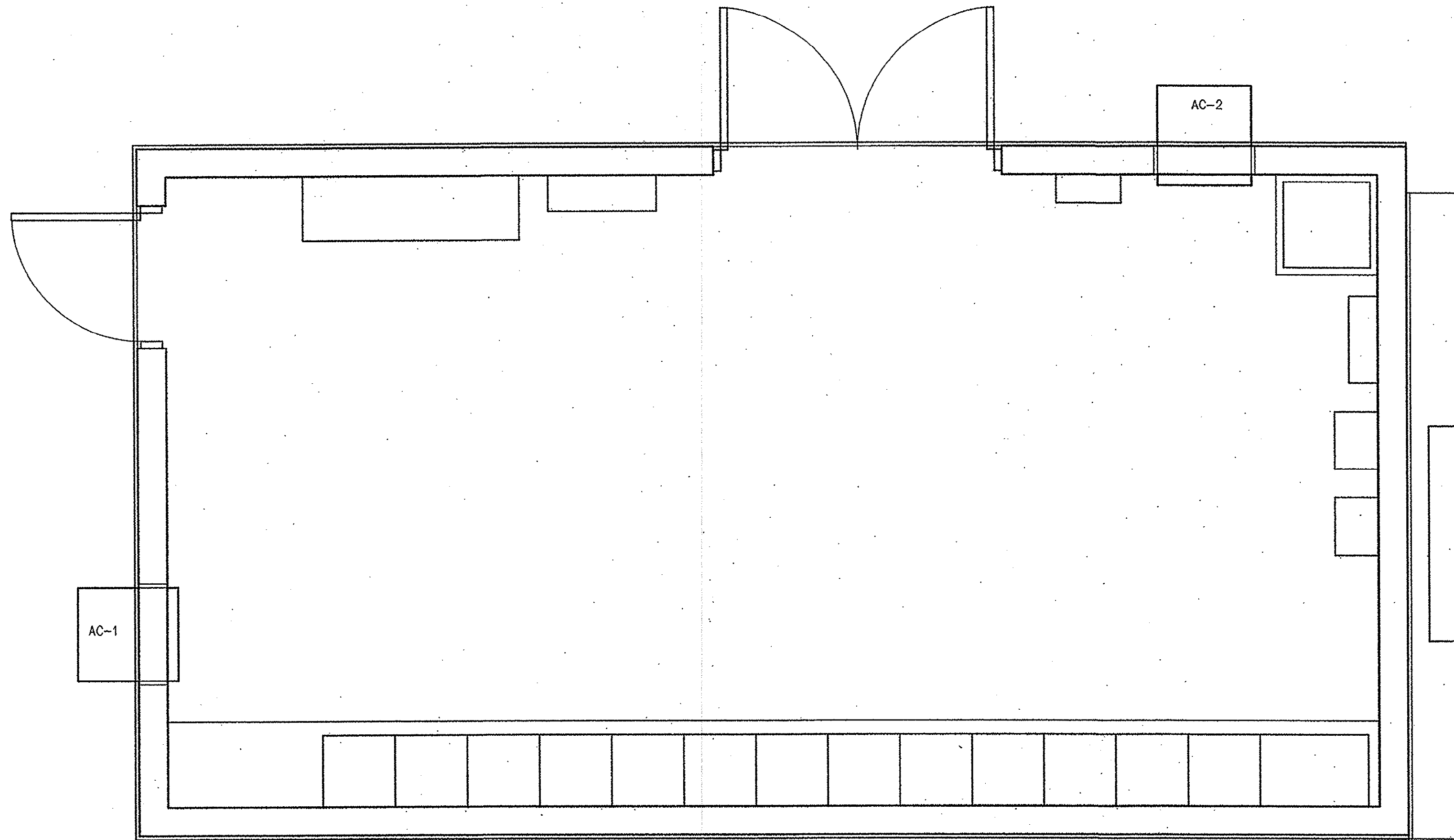


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NEW ELECTRICAL BUILDING
ARCHITECTURAL
SECTIONS AND DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	A401
	H&S FLAT FILE NO.	56



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

NOTES:

- 1 AC-1, AND AC-2 SHALL HAVE HIGH EFFICIENCY ROTARY COMPRESSOR, AUTOMATIC THERMOSTAT, ENERGY SAVER SWITCH, SIX-WAY AIR FLOW CONTROL EXHAUST AND VENTILATION CONTROLS, THREE SPEED COOLING, AND CORROSION PROTECTION.
- 2 AC-2 SHALL HAVE 24 HOURS PROGRAMMABLE TIMER, TURBO SETTING FOR MAXIMUM COOLING, DIRTY FILTER INDICATOR, BUILT-IN DIAGNOSTICS, LIQUID CRYSTAL DISPLAY, SET TEMPERATURE AND ROOM TEMPERATURE DIGITAL READOUT, AND AUTO AIR CIRCULATOR.

AC UNIT SCHEDULE

MARK	LOCATION	TOTAL CAPACITY BTUH	HEATING CAPACITY BTUH	CFM	ELECTRICAL DATA			MANUFACTURER	MODEL	REMARKS
					VOLTS	HZ	PHASE			
AC-1	ELECTRICAL BUILDING	23500	15200	580	230	60	1	CARRIER	YHB243D	-
AC-2	ELECTRICAL BUILDING	26500	-	600	230	60	1	CARRIER	YCB273D	-

DESIGNED	JLH				HAZEN AND SAWYER Environmental Engineers & Scientists 4011 WestChase Blvd, Raleigh, North Carolina 27607	GRAND STRAND WATER AND SEWER AUTHORITY SOUTH CAROLINA CONWAY WWTP 4.0 MGD EXPANSION AND UPGRADE	NEW ELECTRICAL BUILDING HVAC TOP PLAN AND SCHEDULE	THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
DRAWN	JLH								H & S JOB NUMBER	30631
CHECKED	JBM								CONTRACT NUMBER	1
PROJ. ENGR.	H & S								DRAWING NUMBER	H400
NO.	ISSUED FOR	DATE	BY	APPROVED					H&S FILE NO. 56.	

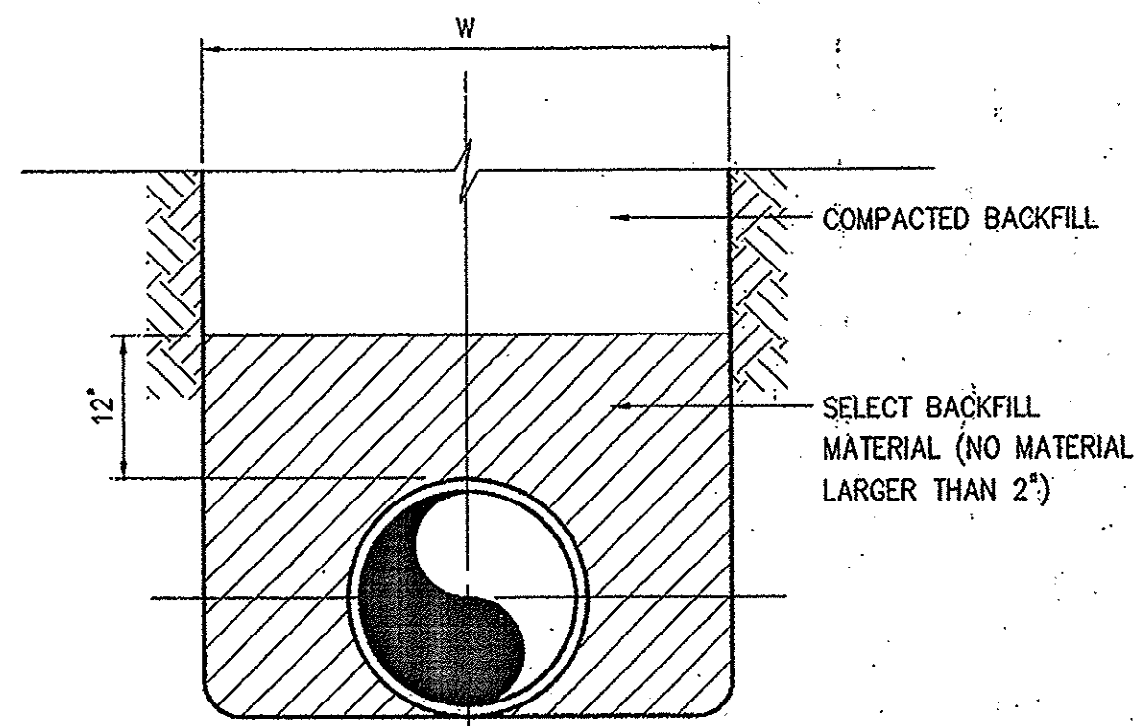
35-004-093

NOTES:

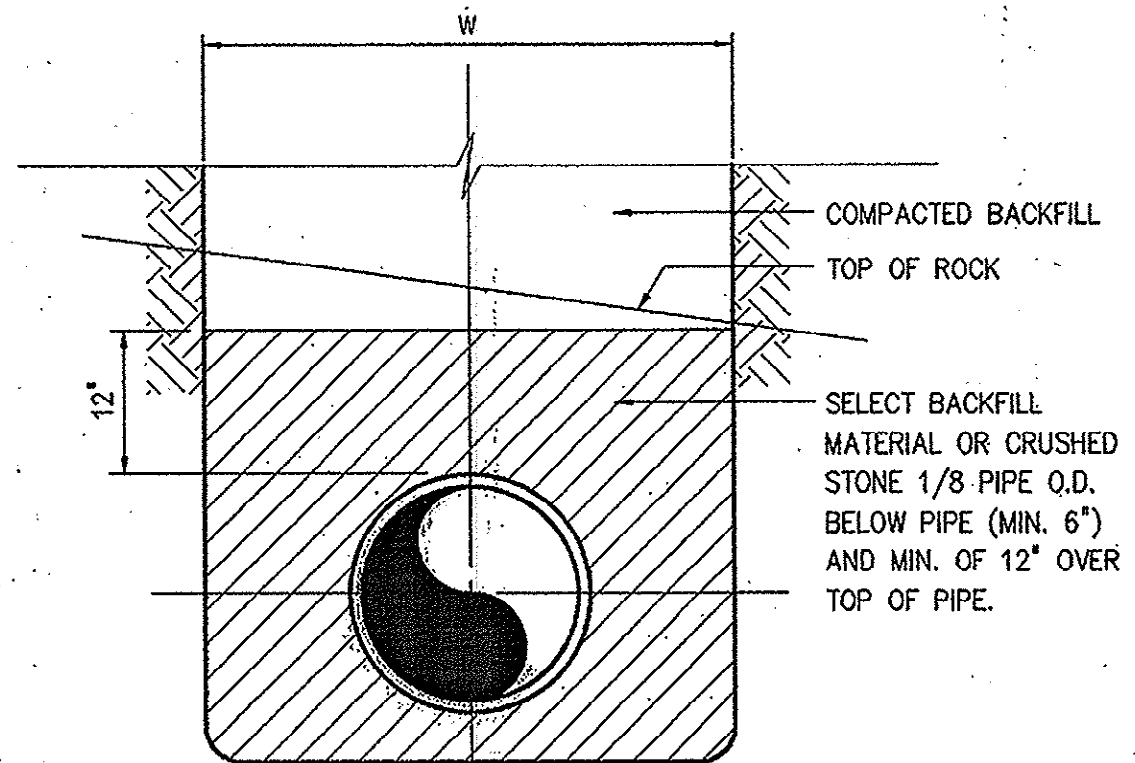
1 CONCRETE THRUST BLOCKS, ARCHES, ENCASEMENTS, FLOWABLE FILL, ETC. SHALL BE FORMED USING FLYWOOD OR SANDBAGS TO PROVIDE REQ'D SHAPE.

CONCRETE THRUST BLOCK SCHEDULE*												
PIPE SIZE (IN)	BEND						DESIGN PRESSURE (PSI)					
	90°/TEE	45°	22 1/2°	11 1/4°	5 5/8°		100	150	200	300	400	500
6.0	1.4	2.8	1.0	2.1	0.7	1.5	0.5	1.0	1.4	1.8	2.2	2.6
8.0	1.8	3.7	1.4	2.7	1.0	1.9	0.7	1.4	1.8	2.2	2.6	3.0
12.0	2.7	5.4	2.0	4.0	1.4	2.8	1.0	2.0	2.4	2.8	3.2	3.6
16.0	3.6	7.1	2.6	5.2	1.9	3.7	1.3	2.6	3.0	3.4	3.8	4.2
24.0	5.3	10.5	3.9	7.7	2.8	5.5	2.0	3.9	4.3	4.7	5.1	5.5
30.0	6.5	13.1	4.8	9.6	3.4	6.9	2.4	4.9	5.3	5.7	6.1	6.5
36.0	7.8	15.6	5.8	11.5	4.1	8.2	2.9	5.8	6.2	6.6	7.0	7.4
42.0	9.1	18.2	6.7	13.4	4.8	9.5	3.4	6.8	7.2	7.6	8.0	8.4
48.0	10.4	20.7	7.6	15.3	5.4	10.9	3.9	7.7	8.1	8.5	8.9	9.3
54.0	11.7	23.3	8.6	17.1	6.1	12.2	4.3	8.7	9.1	9.5	9.9	10.3

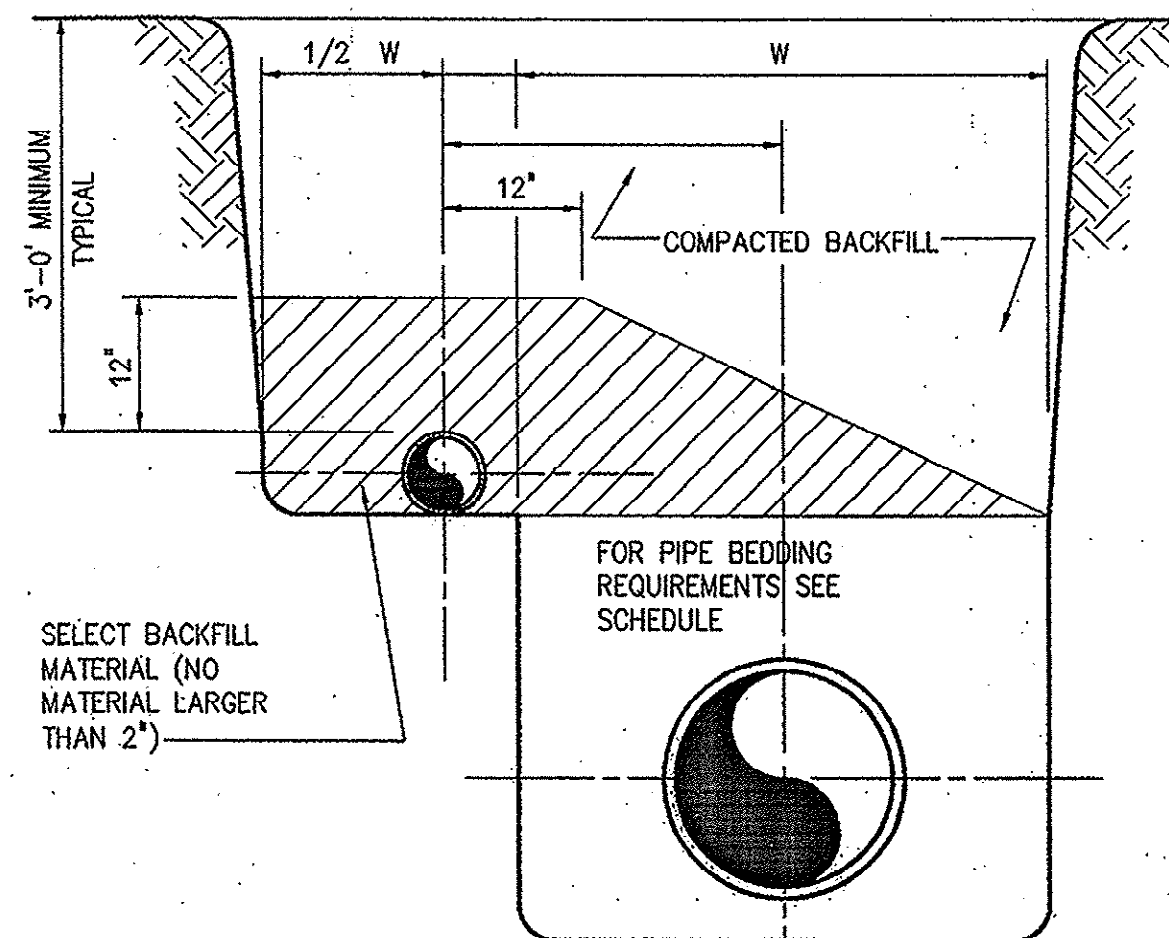
* BASED ON AVERAGE SOIL PASSIVE BEARING STRENGTH OF 2000 PSF USING SF OF 1.5



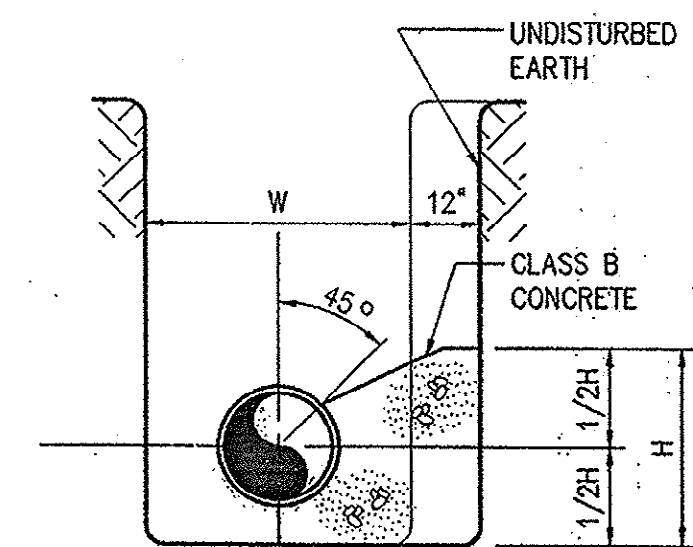
TYPE A
IN EARTH
0222100



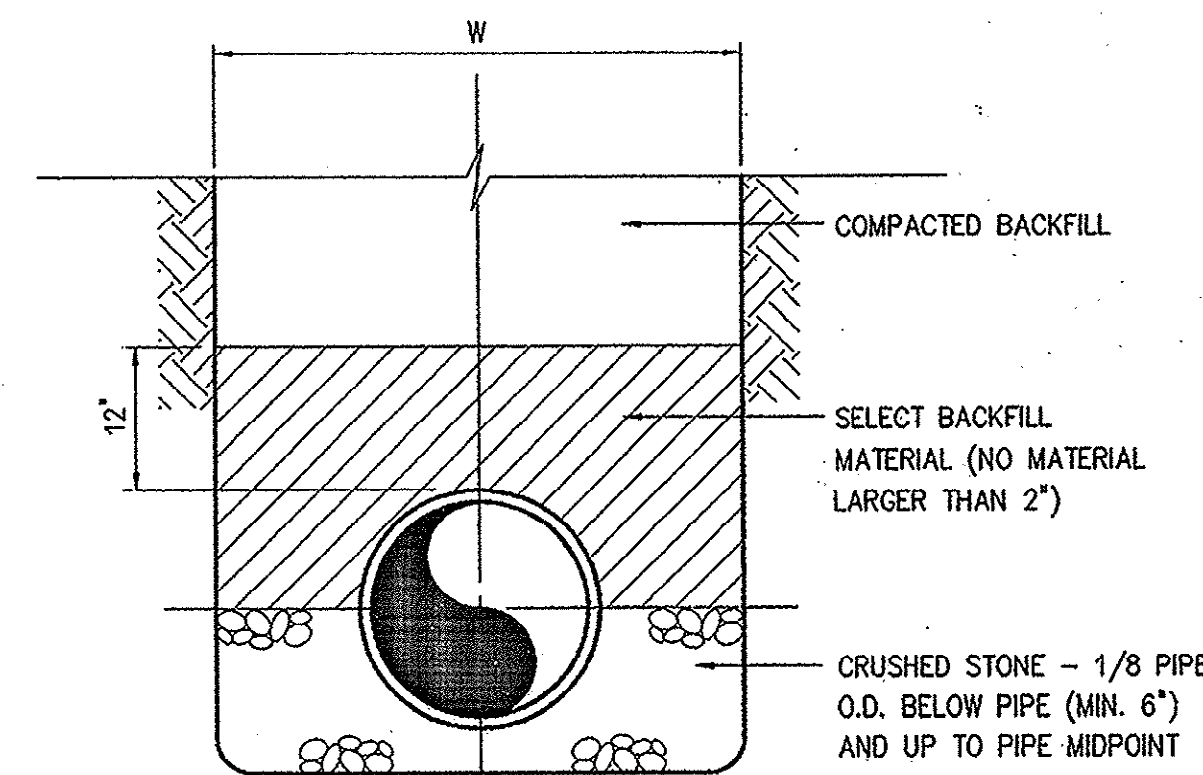
TYPE A
IN ROCK
0222101



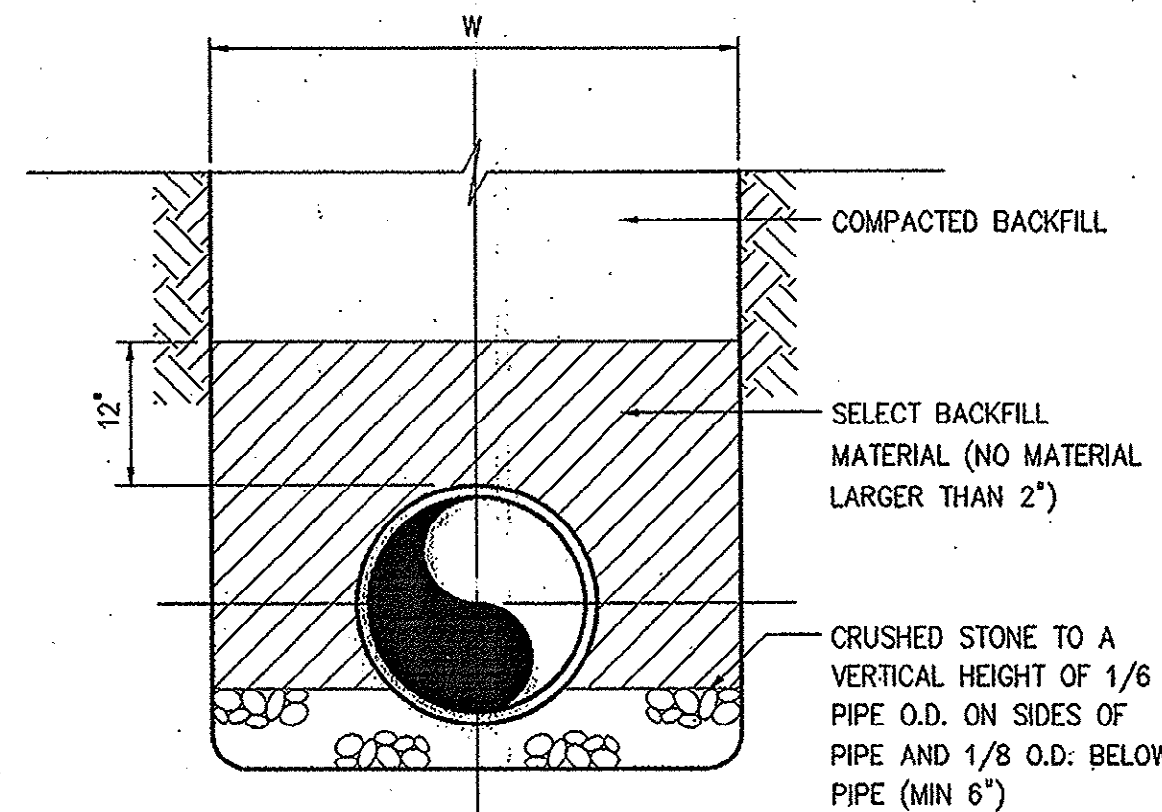
PARALLEL PIPES IN TRENCH
0222106



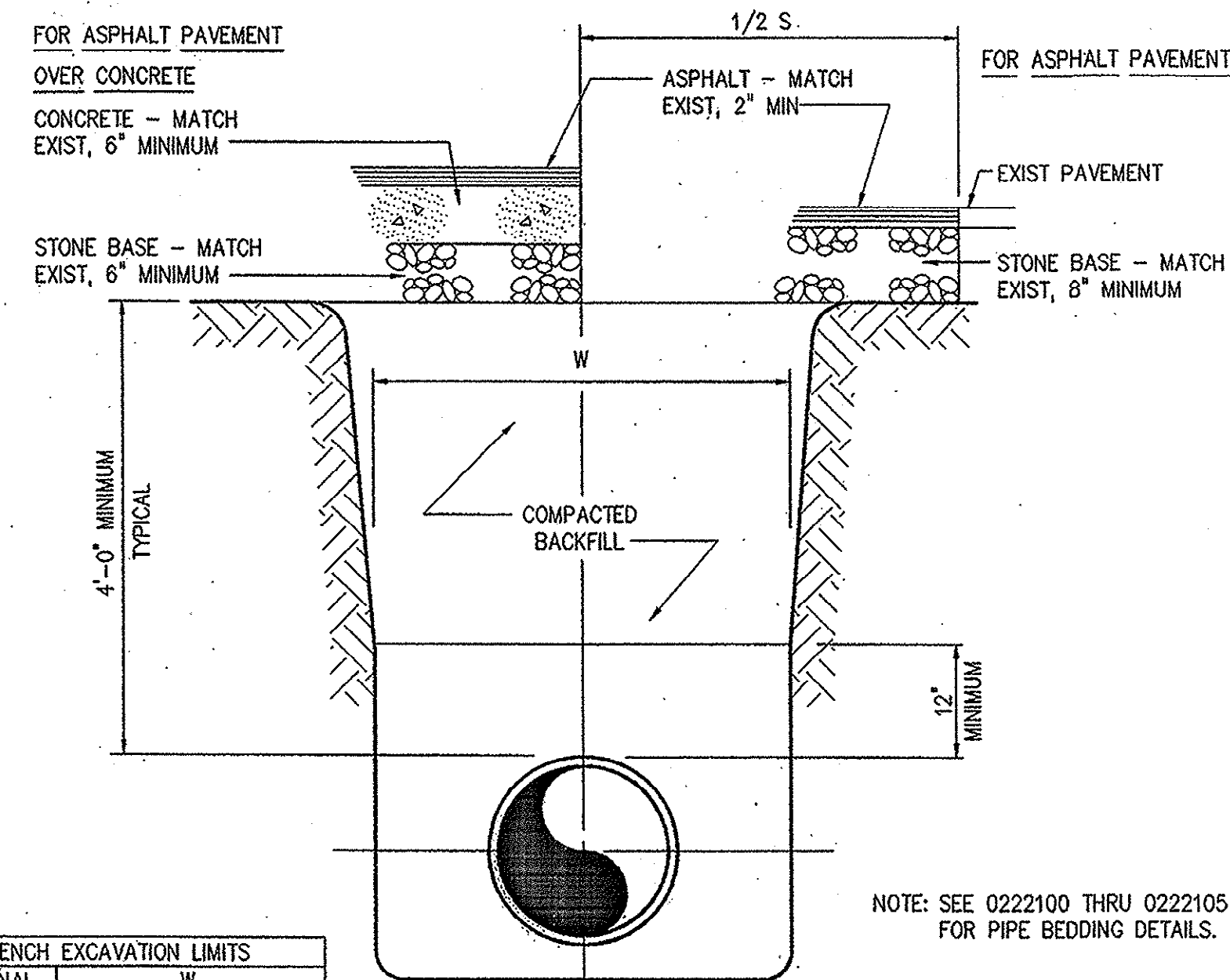
TYPICAL SECTION
TEE OR BEND



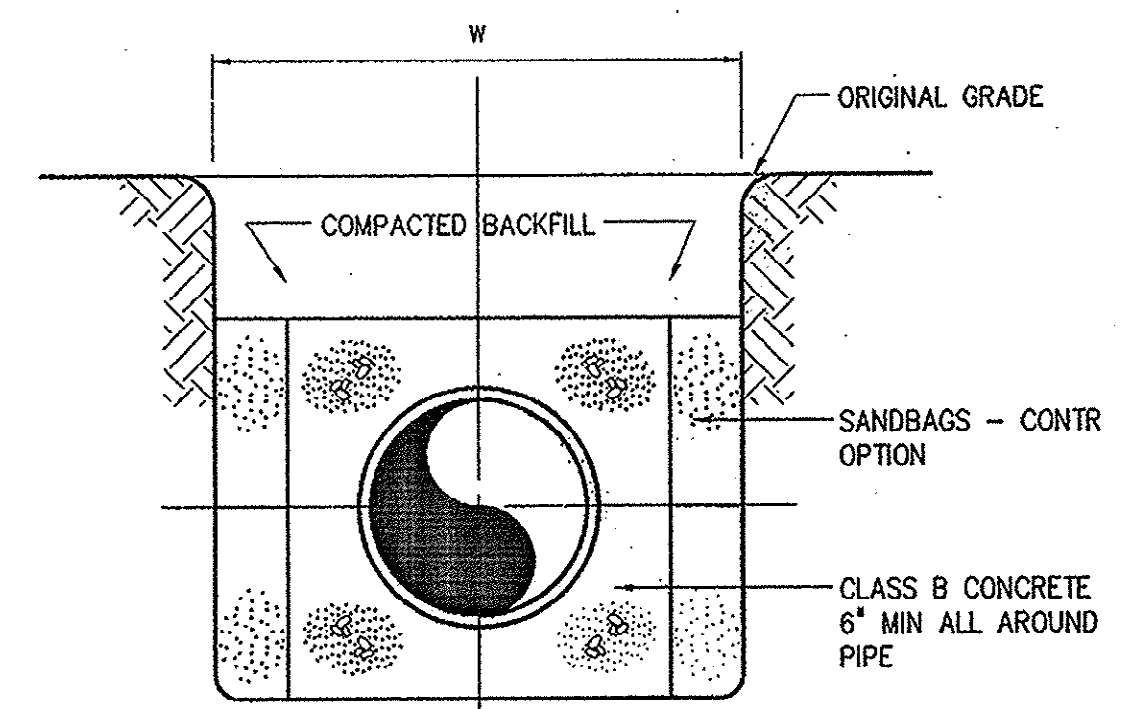
TYPE B
0222102



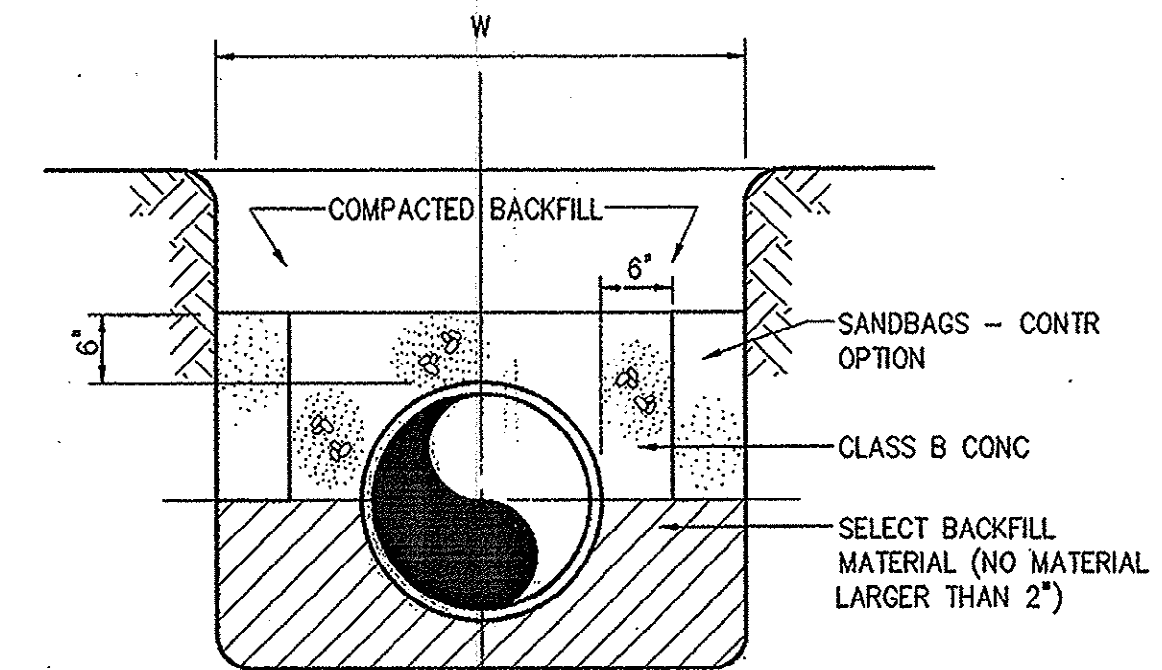
TYPE C
0222103



TYPICAL TRENCH
0222107



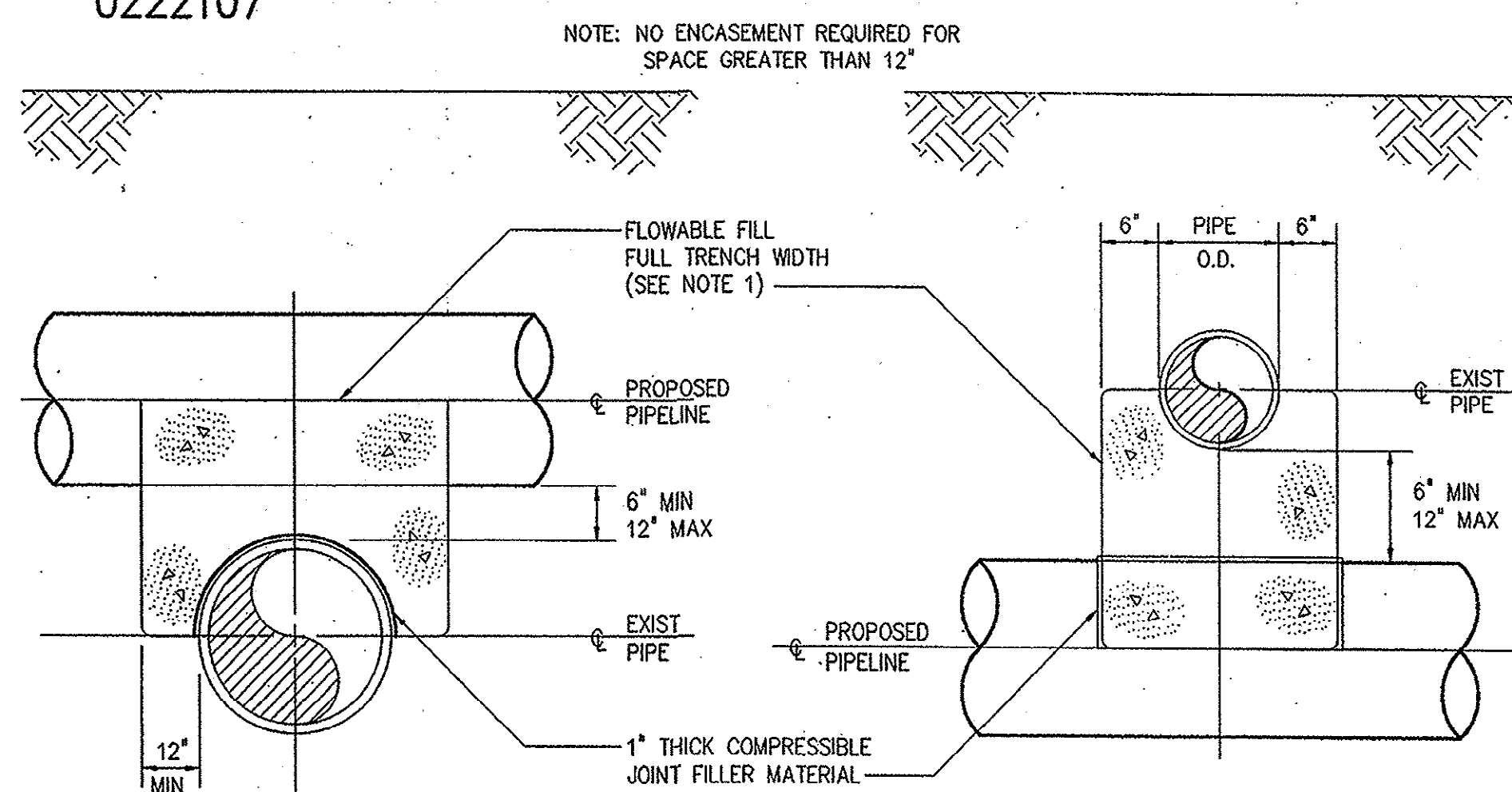
CONCRETE ENCASEMENT
(SEE NOTE 1)
0222104



CONCRETE ARCH
(SEE NOTE 1)
0222105

TRENCH EXCAVATION LIMITS		
INTERNAL DIAMETER OF PIPE	W	W=MIN
4'-6"	3'-9"	2'-0"
6'-10"	3'-9"	2'-2"
12"	3'-9"	0.0+2
14"-16"	4'-2"	0.0+2
18"	4'-4"	0.0+2
20"-24"	4'-8"	0.0+2
24"	4'-11"	0.0+2
27"	5'-9"	0.0+2
30"	6'-7"	0.0+2
36"	7'-4"	0.0+2
42"	8'-2"	0.0+2
48"	8'-9"	0.0+2
54"	9'-4"	0.0+2
60"	9'-10"	0.0+2
72"	11'-0"	0.0+2
78"	11'-8"	0.0+2
84"	12'-0"	0.0+2
90"	12'-6"	0.0+2
96"	13'-0"	0.0+2
108"	14'-0"	0.0+2
DEPTH OF CUT	S	MAXIMUM PAVEMENT REPLACEMENT WIDTH
0'-6"	S=W+4'	
>6'-8"	S=W+8'	
>8'-10"	S=W+12'	
>10'-12"	S=W+16'	
>12'-14"	S=W+20'	
>14'-16"	S=W+24'	
>16'-18"	S=W+28'	
>18"	S=W+32'	

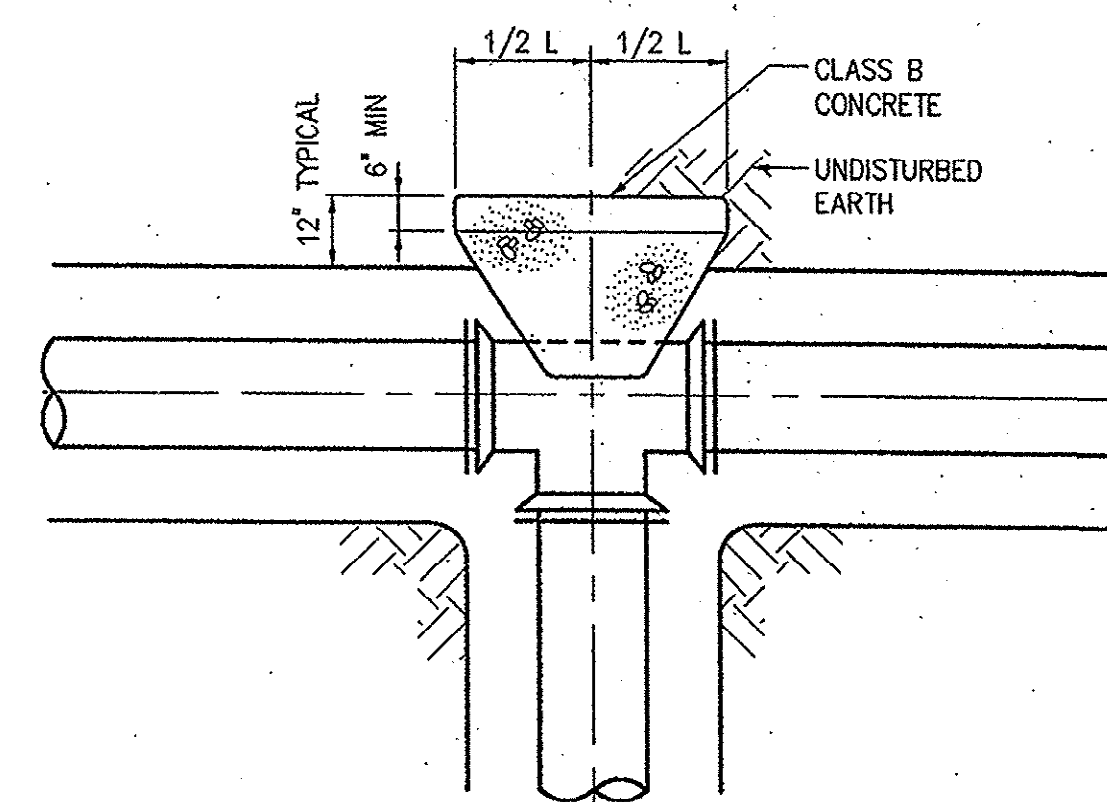
W = TRENCH WIDTH AT BOTTOM OF PIPE. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.



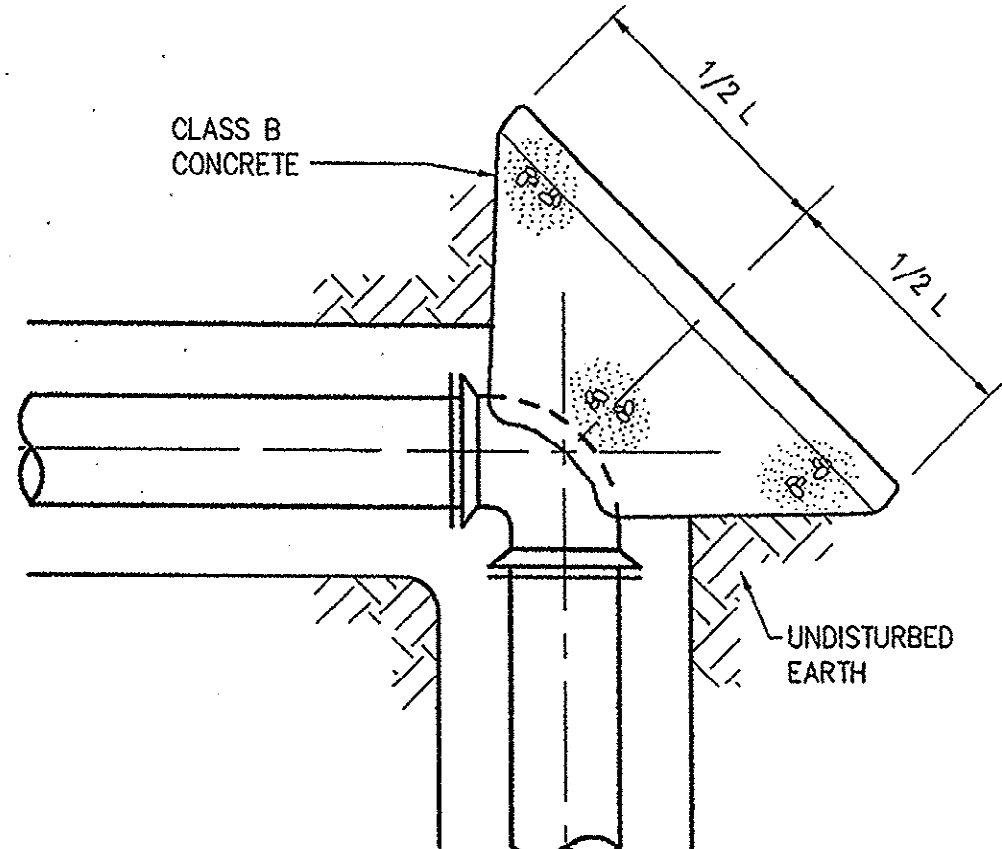
PROPOSED PIPELINE OVER EXIST PIPE

PROPOSED PIPELINE UNDER EXIST PIPE

0222118



PLAN - TEE



PLAN - BEND

THRUST BLOCKS
(SEE NOTE 1)

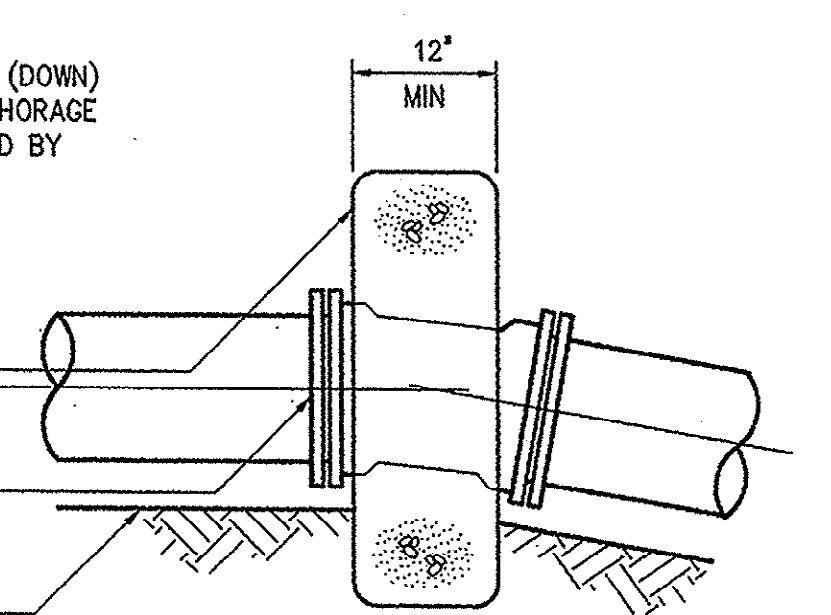
0222108

NOTE: FOR VERTICAL BEND (DOWN) IN EXCESS OF 11 1/4" ANCHORAGE SHALL BE AS RECOMMENDED BY THE ENGINEER.

TYPICAL CONCRETE THRUST COLLAR. MIN OF 12" INTO UNDISTURBED MATERIAL ALL AROUND.

TYPICAL BEND

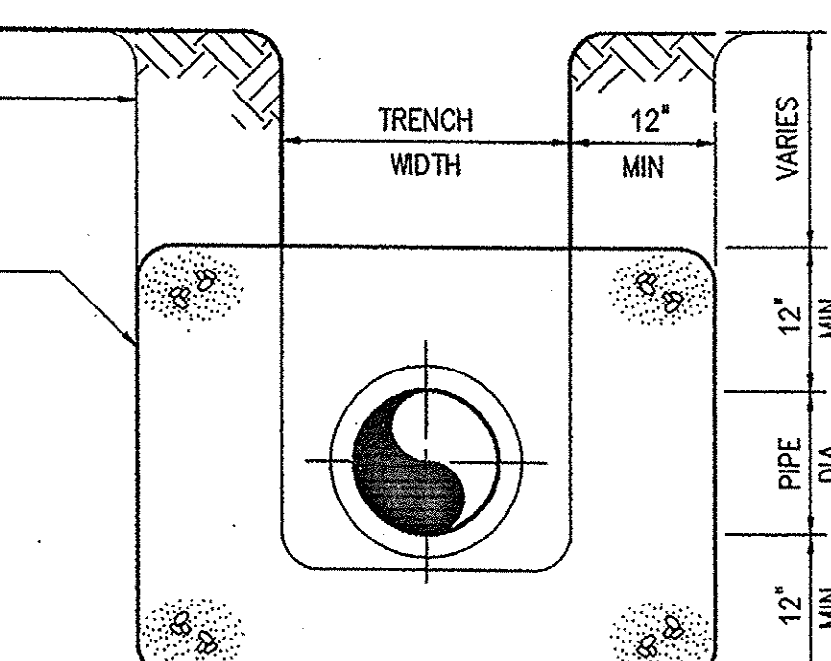
TRENCH, BOTTOM



ELEVATION

EXCAVATION FOR COLLAR

TYPICAL CONCRETE THRUST COLLAR. MIN OF 12" INTO UNDISTURBED SOIL.



THRUST COLLAR

0222111

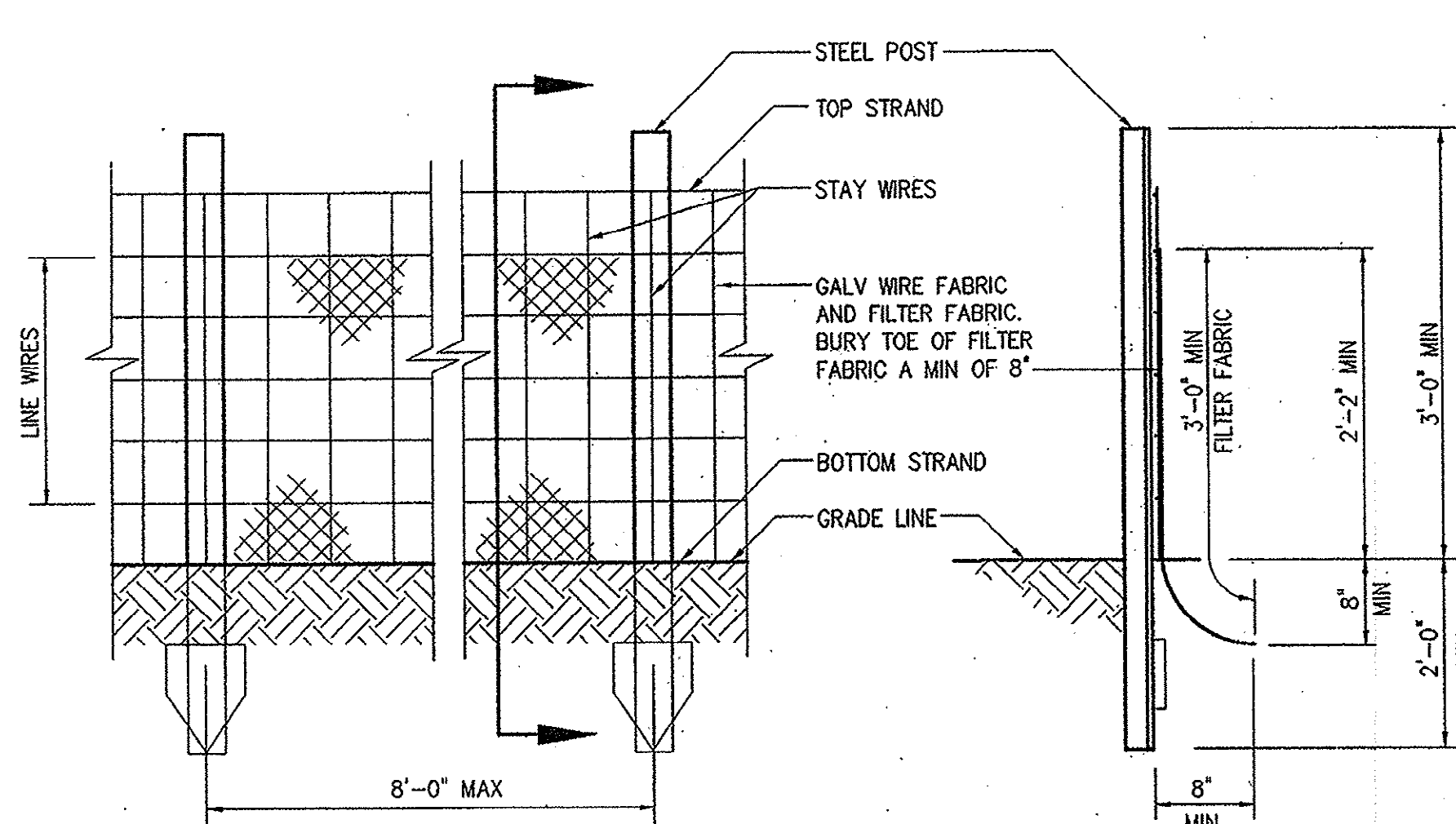
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.
DATE: AUGUST 2001
H & S JOB NUMBER: 30631
CONTRACT NUMBER: 1
DRAWING NUMBER: D1
H & S FILE NO. 56

35-009-044

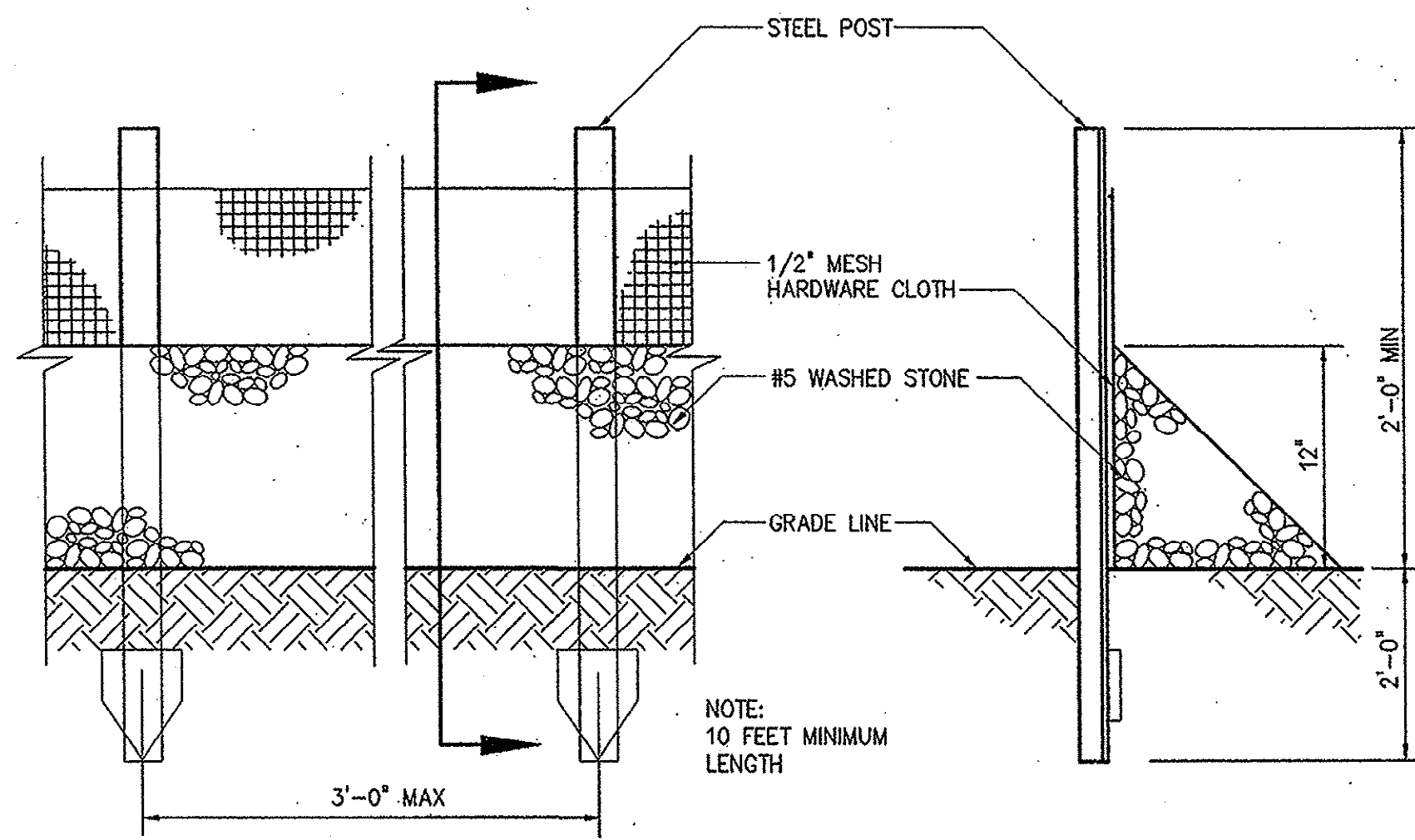


ELEVATION
SILT FENCE

NOTE:

1. EXTRA STRENGTH FILTER FABRIC (AS APPROVED BY ENGINEER) WITH 6'-0" POST SPACING DOES NOT REQUIRE MESH SUPPORT FENCE.
2. FILTER FABRIC SHALL BE WIRED DIRECTLY TO POST.

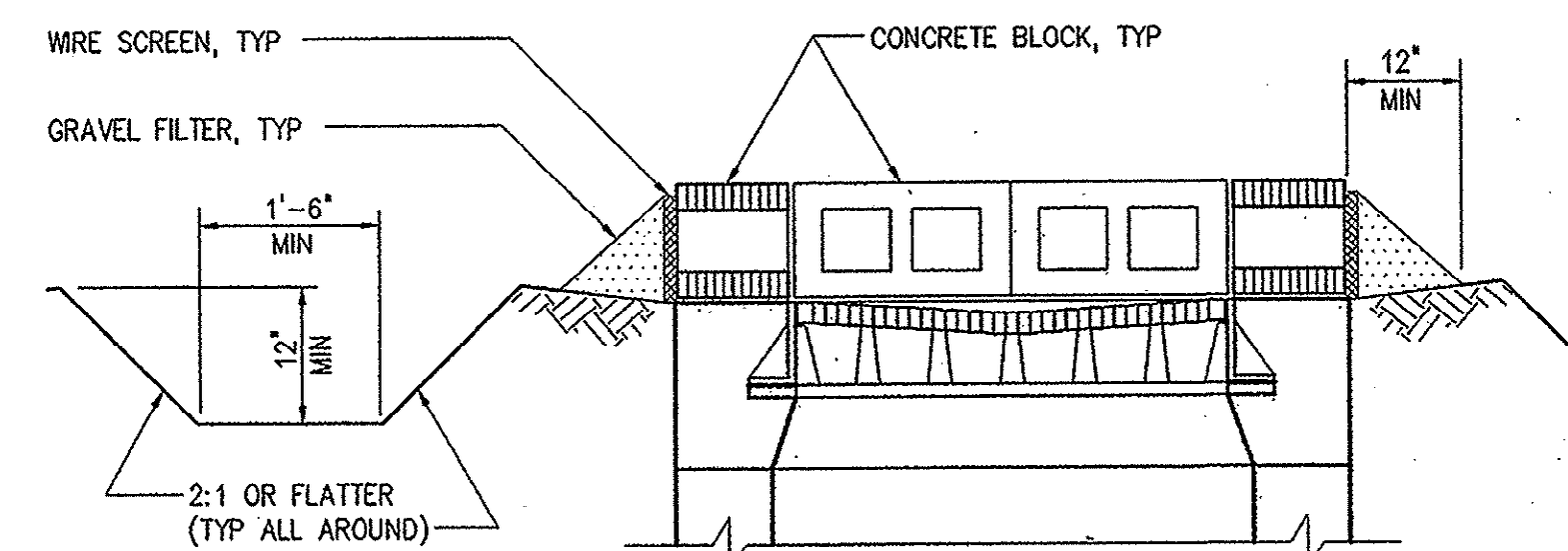
0227000



ELEVATION
STONE FILTER

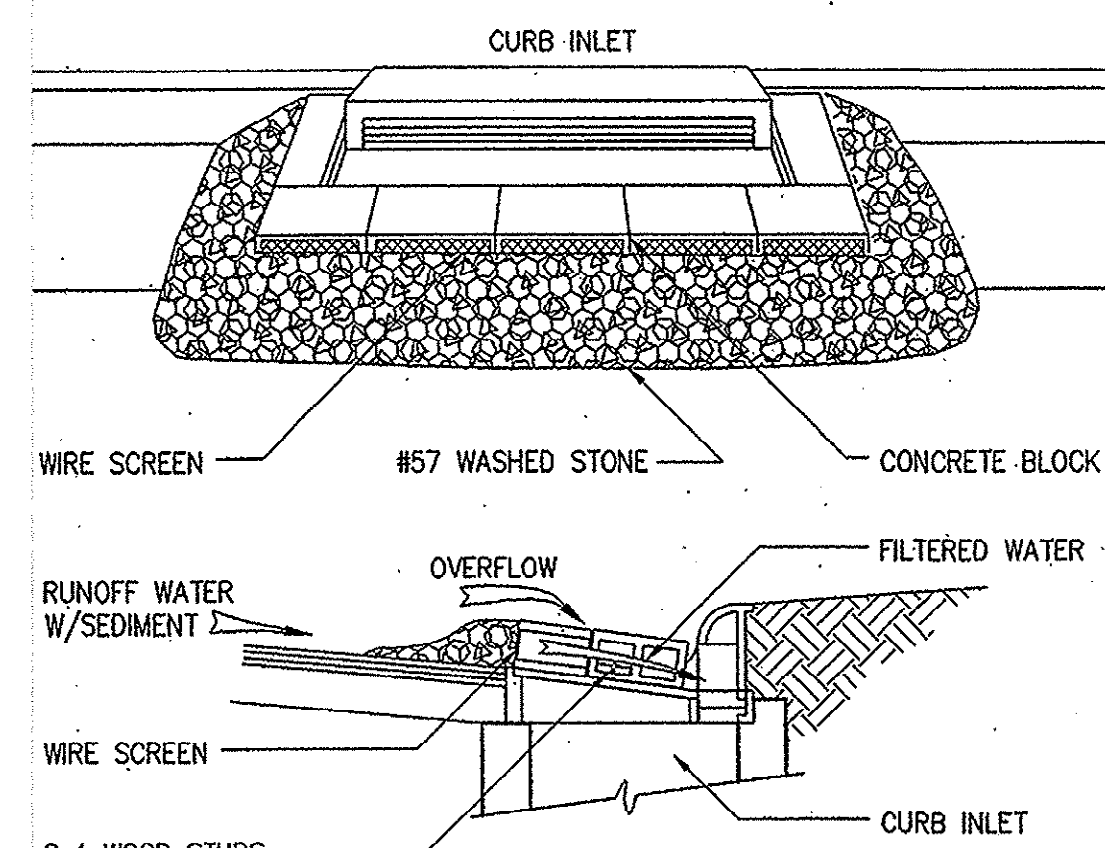
0227008

SECTION
STONE FILTER



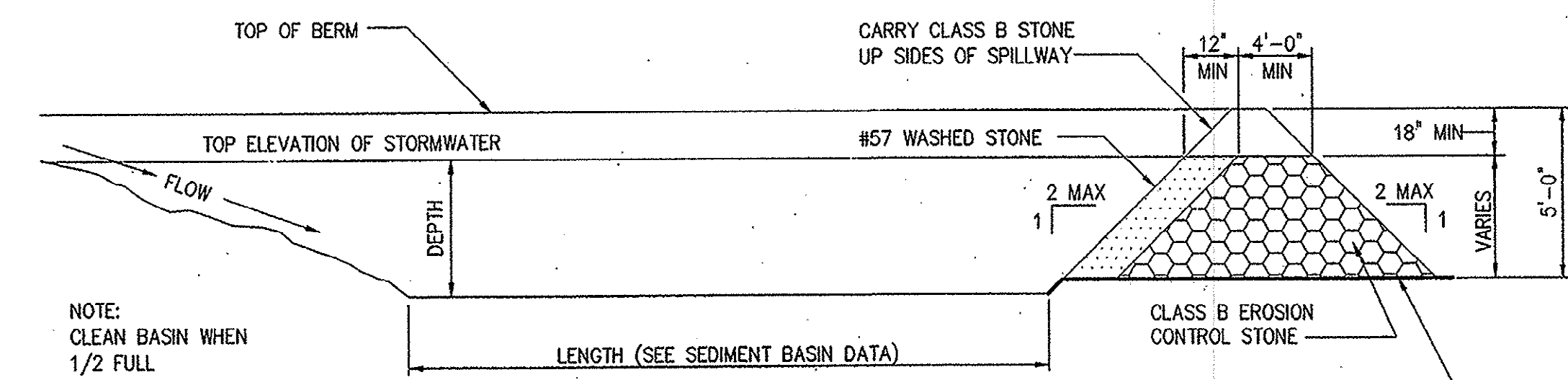
YARD INLET EROSION CONTROL

0227001

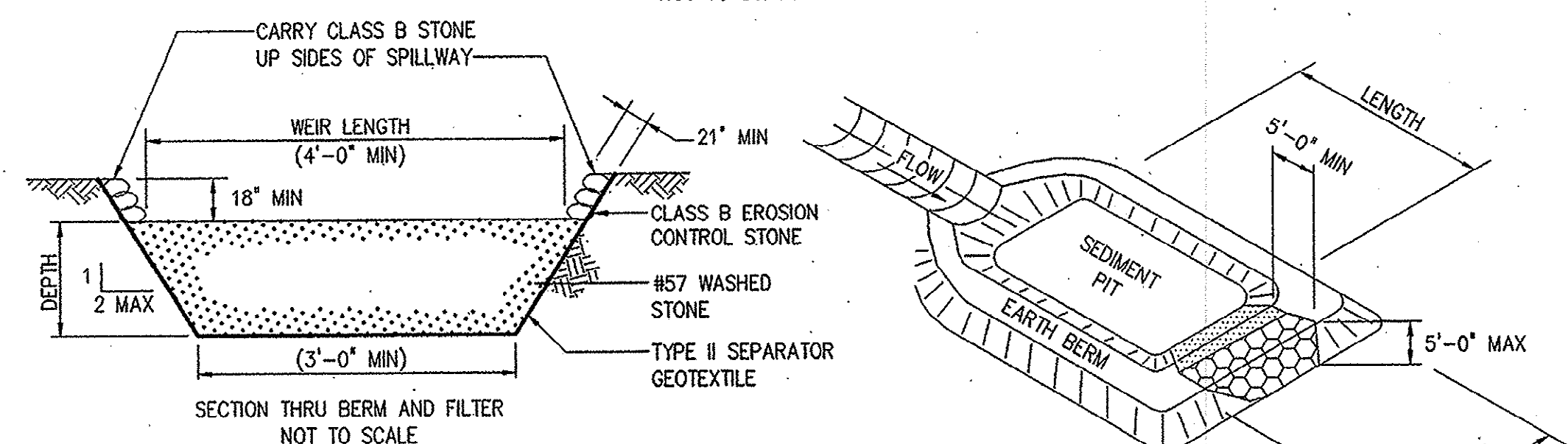


CURB INLET SEDIMENT CONTROL

0227002



SECTION THRU BASIN AND FILTER
NOT TO SCALE

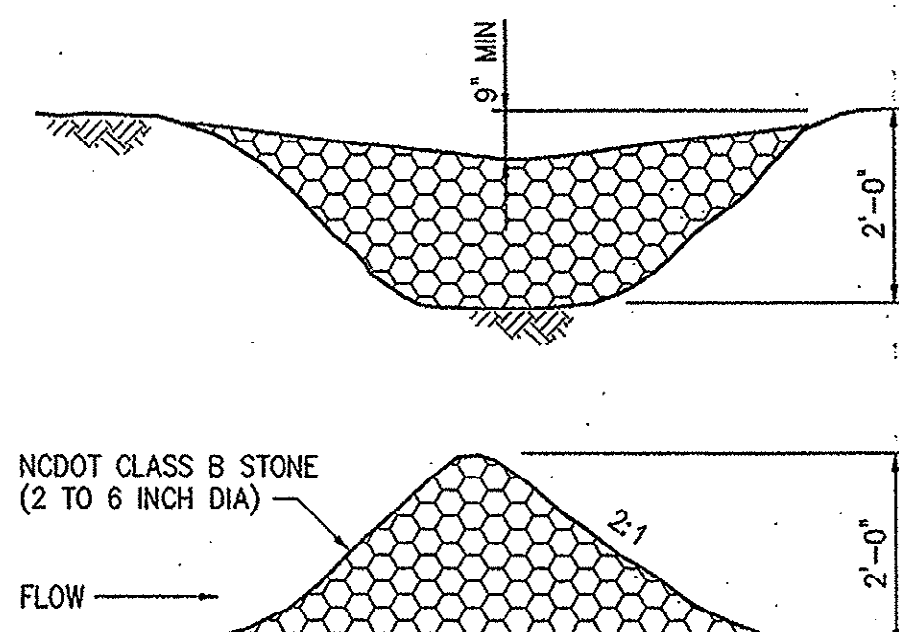


TEMPORARY SEDIMENT BASIN

0227004

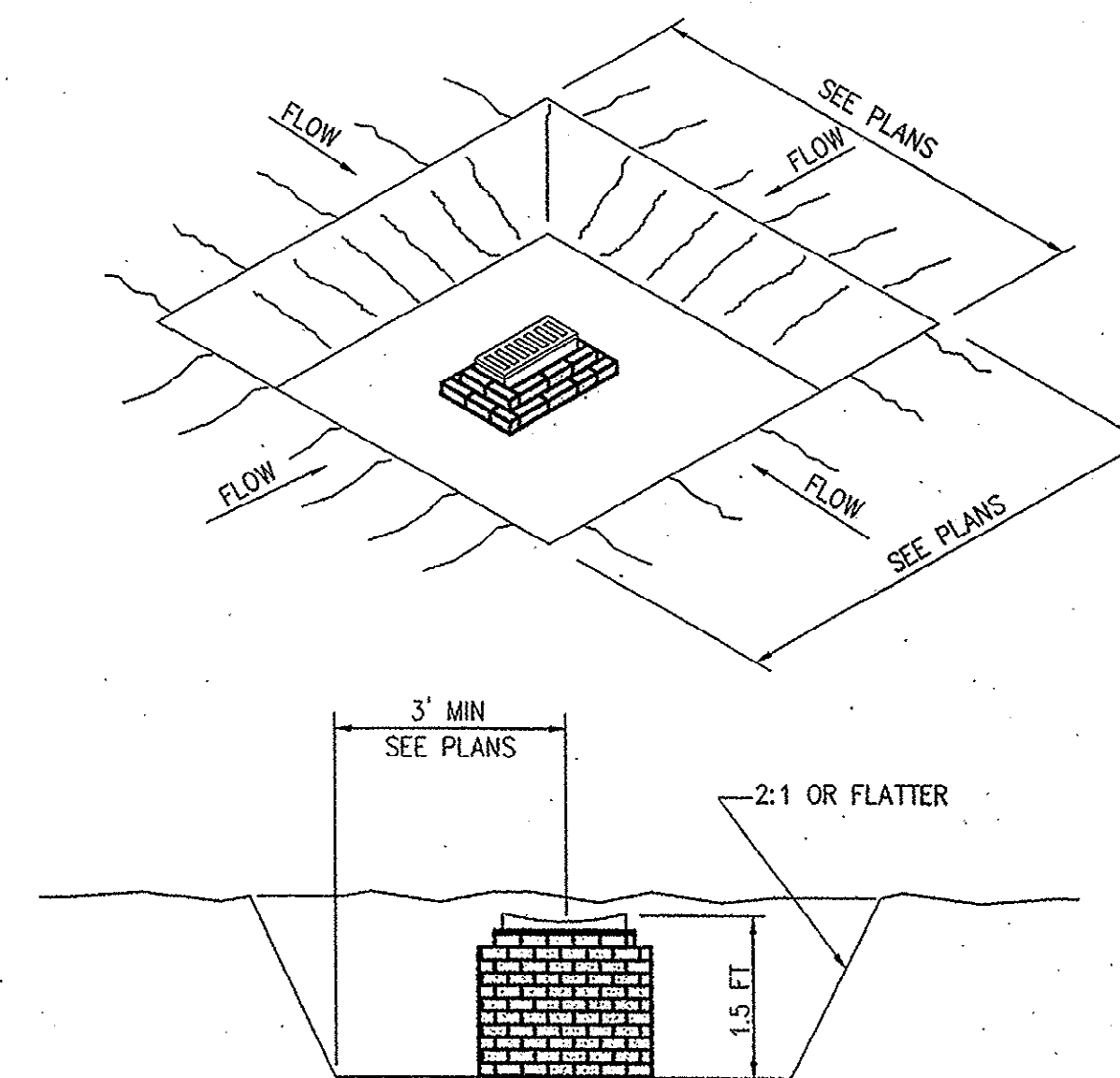
SEDIMENT BASIN DATA				
BASIN NUMBER	BASIN WIDTH (FT)	BASIN LENGTH (FT)	BASIN DEPTH (FT)	WEIR LENGTH (FT)
(A)				
(B)				
(C)				
(D)				
(E)				
(F)				
(G)				
(H)				

0227007



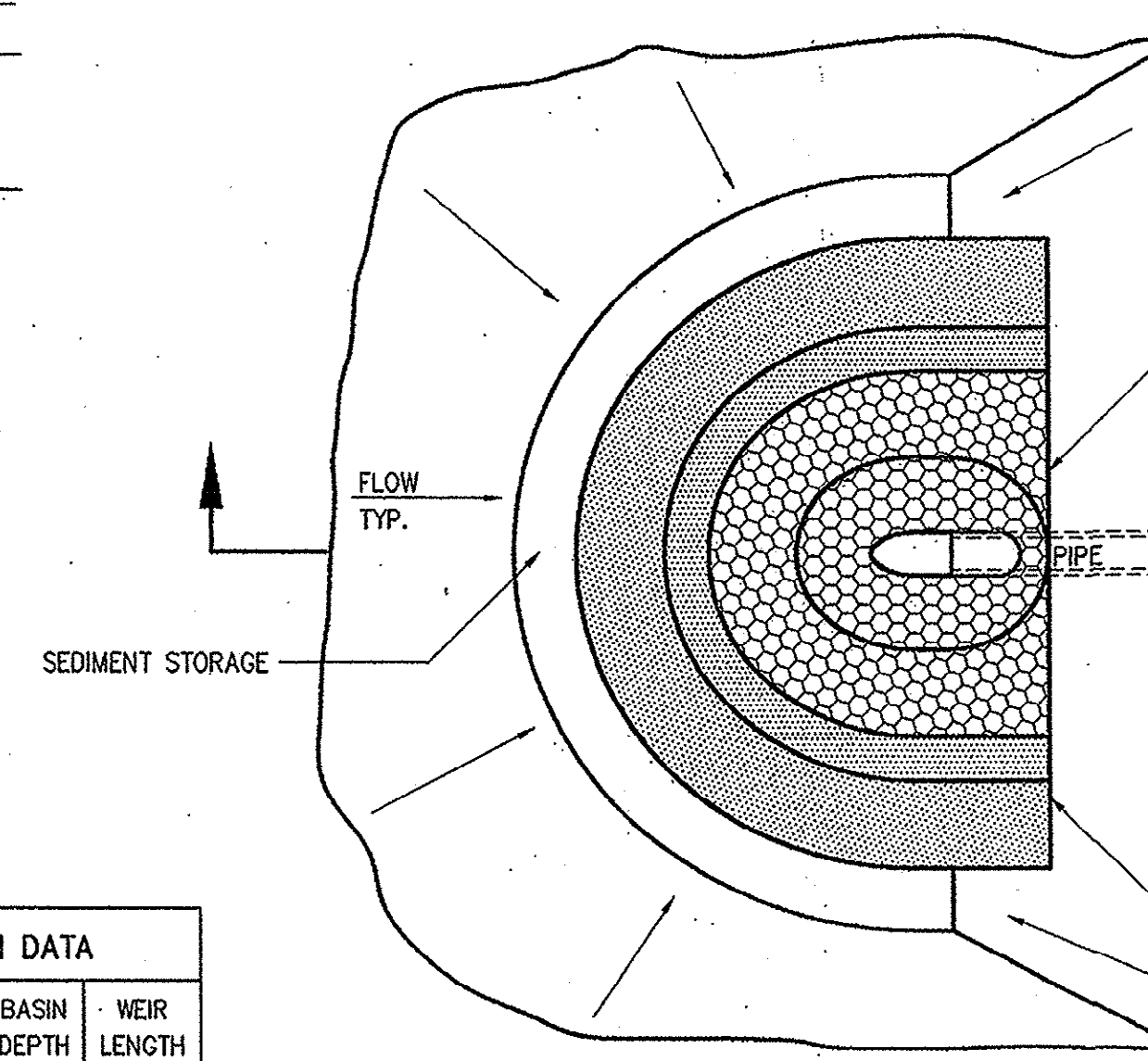
STONE CHECK DAM

0227003



CROSS SECTION
YARD INLET SEDIMENT CONTROL

0227006



PLAN
GRAVEL AND RIP RAP FILTER BERM BASIN

CLASS I RIP RAP

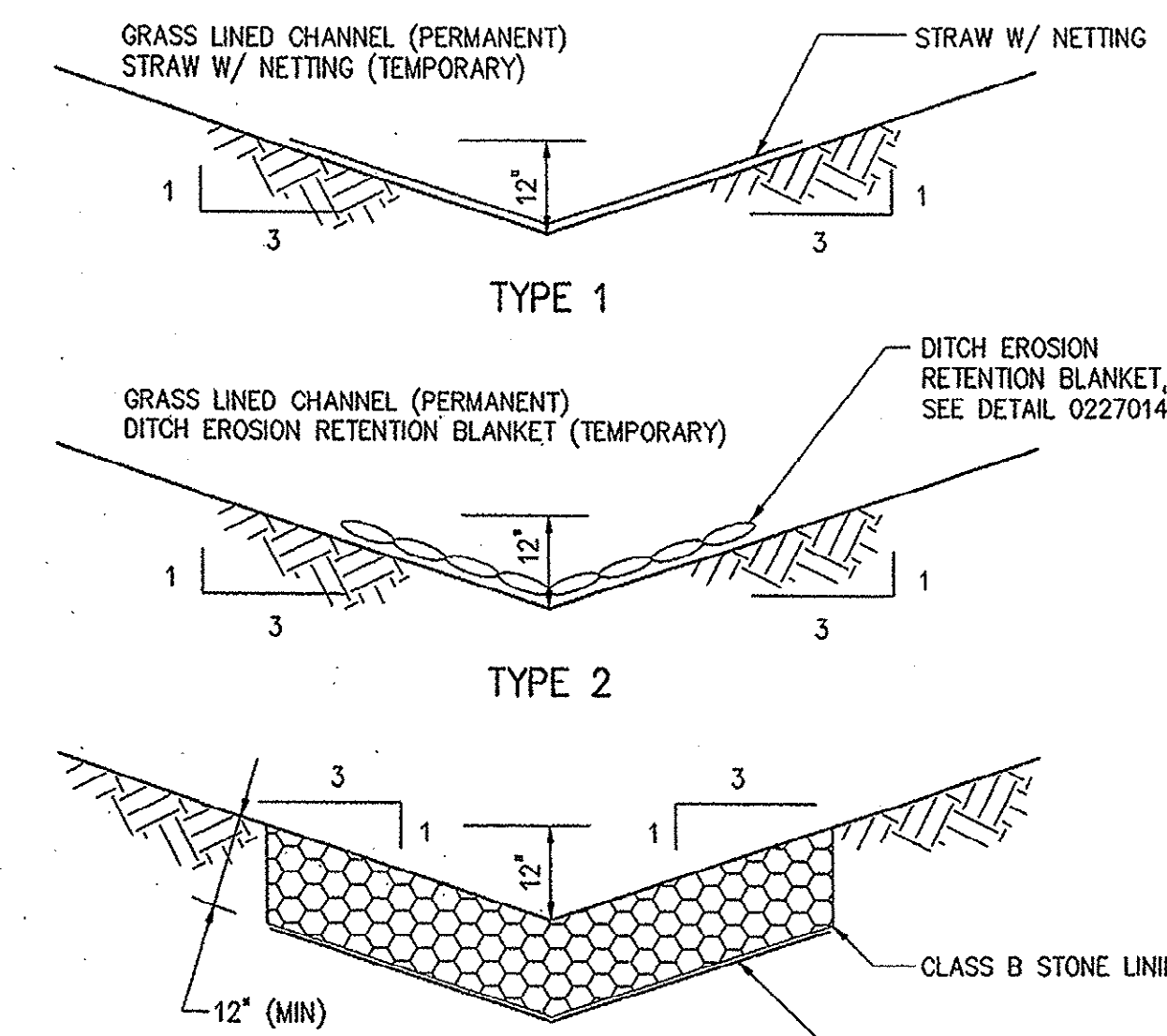
FLOOD STORAGE ZONE

SEDIMENT STORAGE ZONE

MAXIMUM SEDIMENT DEPTH
(CLEAN OUT LEVEL)

#57 WASHED STONE
1' THICK x 3' HIGH (MIN.)

0227016



TYPICAL DITCH DETAIL

(SEE DETAIL 0227021)

0227011

CLASS I RIP RAP

FLOOD STORAGE ZONE

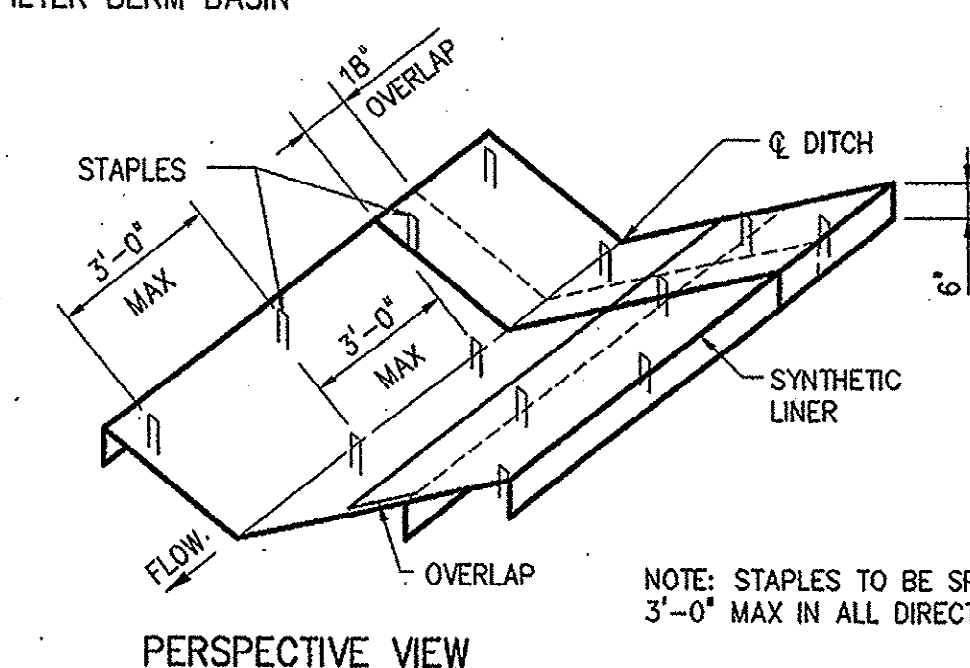
SEDIMENT STORAGE ZONE

MAXIMUM SEDIMENT DEPTH
(CLEAN OUT LEVEL)

#57 WASHED STONE
1' THICK x 3' HIGH (MIN.)

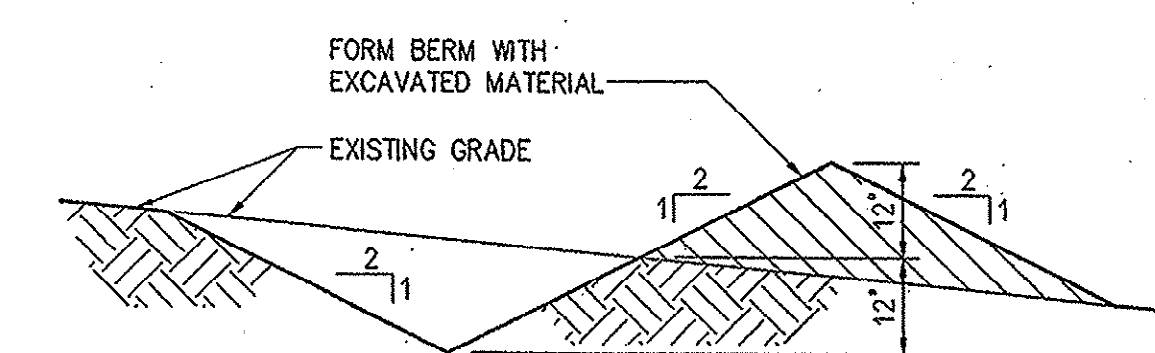
0227016

SECTION
GRAVEL AND RIP RAP FILTER BERM BASIN



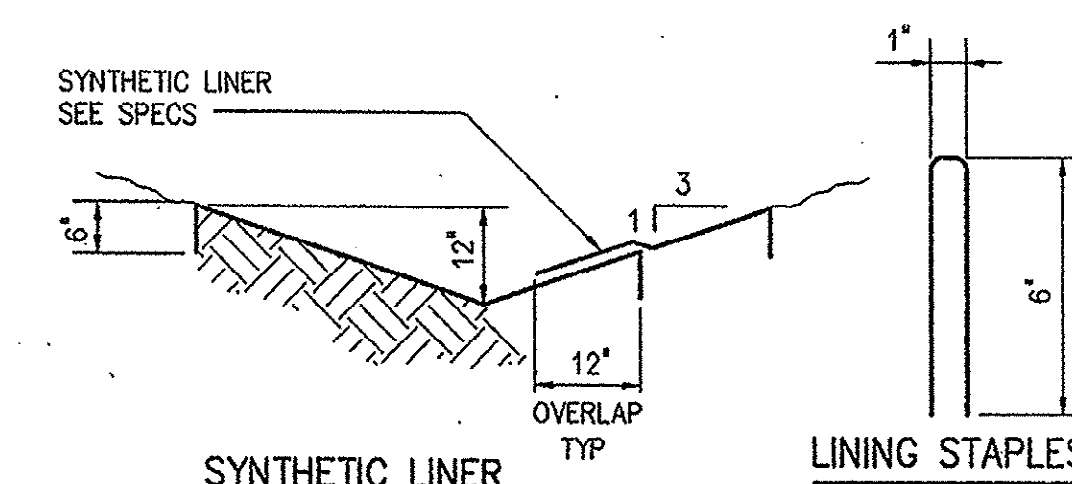
PERSPECTIVE VIEW

NOTE: STAPLES TO BE SPACED AT
3'-0" MAX IN ALL DIRECTIONS.



TEMPORARY DIVERSION SWALE

0227009

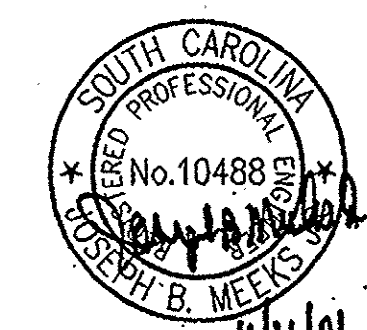
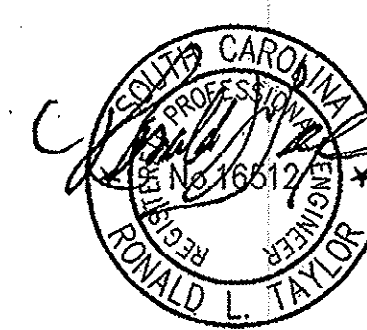


SYNTHETIC LINER

LINING STAPLES

0227014

DESIGNED	H & S
DRAWN	H & S
CHECKED	JBM
PROJ. ENGR.	JBM
APPROVED	JBM
DATE	8-31-01
BY	JBM
ISSUED FOR	CONSTRUCTION
NO.	1



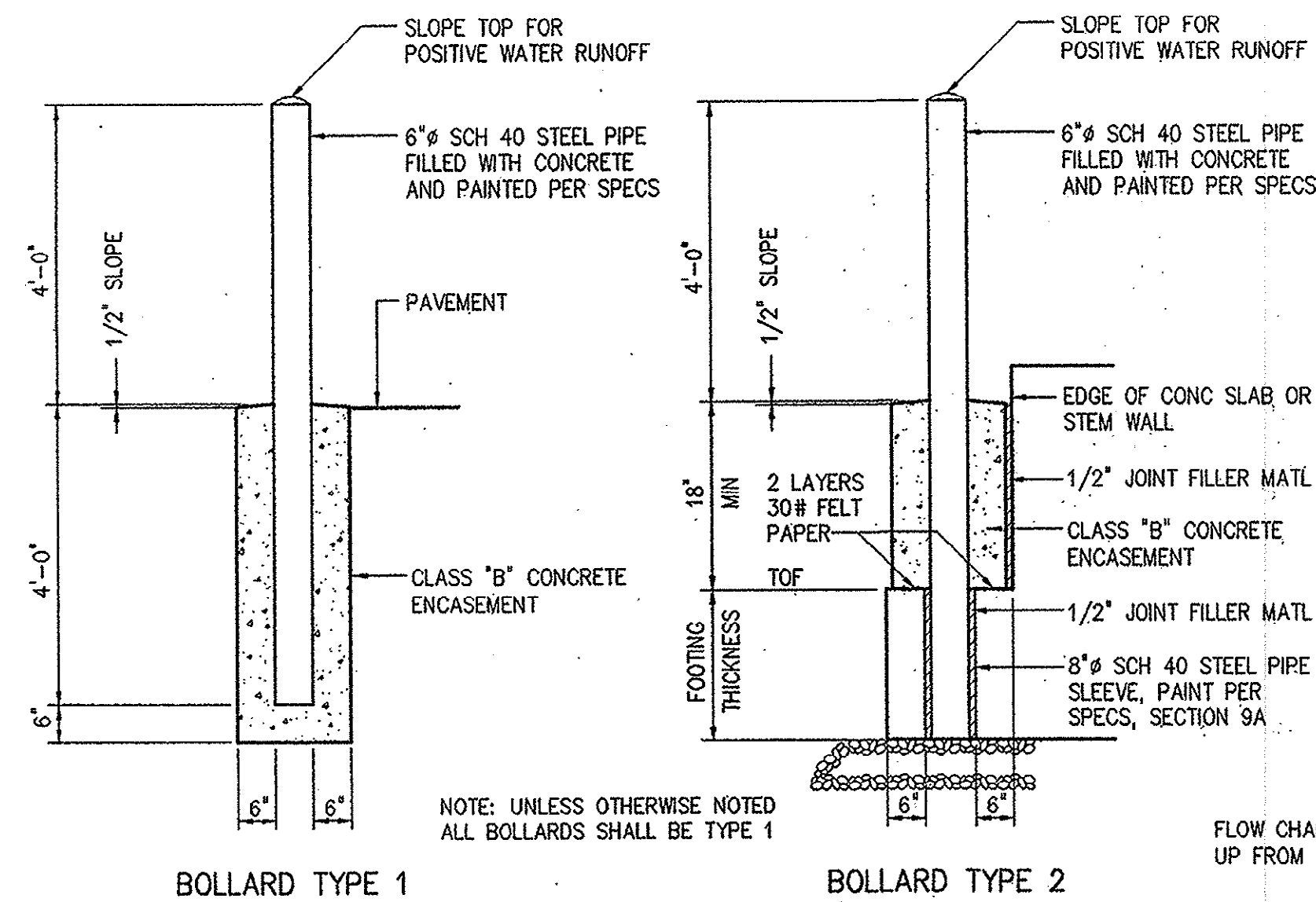
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

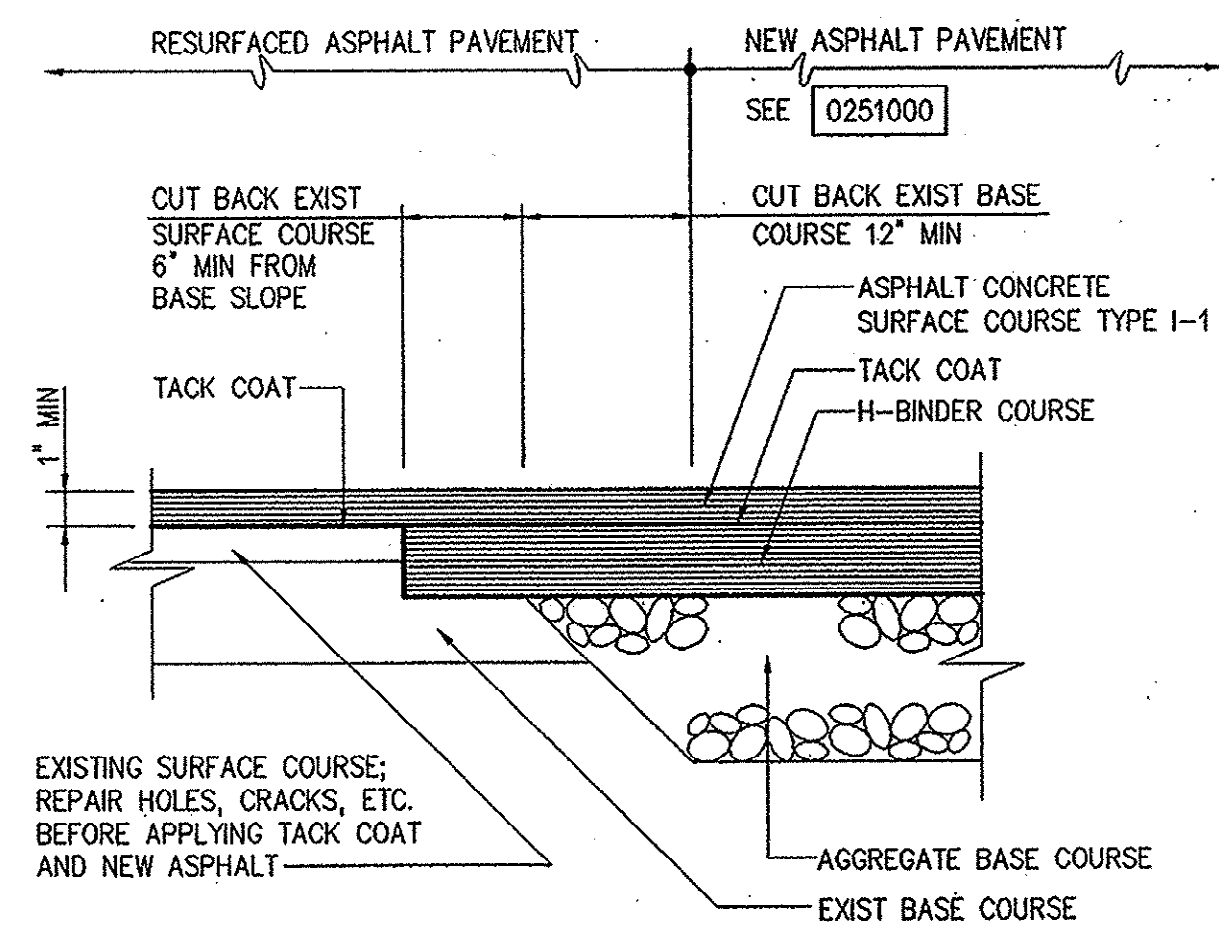
MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001
H & S JOB NUMBER 30631	CONTRACT NUMBER 1
DRAWING NUMBER D2	H & S FILE NO. 56

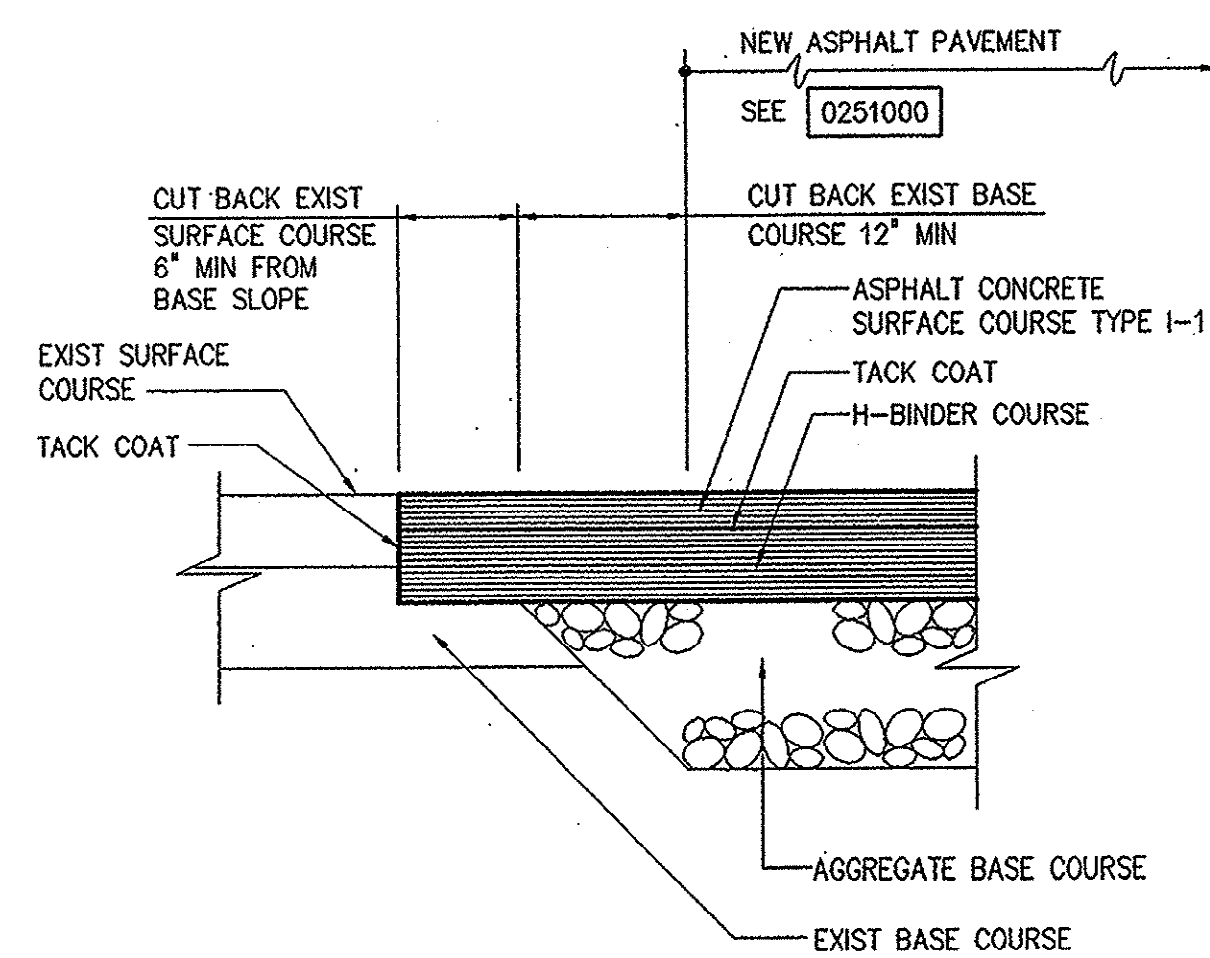
35-004-032045



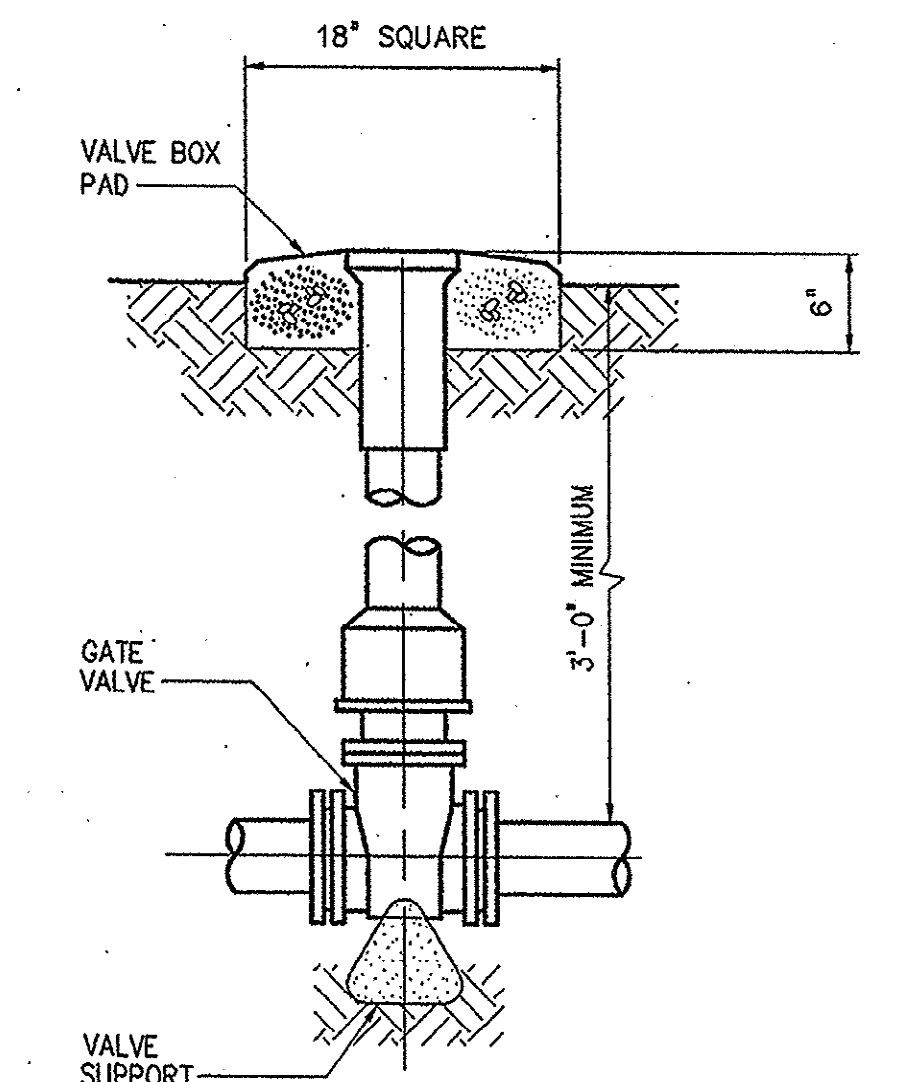
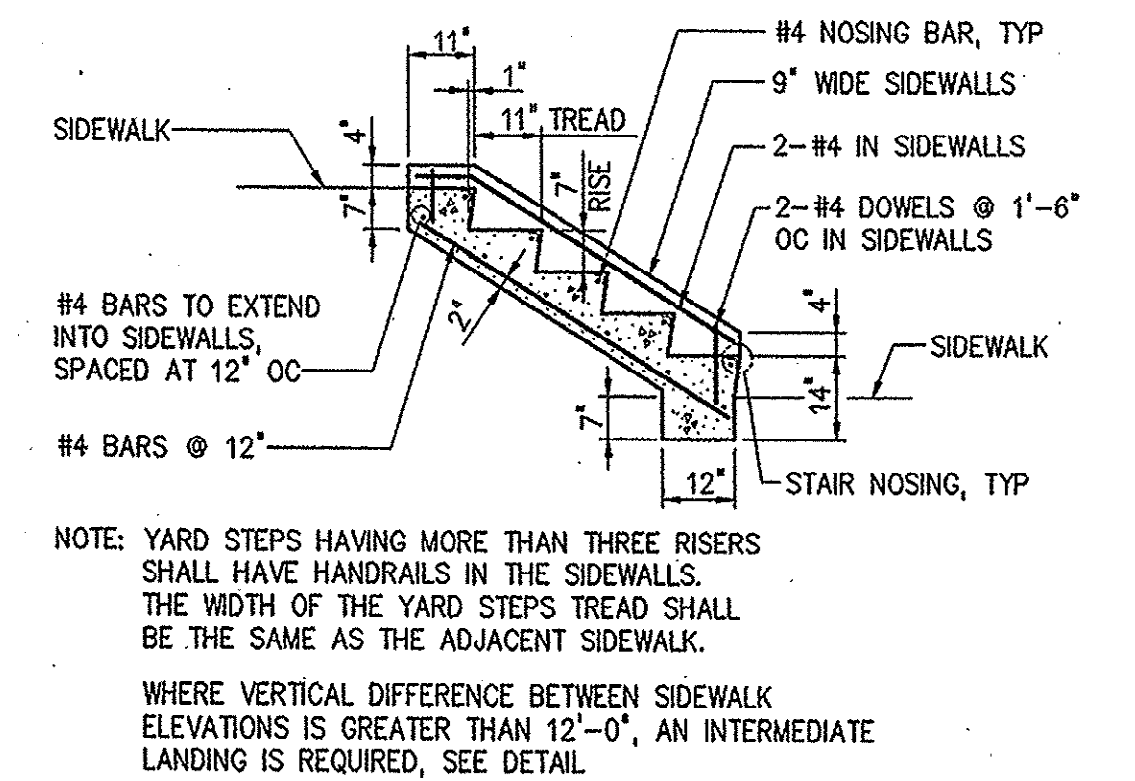
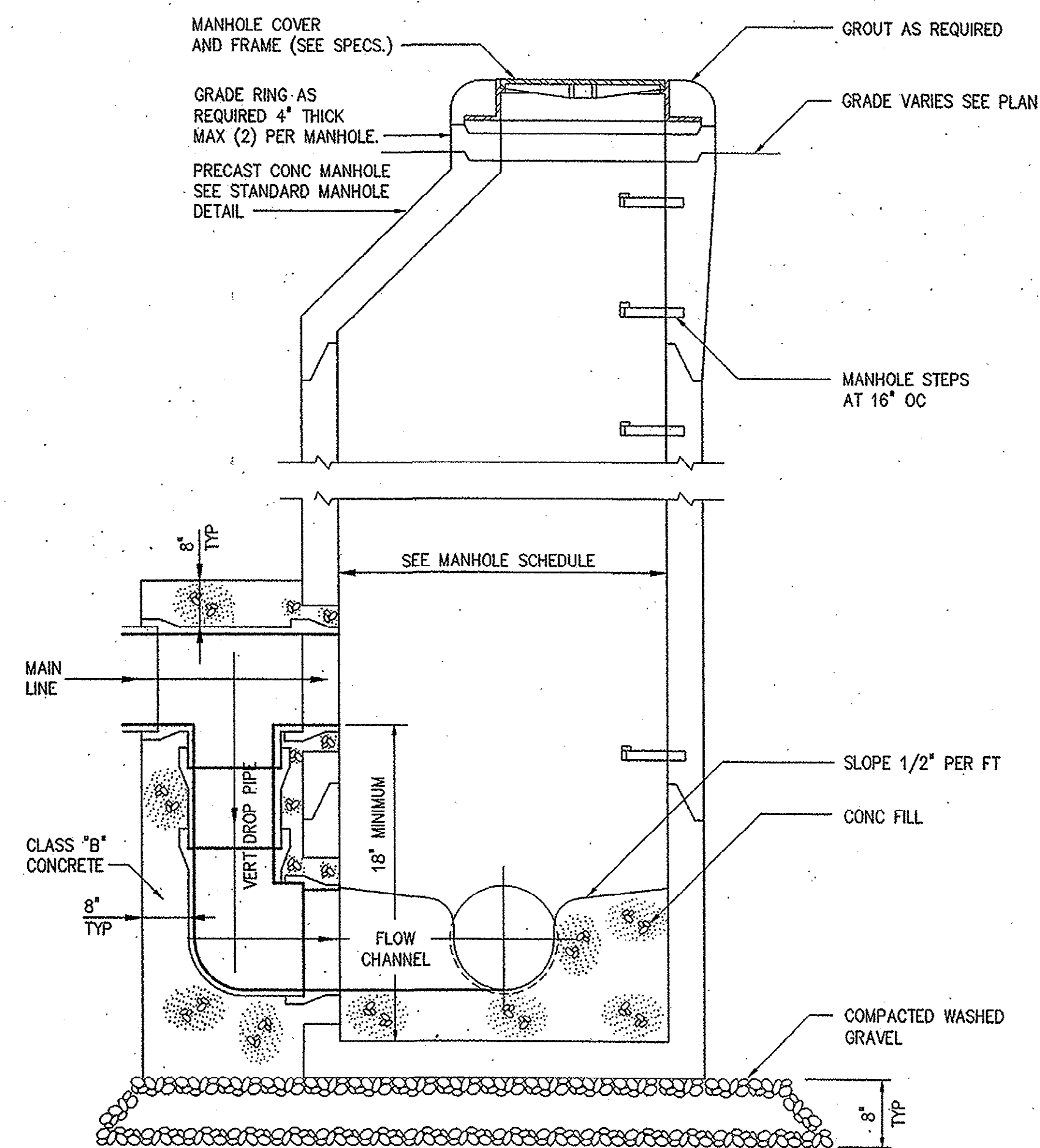
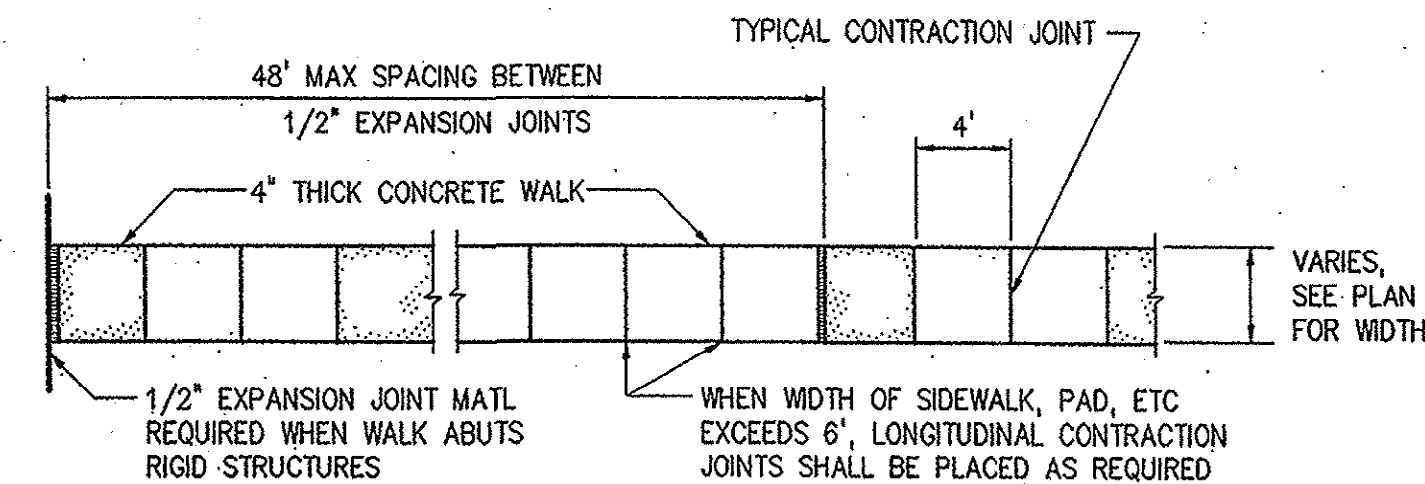
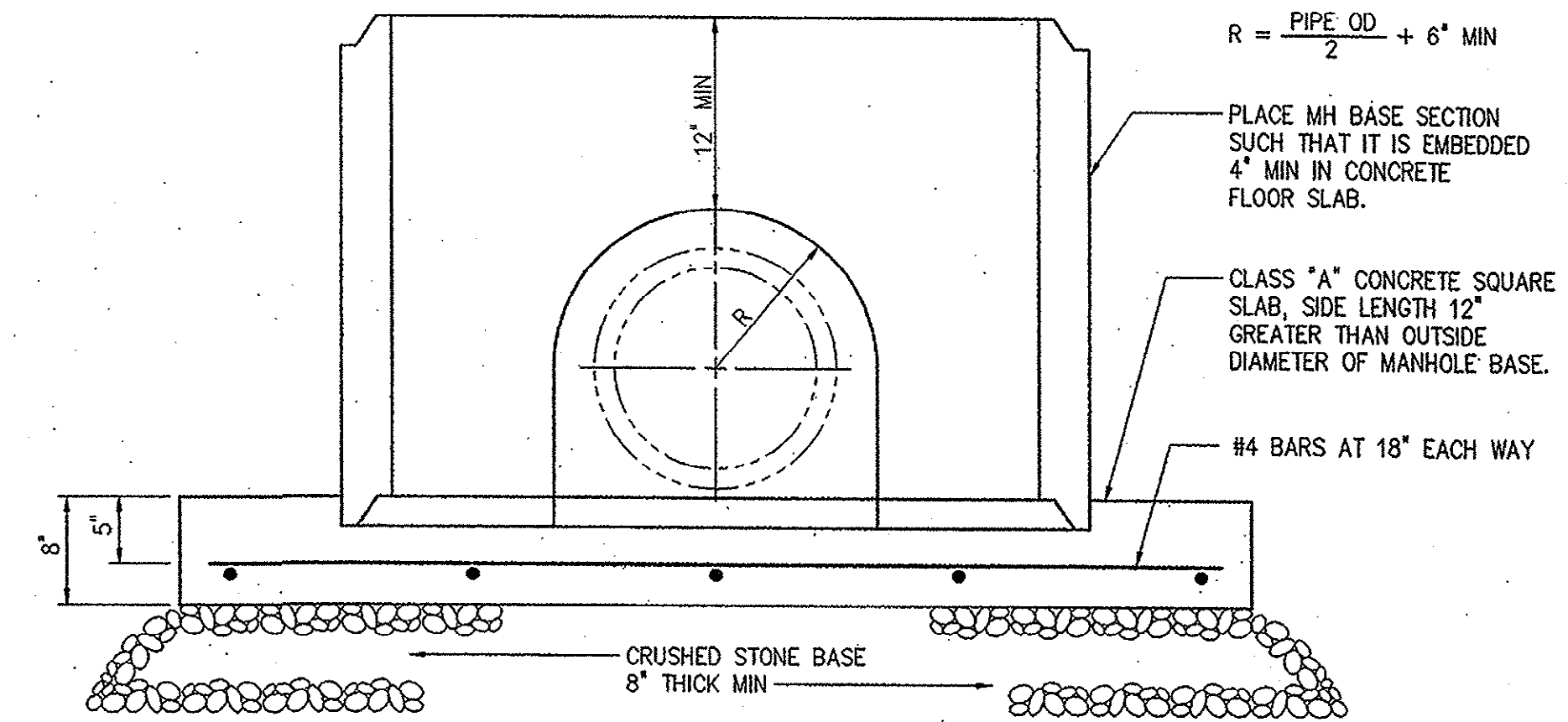
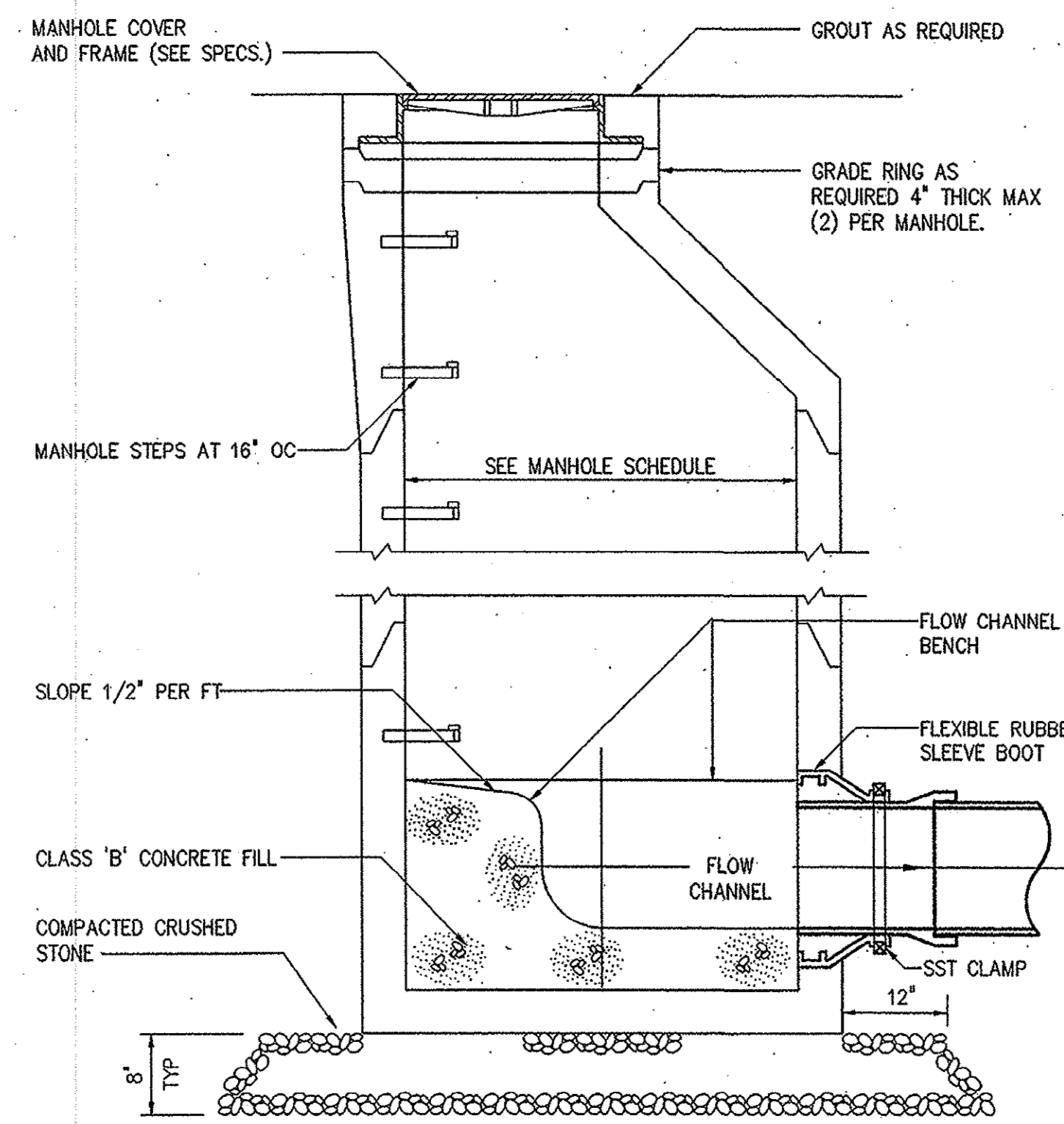
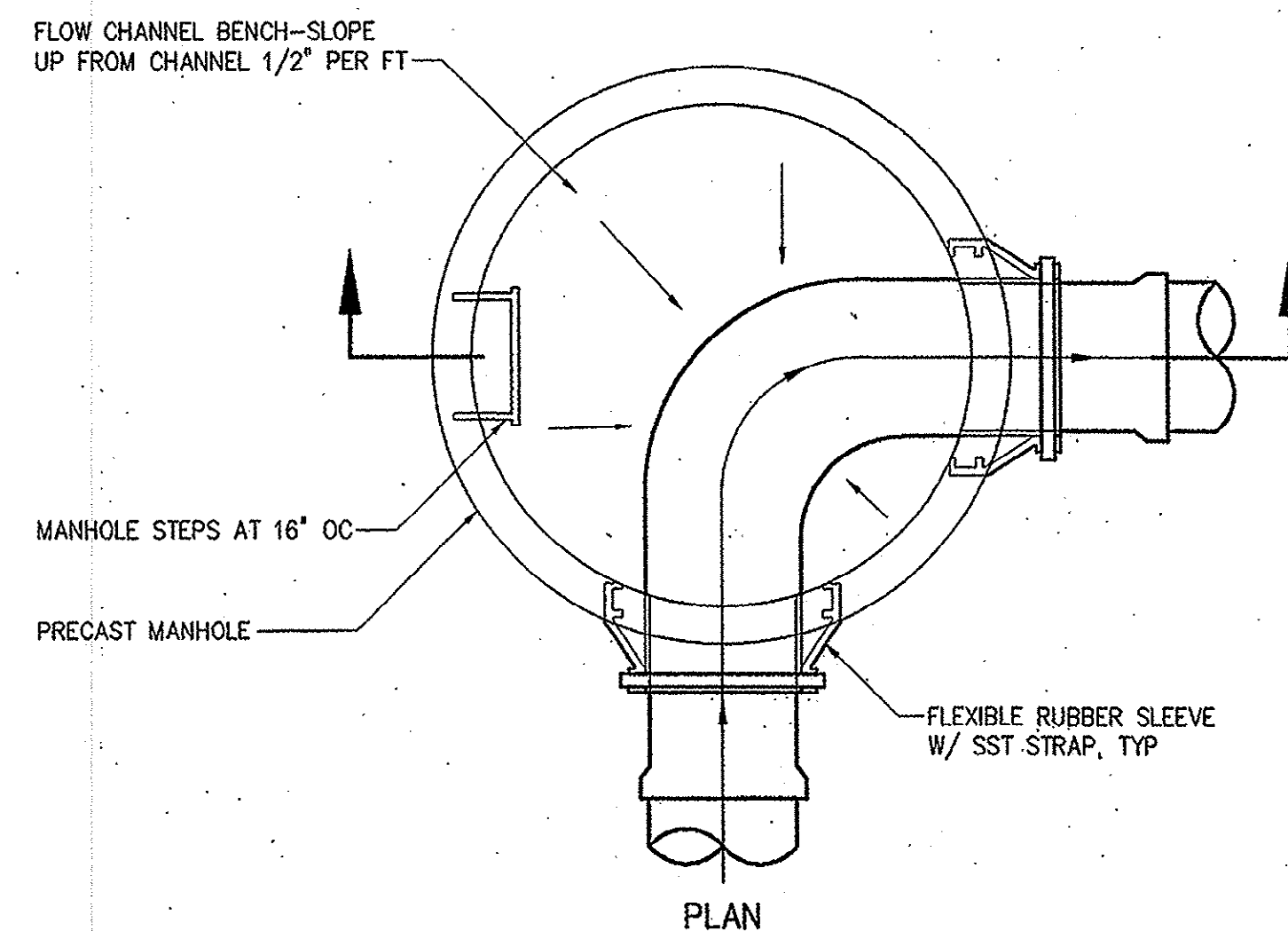
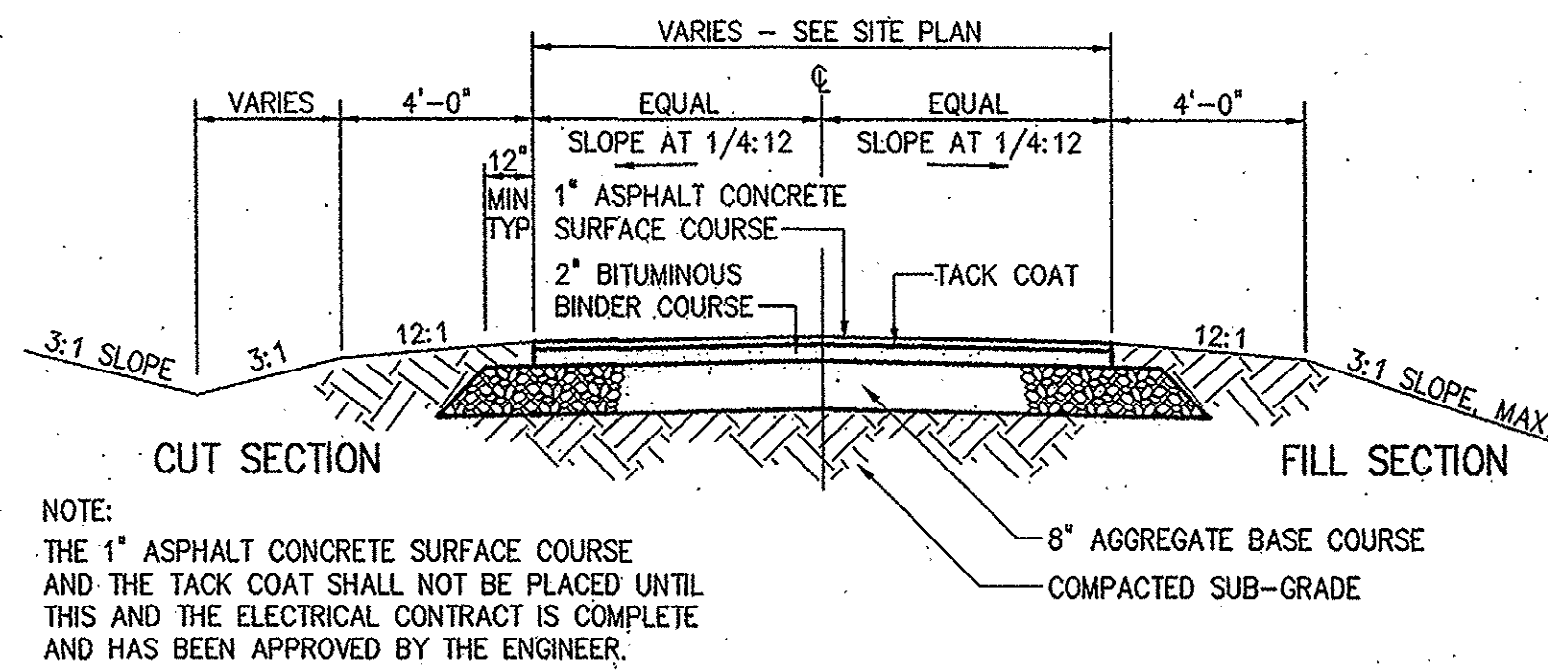
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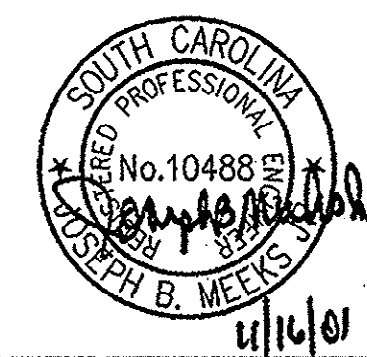
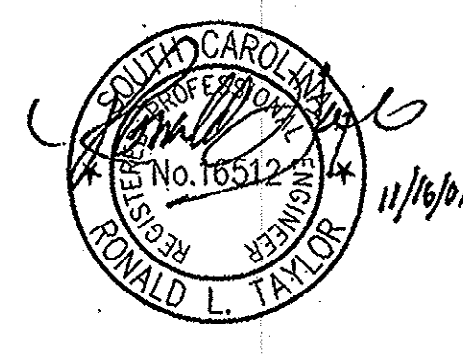
0251300



0251301



DESIGNED	H & S
DRAWN	H & S
CHECKED	JBM
PROJ. ENGR.	JBM
CONSTRUCTION	11/16/01
REGULATORY APPROVAL	8-31-01
ISSUED FOR	DATE
NO.	BY
	APPROVED



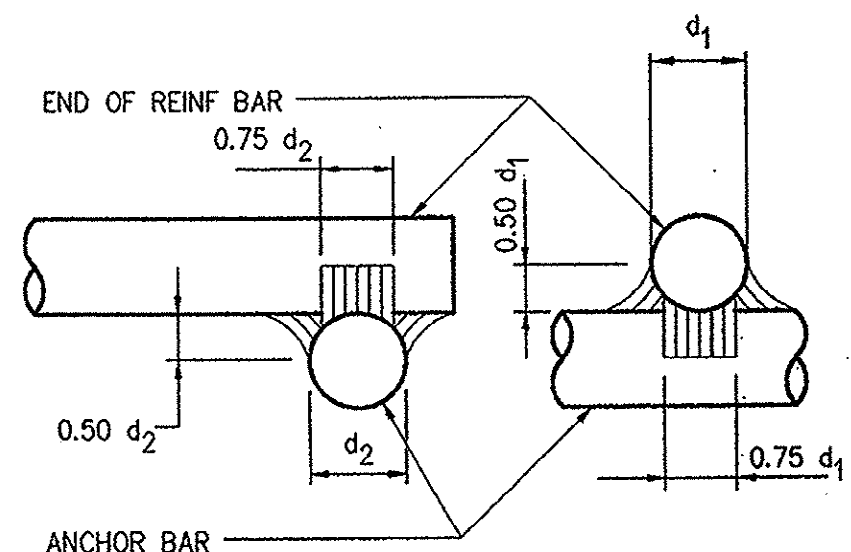
HAZEN AND SAWYER
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GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

MISCELLANEOUS STANDARD DETAILS

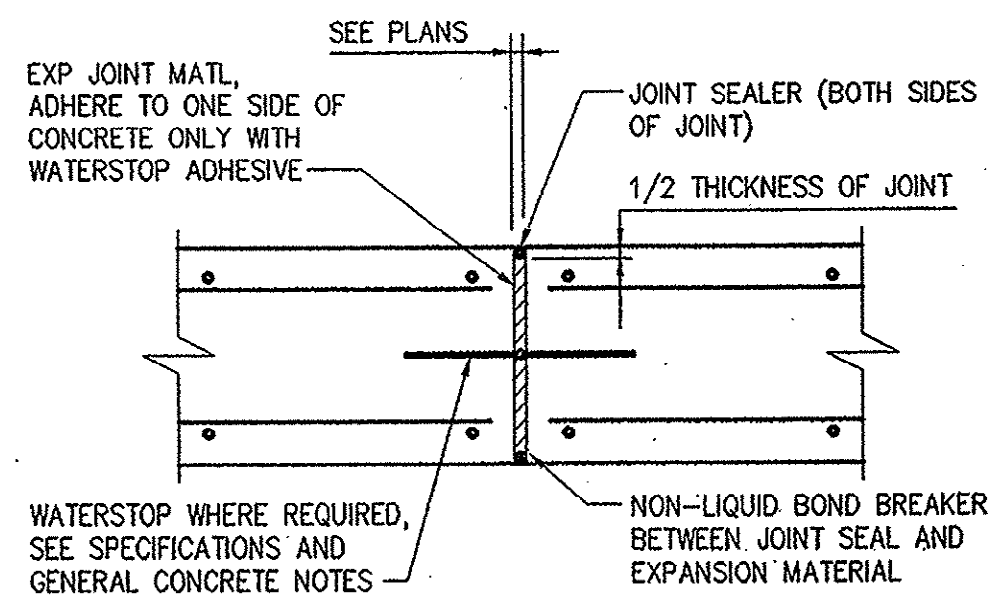
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	D4
	H & S FLAT FILE NO.	56

33-004-047



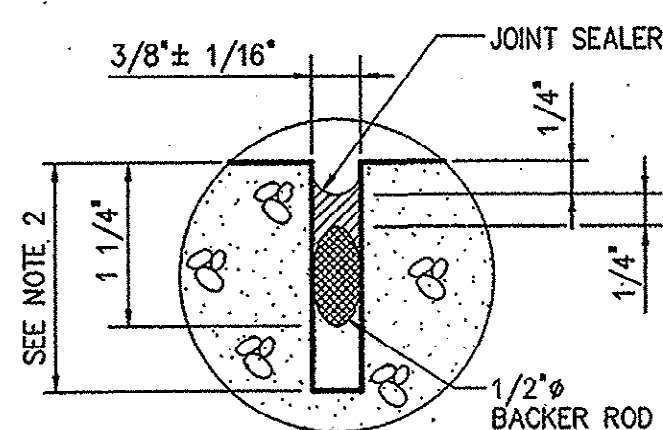
NOTES: BARS TO BE WELDED SHALL CONFORM TO ASTM A706. WELDING SHALL BE DONE BY CERTIFIED WELDERS IN CONFORMANCE WITH AWS D1.4. WELDING IS PERMITTED ONLY WHERE SHOWN ON PLANS OR OTHERWISE APPROVED BY THE ENGINEER.

REINFORCING BAR WELDMENT
0321000

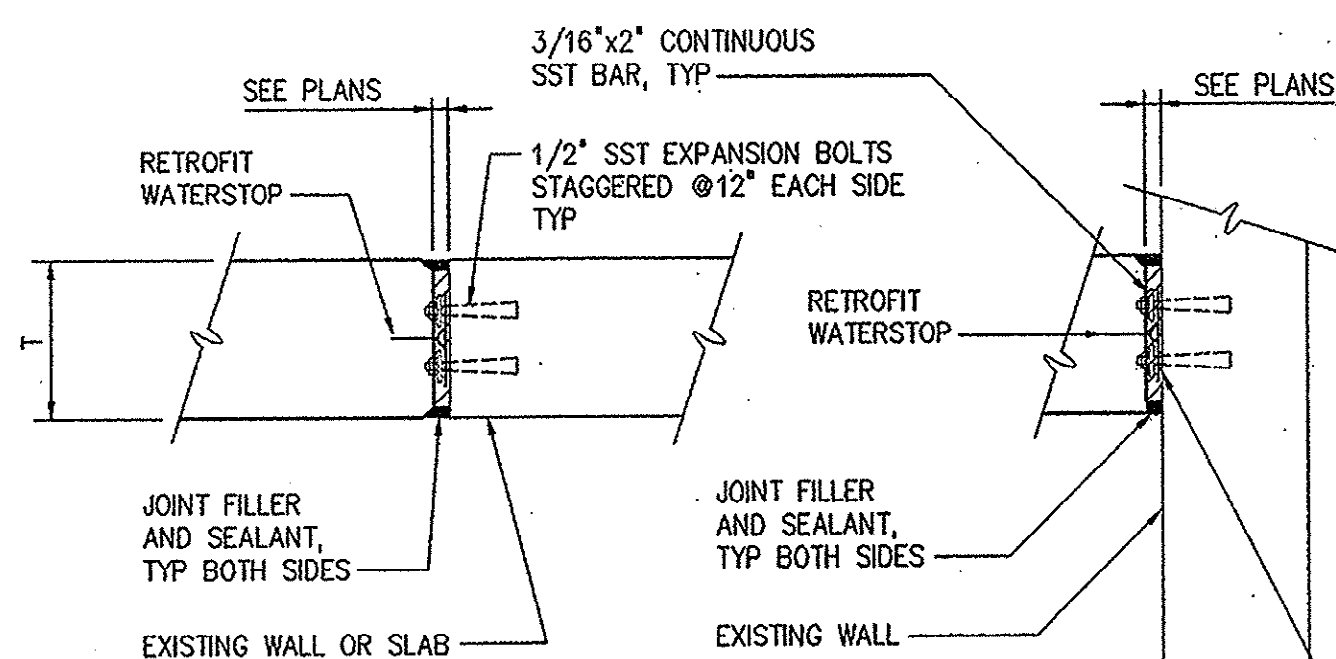


TYPICAL EXPANSION JOINT
0325100

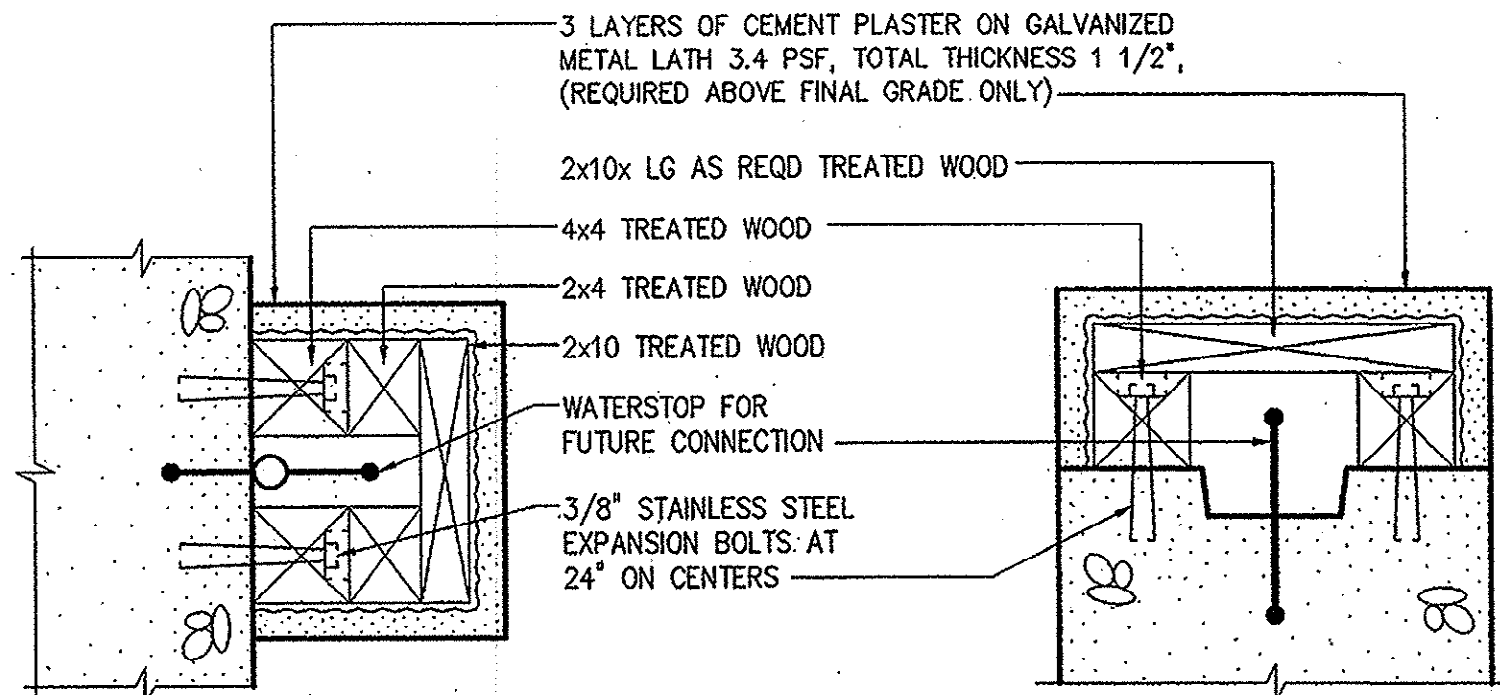
NOTES:
1. JOINTS SHALL BE FORMED BY AN APPROVED JOINT INSERT. SAWCUTTING OF JOINTS WILL NOT BE ALLOWED.
2. DEPTH SHALL BE 1 1/2" IN REINF CONC. DEPTH SHALL BE 1/3 OF CONCRETE THICKNESS IN UNREINFORCED CONCRETE PAVEMENT.



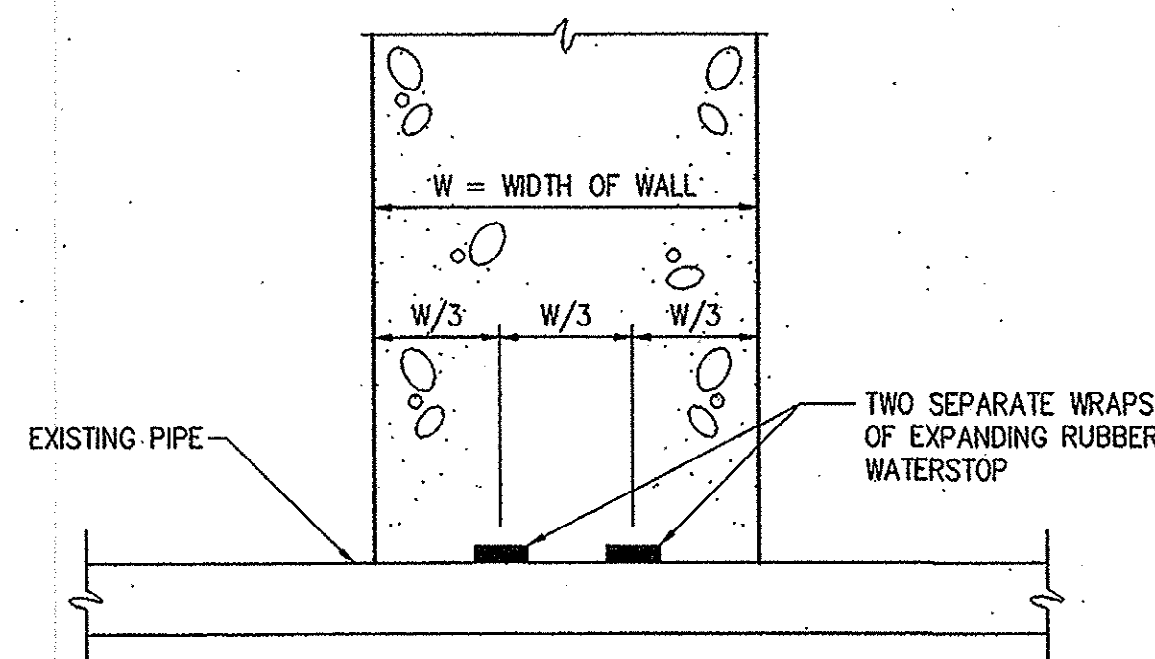
TYPICAL CONTRACTION JOINT
0325101



EXPANSION JOINT

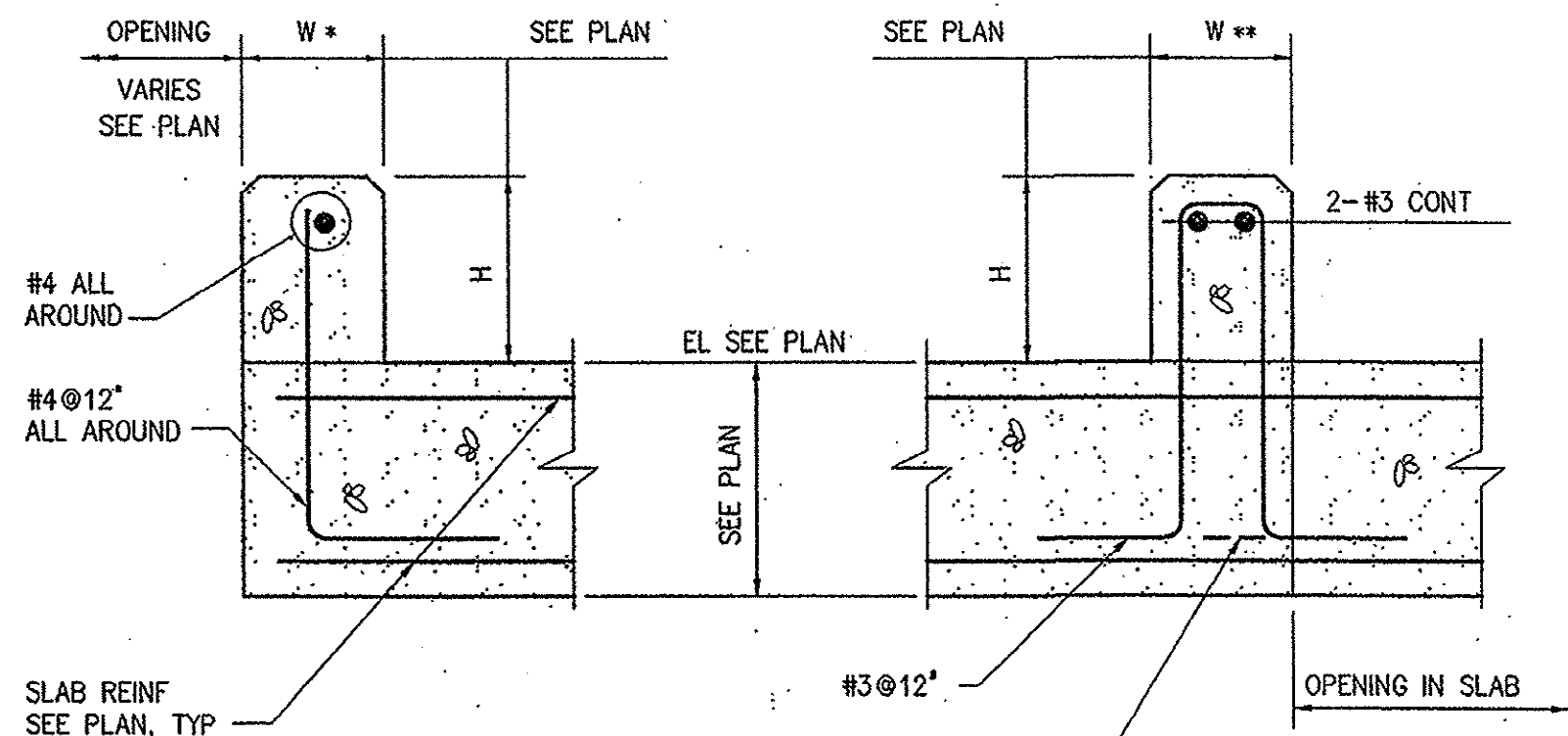


EXPANSION JOINT
CONSTRUCTION JOINT
WATERSTOP PROTECTION AT CONNECTION WITH FUTURE CONSTRUCTION
0325300



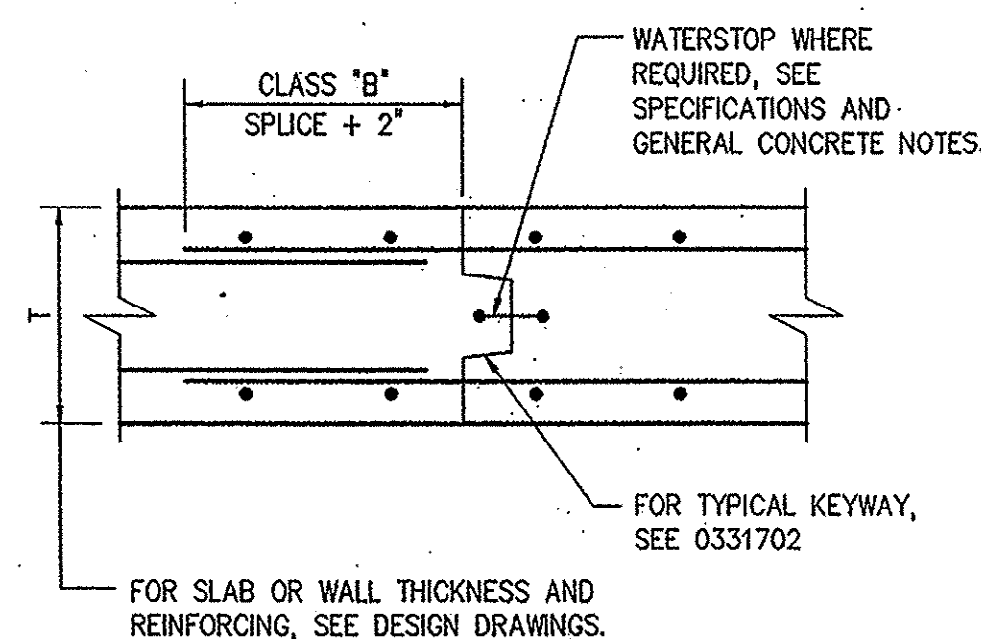
NOTE: EACH WRAP SHALL BE LAPPED 4", WITH THE LAP ABUTTING SIDE BY SIDE. LAPS SHALL BE SEPARATED BY 180°.

WATERSTOP CONNECTION
AROUND EXISTING PIPE
0325303

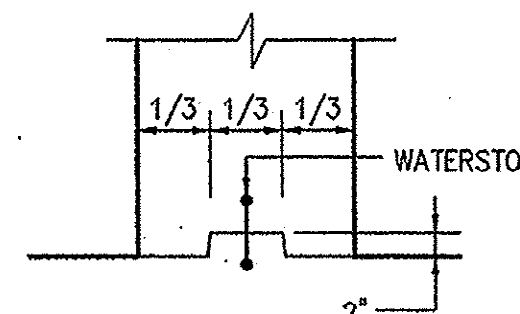


NOTE: W* DENOTES CURBS LESS THAN 8". W** DENOTES CURBS EQUAL TO OR GREATER THAN 8". DOWELS MAY BE CAST IN OR ANCHORED WITH DOWEL ADHESIVE SYSTEM WITH A 6" MINIMUM EMBEDMENT.

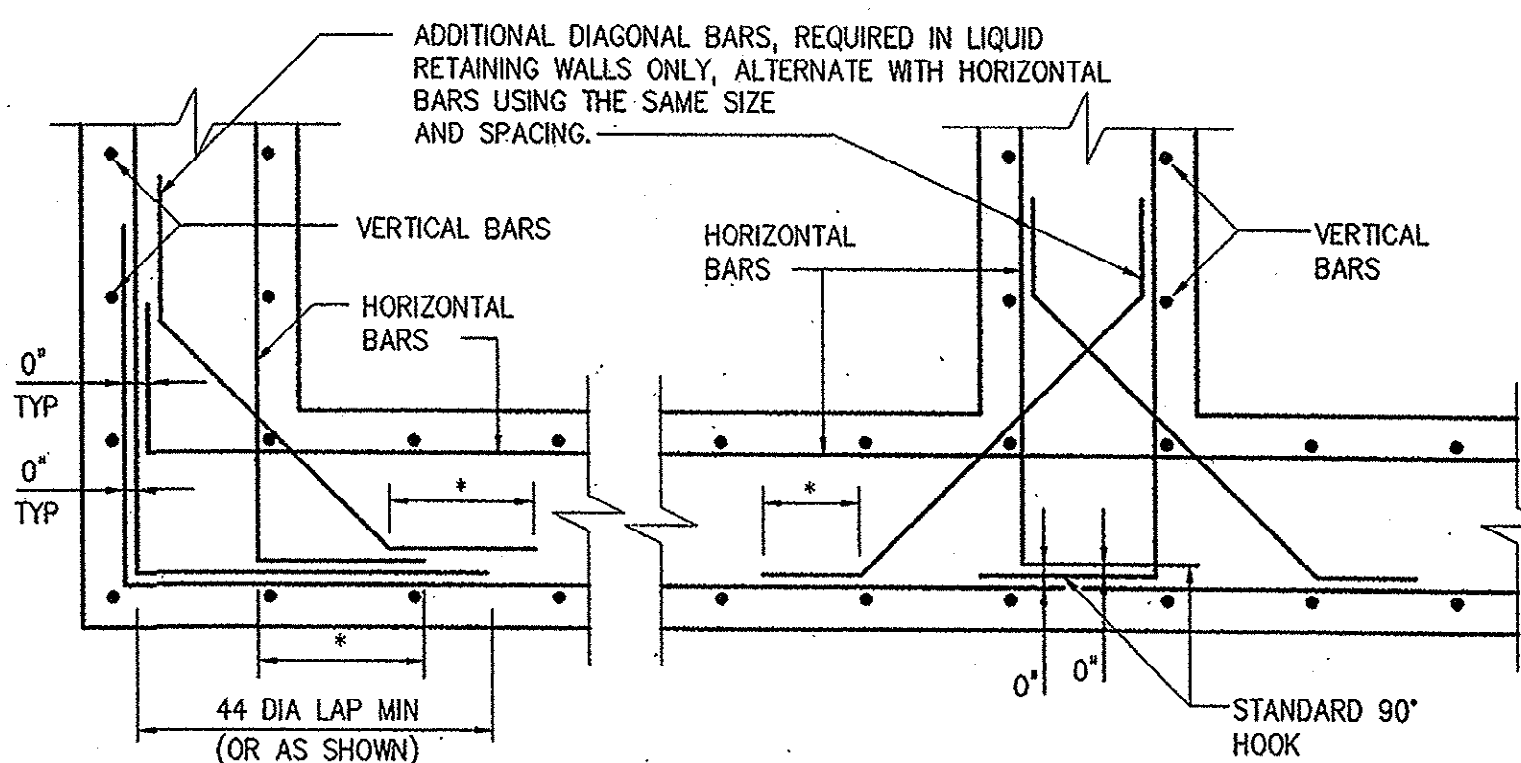
TYPICAL CONCRETE CURB
0331004



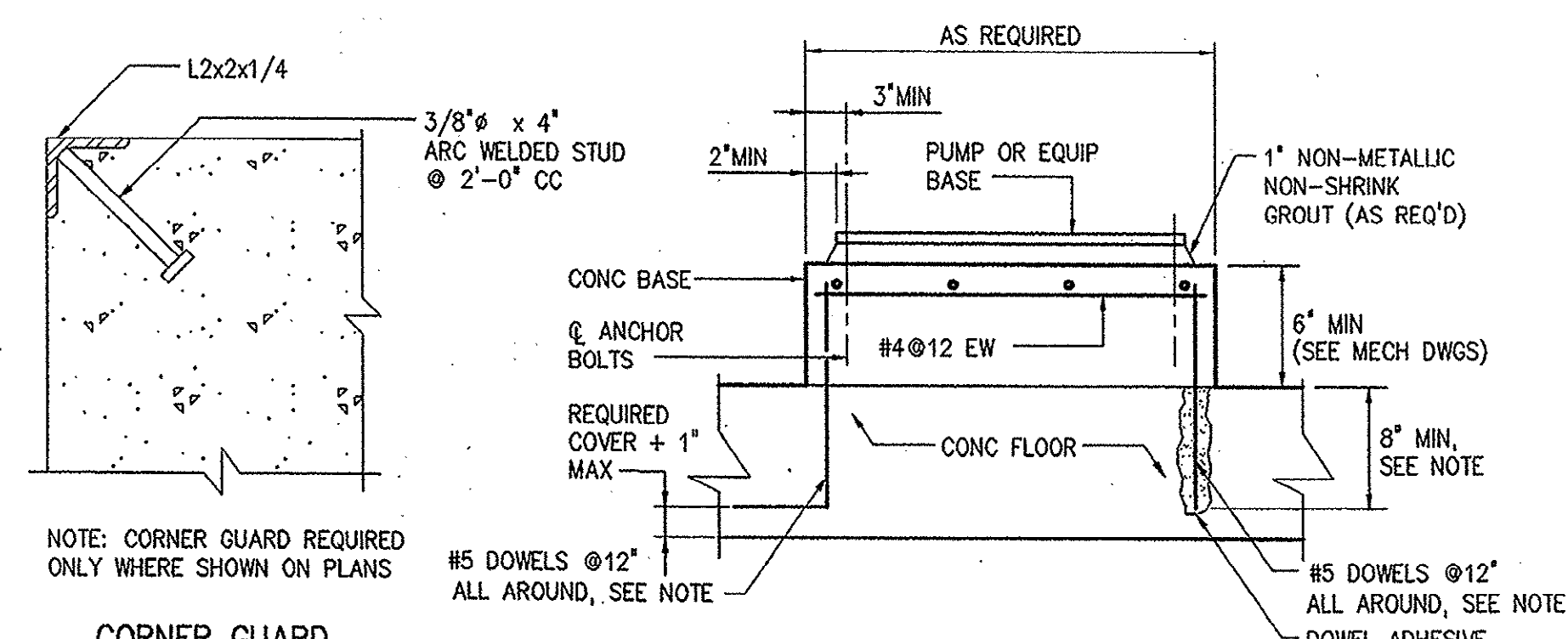
TYPICAL CONSTRUCTION JOINT
0331701



TYPICAL KEYWAY
0331702

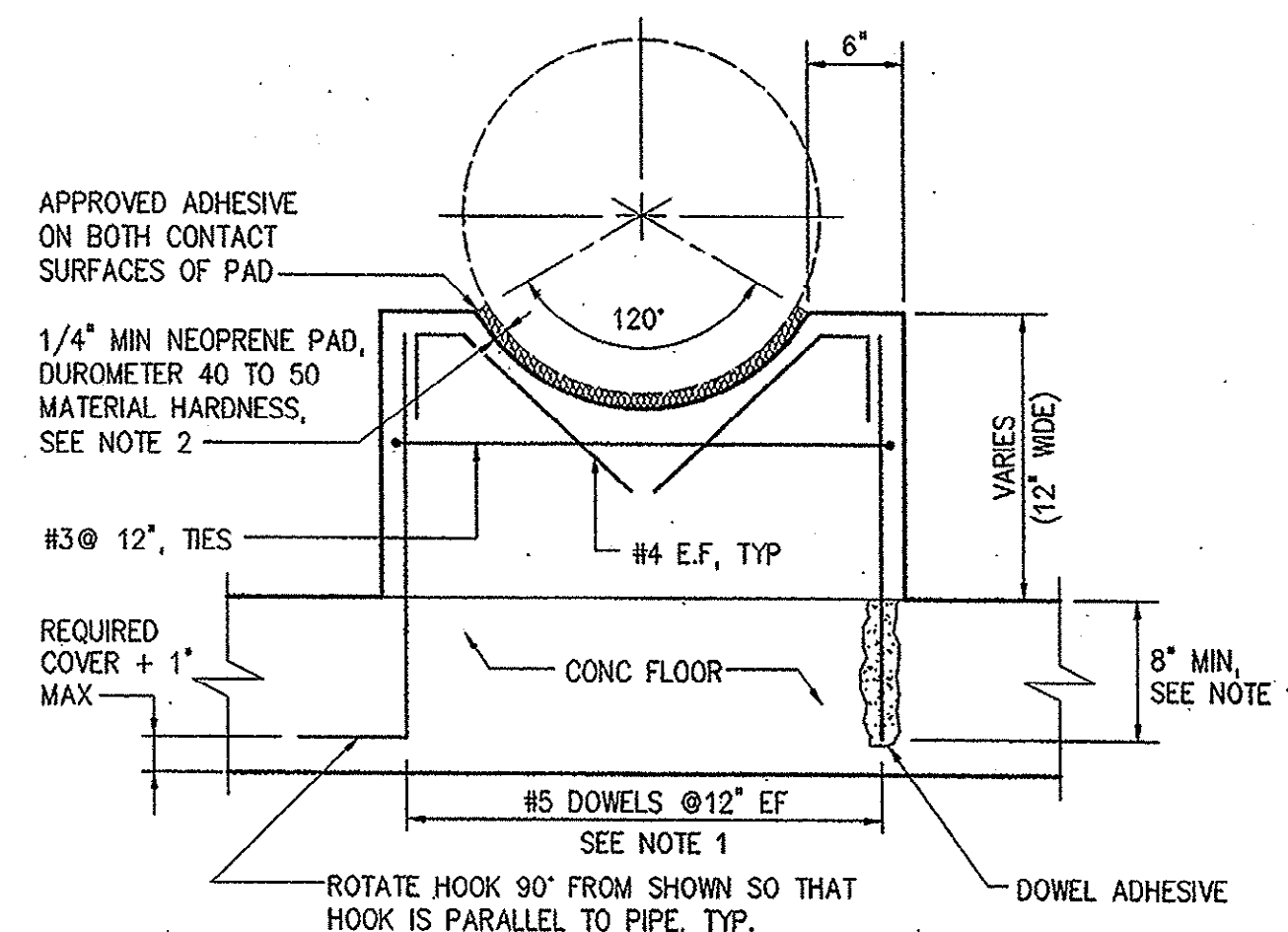


TYPICAL WALL REINFORCING
0331700



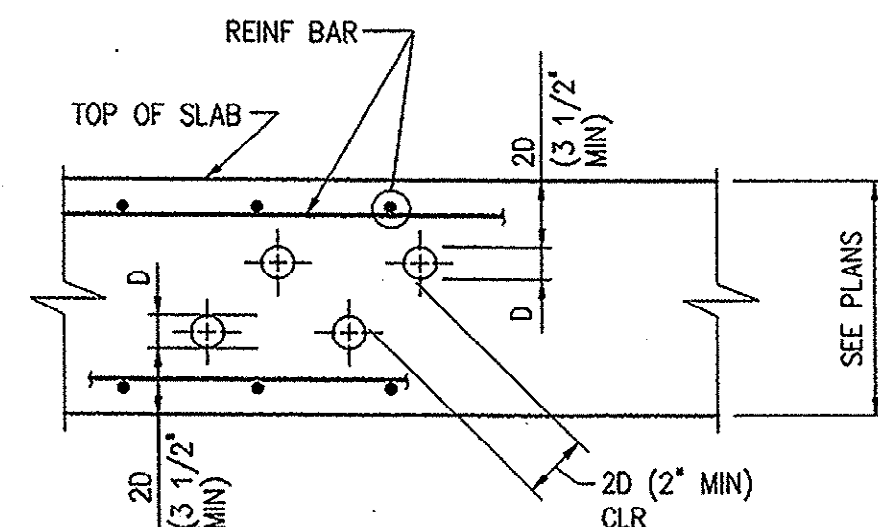
NOTE: DOWELS MAY BE CAST IN WITH 90° HOOK OR ANCHORED WITH DOWEL ADHESIVE AT CONTRACTORS OPTION. WHERE FLOOR IS 8" THICK OR LESS, USE #4 DOWELS EMBEDDED TO WITHIN 2" OF BOTTOM OF FLOOR SLAB.

TYP PUMP OR EQUIP BASE
0331600



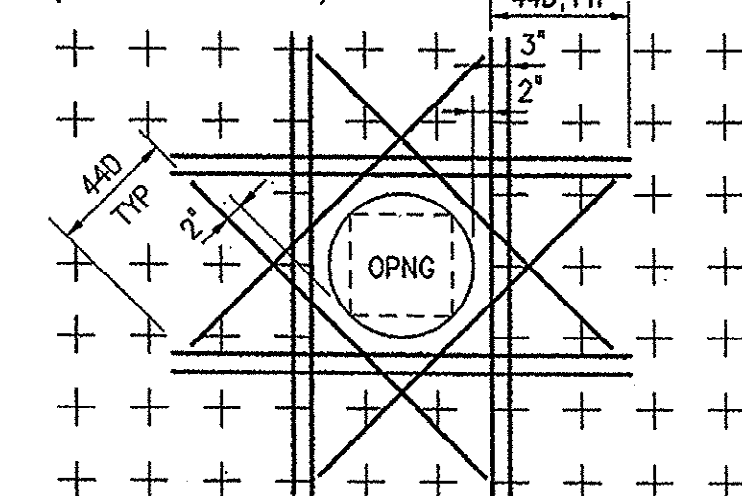
NOTES: 1. DOWELS MAY BE CAST IN WITH 90° HOOK OR ANCHORED WITH DOWEL ADHESIVE AT CONTRACTORS OPTION. WHERE FLOOR IS 8" THICK OR LESS, USE #4 DOWELS EMBEDDED TO WITHIN 2" OF BOTTOM OF FLOOR SLAB.
2. ENGINEER SHALL VERIFY THICKNESS OF PAD WILL ACCOMMODATE DESIGN MOVEMENT, PARTICULARLY FOR OUTSIDE AERIAL PIPE.

CRADLE PIPE SUPPORT
0331601



NOTE: D DENOTES PIPE OR CONDUIT OD
PIPE OR CONDUIT EMBEDDED IN SLAB
0331604

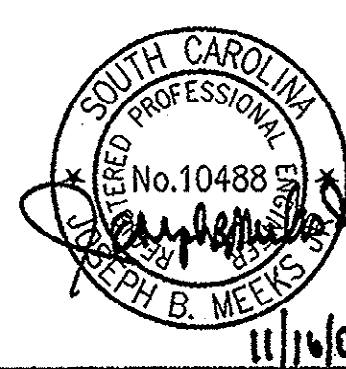
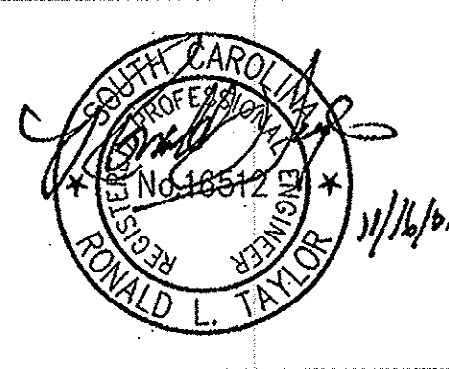
PLACE EXTRA BARS OF THE SAME SIZE AS THE INTERRUPTED BARS AT EACH SIDE OF OPENINGS. QUANTITY OF EXTRA BARS AT EACH SIDE SHALL EQUAL HALF THE QUANTITY OF INTERRUPTED BARS, EXCEPT WHERE NOTED OTHERWISE. PROVIDE ONE DIAGONAL BAR EACH SIDE OF OPENING. SIZE TO BE EQUAL TO MAIN REINFORCING. (TYPICAL EACH FACE)



NOTE: THIS DETAIL IS FOR OPENINGS 8" OR LARGER, FOR SMALLER OPENINGS, BEND BARS.

TYPICAL REINF AT OPENINGS
0331703

DESIGNED	H & S
DRAWN	H & S
CHECKED	JBM
PROJ. ENGR.	JBM
NO.	1
CONSTRUCTION	8-31-01
REGULATORY APPROVAL	11/16/01
ISSUED FOR	DATE
BY	APPROVED



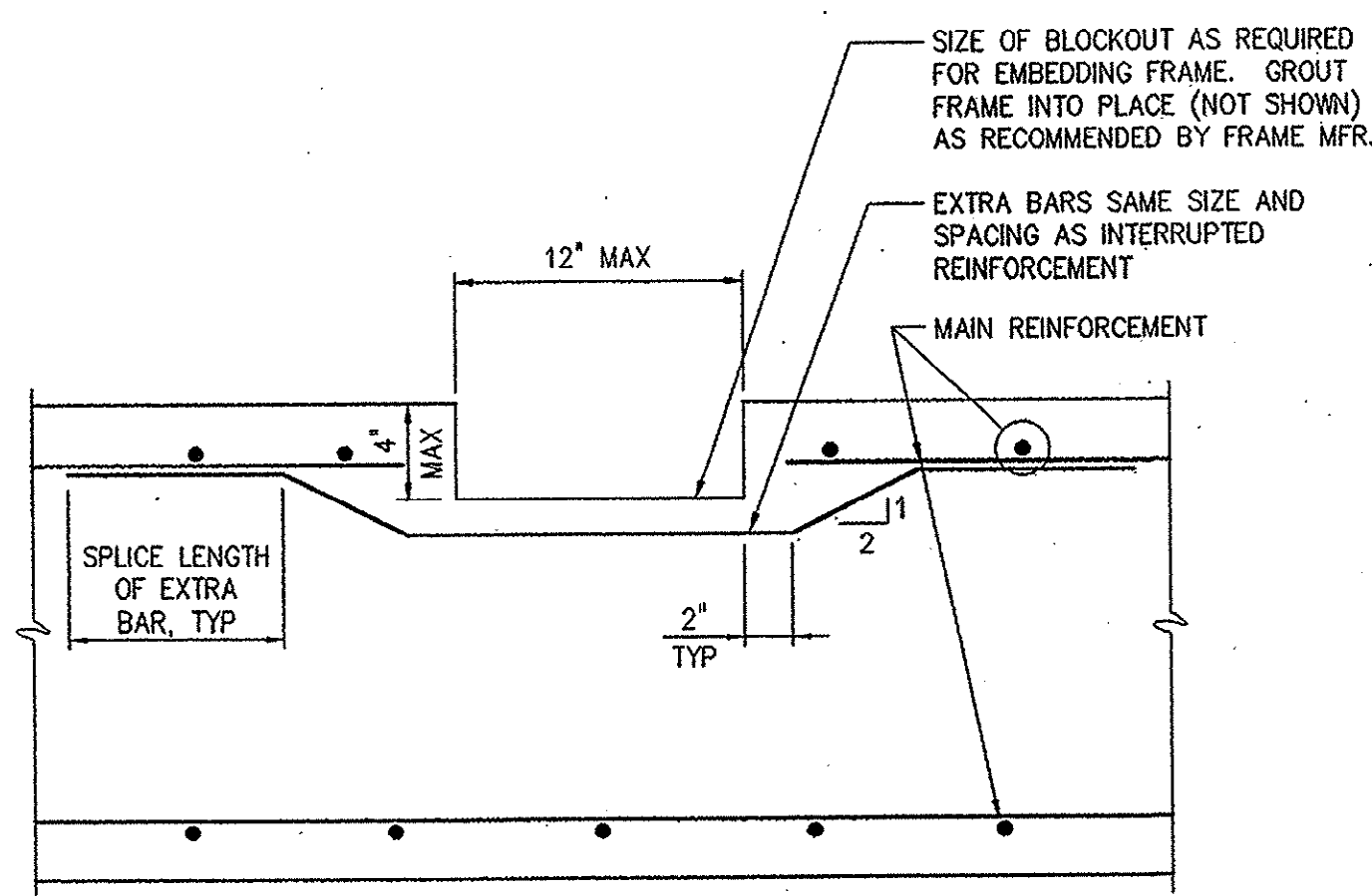
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4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

MISCELLANEOUS STANDARD DETAILS

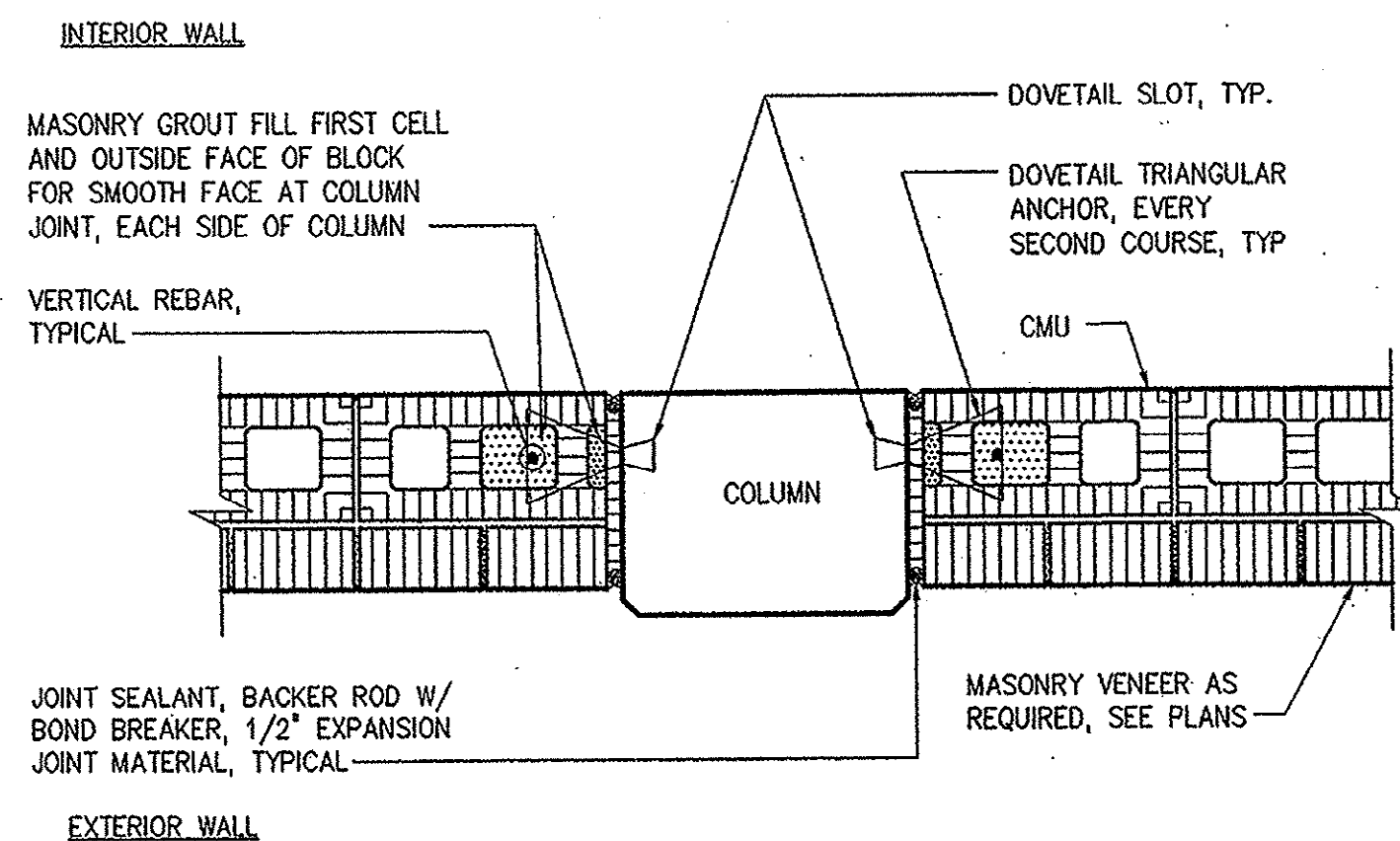
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	D5
	H & S FLAT FILE NO.	56

35-004-048



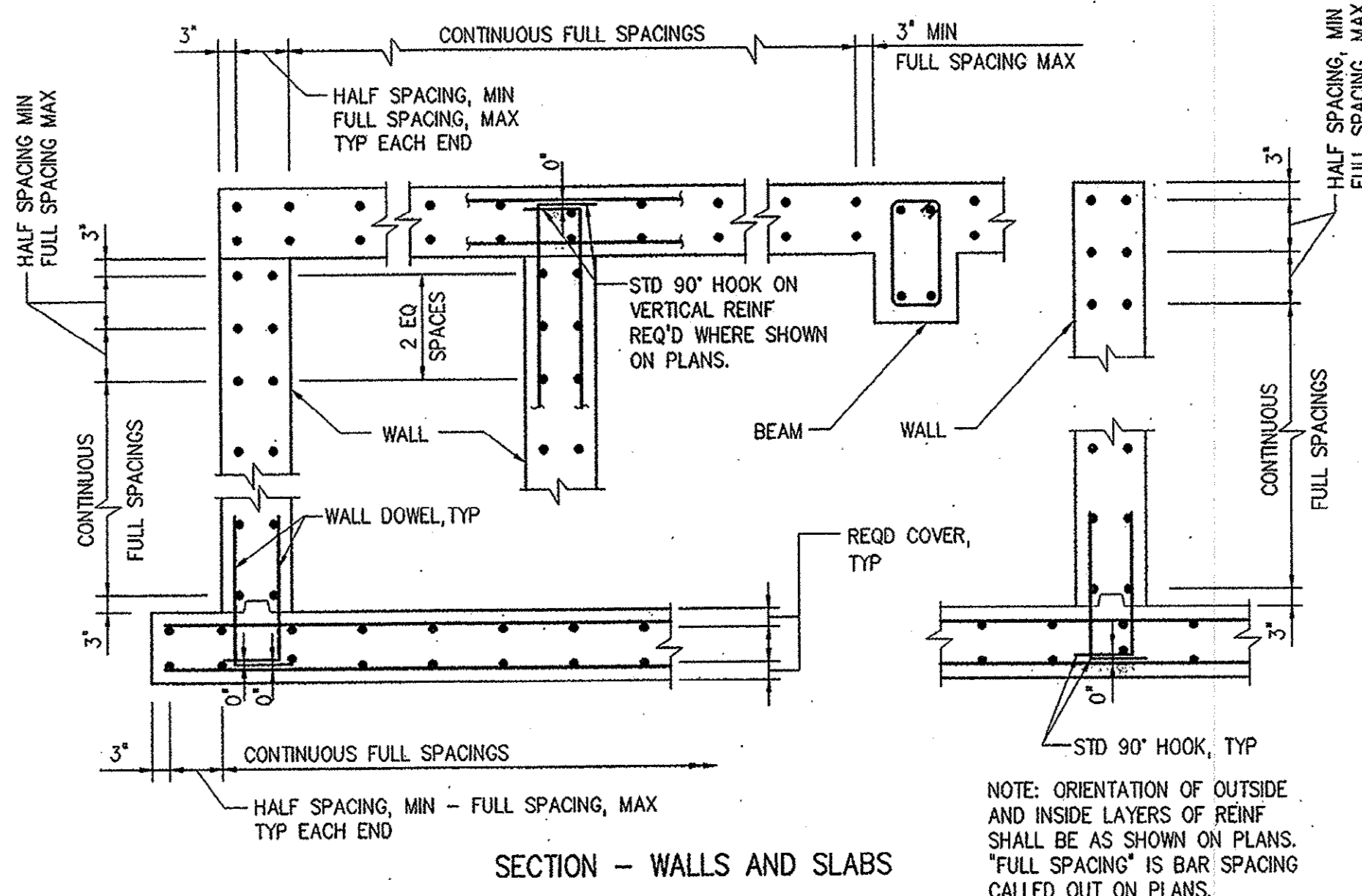
TYPICAL BLOCKOUT FOR EMBEDDED EQUIPMENT FRAME

0331710



MASONRY TIE-IN AT COLUMN

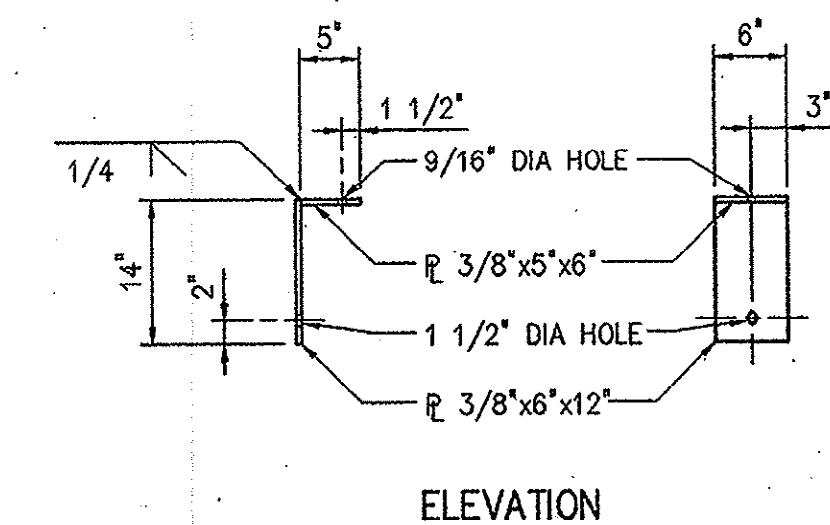
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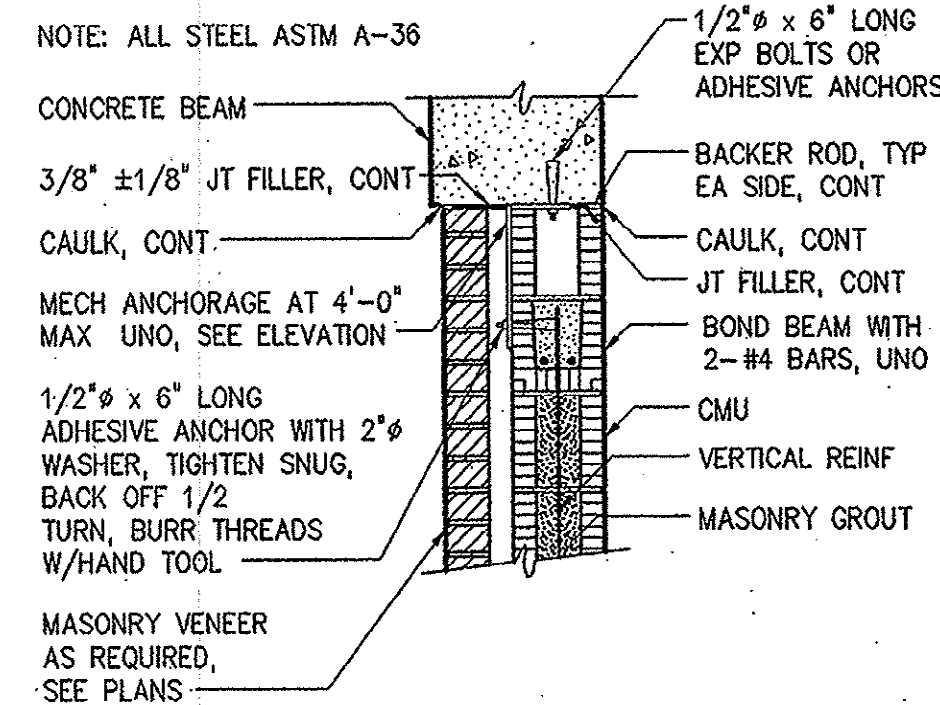
SECTION - WALLS AND SLABS

TYPICAL BAR PLACEMENT

0331704

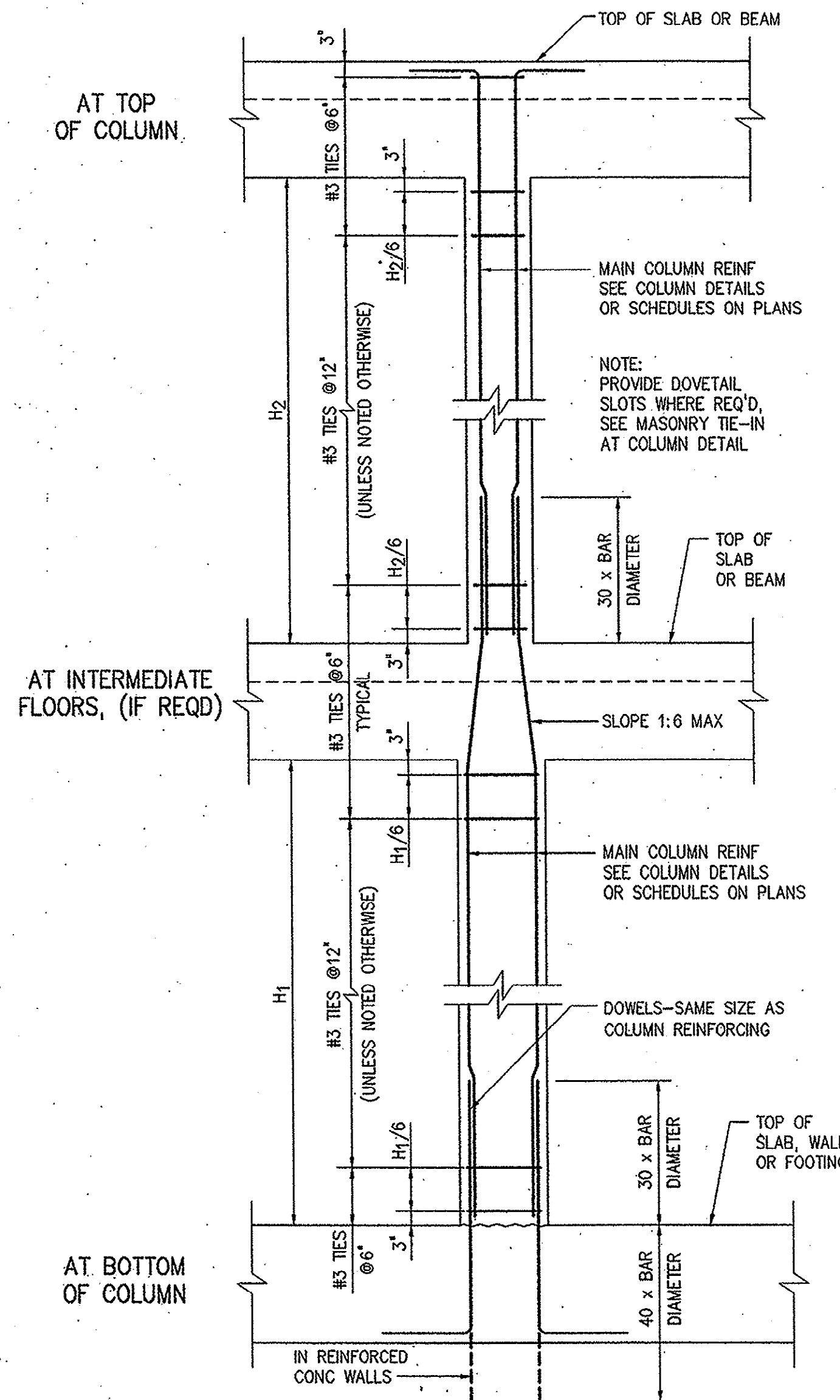


ELEVATION



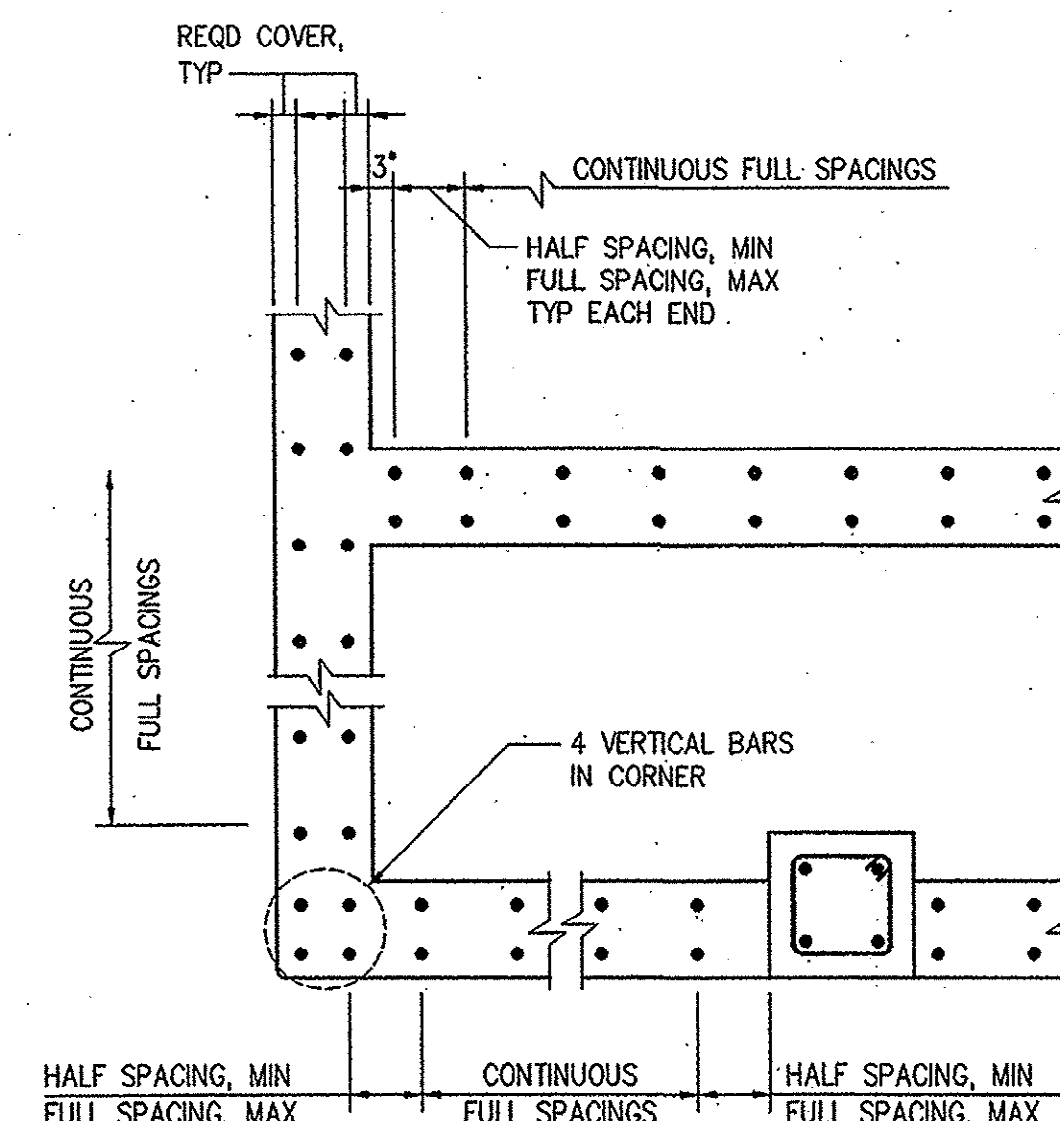
MASONRY WALL TO CONCRETE BEAM CONNECTION

0420108

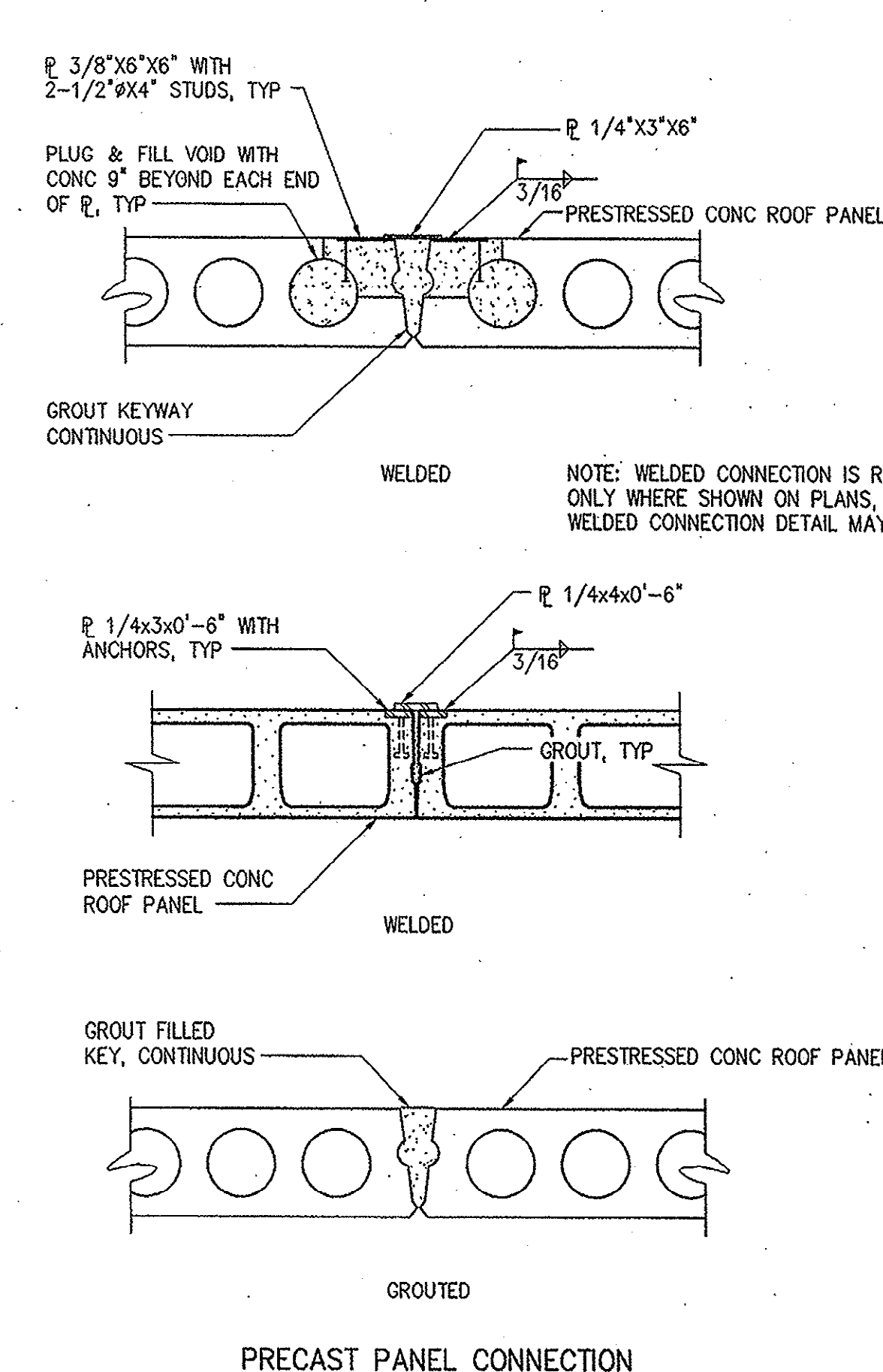


TYPICAL COLUMN ELEVATION

0331800



PLAN - WALLS



PRECAST PANEL CONNECTION

0341203

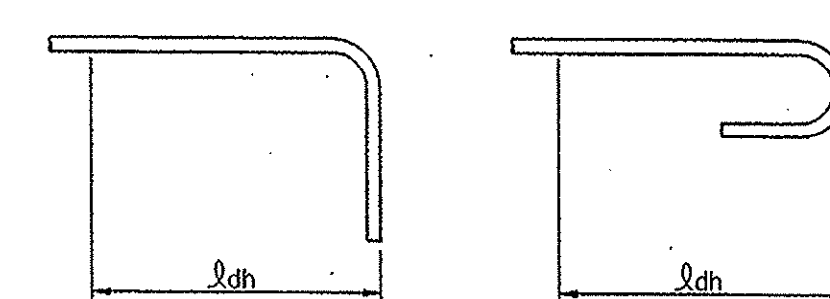
DEVELOPMENT LENGTH OF STANDARD HOOKS

FOR BARS IN TENSION

fy = 60,000 psi fc' = 4000 psi OR GREATER

BAR SIZE	DEVELOPMENT LENGTH, l _{dh}	
	BASIC	W/ CONC COVER *
#3	8"	6"
#4	10"	7"
#5	1'-0"	9"
#6	1'-3"	11"
#7	1'-5"	1'-0"
#8	1'-7"	1'-2"
#9	1'-10"	1'-4"
#10	2'-1"	1'-6"
#11	2'-3"	1'-7"

* SIDE COVER NORMAL TO PLANE OF HOOK AT LEAST 2 1/2"; AND FOR 90° HOOK END COVER BEYOND OUTSIDE END OF HOOK AT LEAST 2".



GENERAL CONCRETE NOTES:

- CONCRETE PROTECTION FOR REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED ON THE DRAWINGS:
 - A - CONCRETE DEPOSITED DIRECTLY AGAINST SOIL - 3"
 - B - CONCRETE EXPOSED TO WEATHER (#5 OR SMALLER) - 1 1/2"
 - (#6 OR LARGER) - 2"
 - C - SLABS - 1 1/2"
 - AT SURFACES CONTACTING WATER OR SEWAGE - 2"
 - D - BEAMS AND COLUMNS (TO MAIN REINFORCEMENT) - 2"
 - (TO COLUMN TIES OR STIRRUPS) - 1 1/2"
 - SURFACES EXPOSED TO SEAWATER - 4"
 - E - WALLS 12" OR MORE - 2"
 - WALLS LESS THAN 12" (#5 OR SMALLER) - 1 1/2"
 - (#6 OR LARGER) - 2"
 - F - FOR SURFACES EXPOSED TO WATER OR SEWAGE IN BEAMS, COLUMNS AND WALLS ADD 1/2" TO ABOVE.
- SPLICES SHALL BE CLASS "B" CONFORMING TO THE PROVISIONS OF ACI 318 UNLESS NOTED OTHERWISE.
- ALL EMBEDDED ITEMS SHALL BE INSTALLED AND SECURED IN PLACE BEFORE CONCRETE PLACEMENT. CONSULT ELECTRICAL, MECHANICAL AND HVAC DRAWINGS FOR PIPING, EMBEDDED ITEMS AND OPENINGS.
- ALL JOINTS IN WATER BEARING STRUCTURES SHALL HAVE A WATERSTOP. ALL JOINTS BELOW GRADE IN WALLS OR SLABS WHICH ENCLOSE AN ACCESSIBLE AREA SHALL HAVE WATERSTOPS.
- CONSTRUCTION JOINTS NOT SHOWN SHALL BE SUBMITTED BY THE CONTRACTOR FOR THE APPROVAL OF THE ENGINEER PRIOR TO SUBMITTING REBAR SHOP DRAWINGS.
- PROVIDE VERTICAL CONSTRUCTION JOINTS IN WALLS AND HORIZONTAL JOINTS IN SLABS NOT GREATER THAN 45'-0" ON CENTER.
- NO BACKFILL SHALL BE PLACED AGAINST ANY SUBSTRUCTURE WALLS UNLESS ADJACENT FLOOR SLABS HAVE TAKEN THEIR FINAL SET, OR WALLS HAVE BEEN PROPERLY BRACED, AND IN ANY CASE NOT SOONER THAN 28 DAYS AFTER THE PLACING OF CONCRETE UNLESS APPROVED BY THE ENGINEER.

BASIC DEVELOPMENT LENGTH AND SPLICE LENGTH

FOR BARS IN COMPRESSION

fy = 60,000 psi fc' = 4000 psi OR GREATER

BASIC DEVELOPMENT LENGTH		BAR SIZE	SPLICE LENGTH	
BASIC	CONFINEMENT *		BASIC	CONFINEMENT *
8"	8"	# 3	12"	12"
10"	8"	# 4	1'-3"	12"
1'-0"	9"	# 5	1'-7"	1'-3"
1'-3"	1'-0"	# 6	1'-11"	1'-6"
1'-5"	1'-1"	# 7	2'-3"	1'-9"
1'-7"	1'-3"	# 8	2'-6"	1'-11"
1'-10"	1'-4"	# 9	2'-10"	2'-2"
2'-1"	1'-7"	# 10	3'-3"	2'-6"
2'-3"	1'-8"	# 11	3'-7"	2'-9"

* BAR ENCLOSED WITHIN SPIRALS OF NOT LESS THAN 1/4 INCH DIAMETER AND NOT MORE THAN 4 INCH PITCH OR WITHIN #4 TIES IN CONFORMANCE WITH ACI 318, SECTION 7.10.5 AT NOT MORE THAN 4 INCHES ON CENTER, FACTOR 0.75 USED.

BASIC DEVELOPMENT LENGTH AND SPLICE LENGTH

FOR BARS IN TENSION

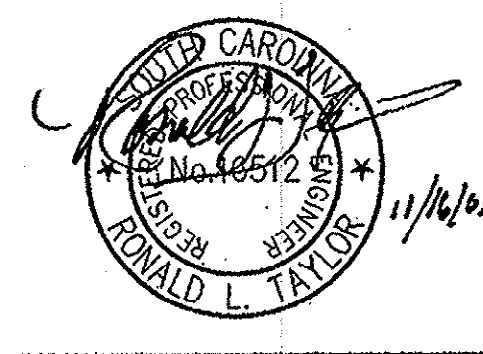
fy = 60,000 psi fc' = 4000 psi OR GREATER, NORMAL WEIGHT CONCRETE

BASIC DEVELOPMENT LENGTH **				BAR SIZE	CLASS B SPLICE LENGTH **			
l _d					1.3 x l _d			
CLEAR SPACING ≥ 3"		CLEAR SPACING < 3"			CLEAR SPACING ≥ 3"		CLEAR SPACING < 3"	
BASIC	TOP *	BASIC	TOP *		BASIC	TOP *	BASIC	TOP *
1'-0"	1'-0"	1'-0"	1'-4"	# 3	1'-0"	1'-3"	1'-4"	1'-8"
1'-0"	1'-3"	1'-7"	2'-1"	# 4	1'-3"	1'-8"	2'-1"	2'-8"
1'-3"	1'-7"	2'-4"	3'-0"	# 5	1'-7"	2'-0"	3'-0"	3'-11"
1'-5"	1'-11"	3'-1"	4'-0"	# 6	1'-11"	2'-5"	4'-0"	5'-2"
2'-5"	3'-1"	4'-11"	6'-4"	# 7	3'-1"	4'-0"	6'-4"	8'-3"
3'-0"	3'-11"	6'-0"	7'-9"	# 8	3'-11"	5'-1"	7'-9"	10'-1"
3'-8"	4'-9"	6'-8"	8'-8"	# 9	4'-9"	6'-2"	8'-8"	11'-4"
4'-5"	5'-8"	7'-5"	9'-8"	# 10	5'-8"	7'-5"	9'-8"	12'-7"
5'-2"	6'-8"	8'-2"	10'-8"	# 11	6'-8"	8'-5"	10'-8"	13'-10"

* TOP REINFORCEMENT IS HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.

** LENGTHS SHOWN IN CHART SHALL BE MODIFIED WHERE REQUIRED TO CONFORM TO THE PROVISIONS OF ACI 318, SECTION 12.2.

DESIGNED	H & S
DRAWN	H & S
CHECKED	JBM
PROJ. ENGR.	JBM
CONSTRUCTION	11/10/01 JBM
REGULATORY APPROVAL	8-31-01 JBM
ISSUED FOR	DATE BY APPROVED



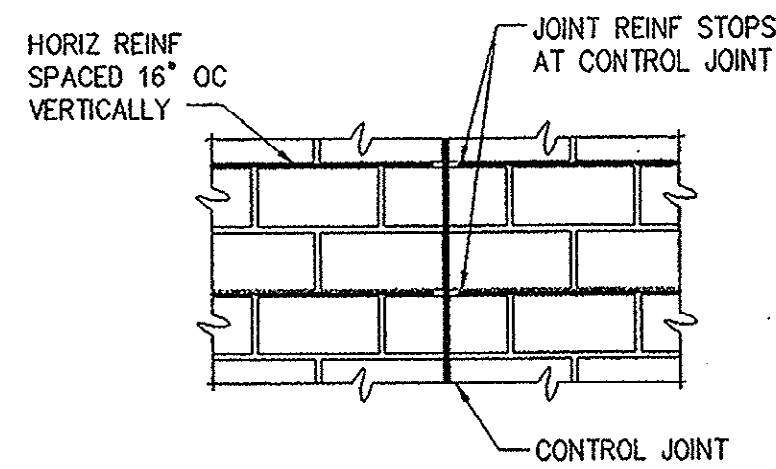
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GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

MISCELLANEOUS STANDARD DETAILS

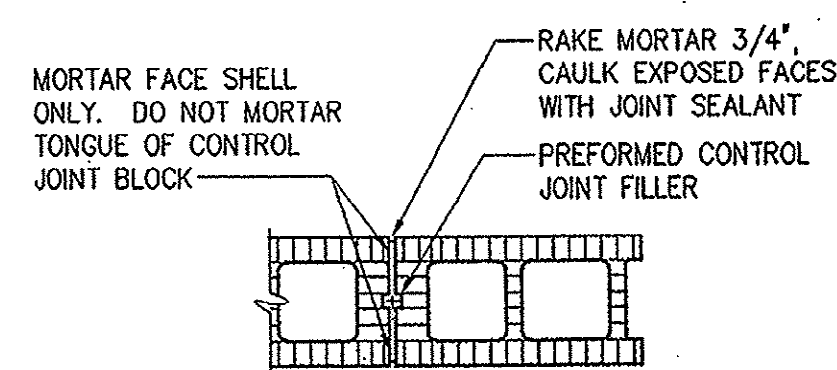
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001
H & S JOB NUMBER	30631
CONTRACT NUMBER	DRAWING NUMBER
1	D6
H & S FLAT FILE NO. 56	

35-004-049



NOTE: CONTROL JOINTS MAY BE OFFSET A MAXIMUM DISTANCE OF 8". CROSS WIRES WITHIN THIS OFFSET SHALL BE CUT.

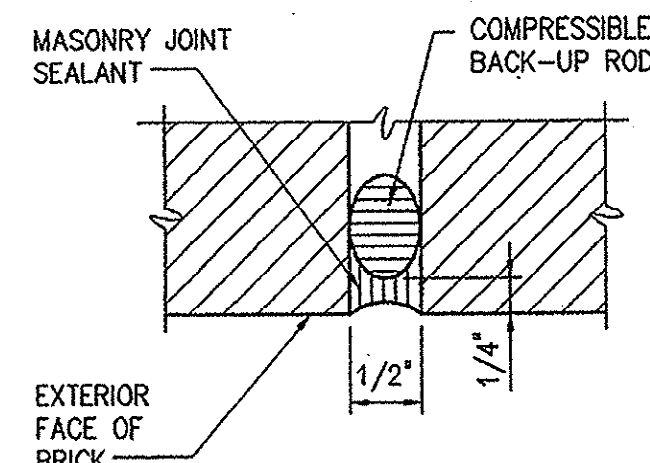
ELEVATION



PLAN

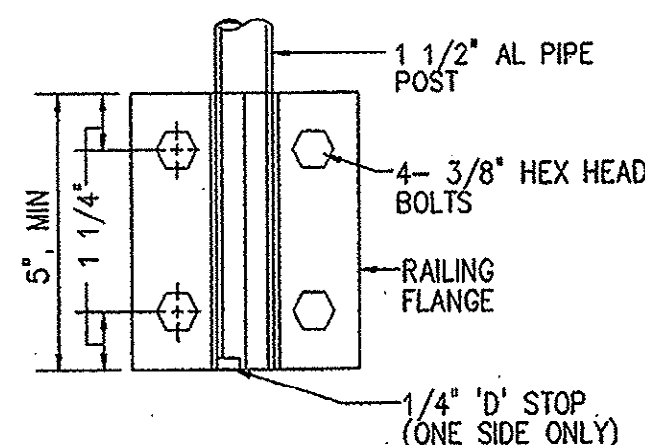
NOTE: WIDE FLANGED PREFORMED CONTROL JOINT FILLER MAY BE USED IN LIEU OF DETAIL SHOWN

CONTROL JOINT BLOCK
0418000

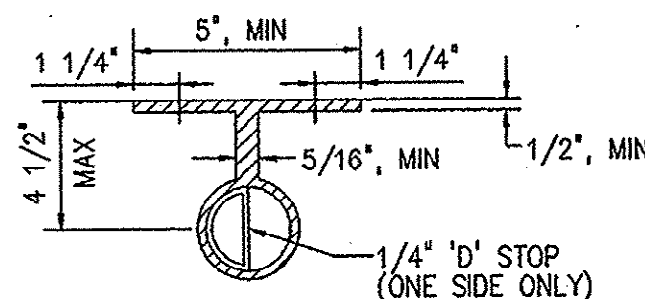


BRICK EXPANSION JOINT

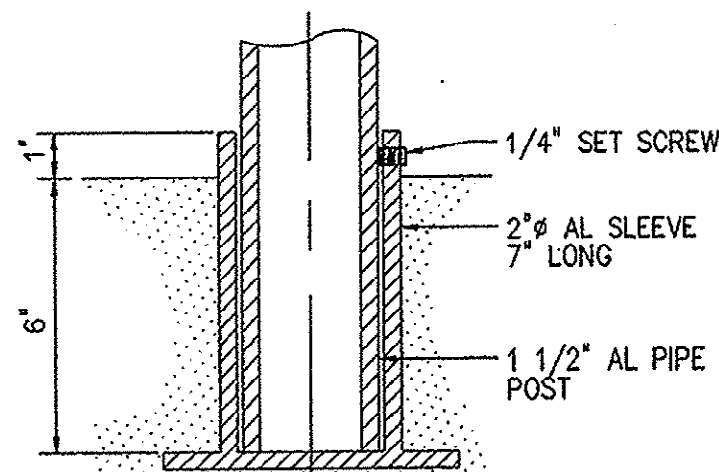
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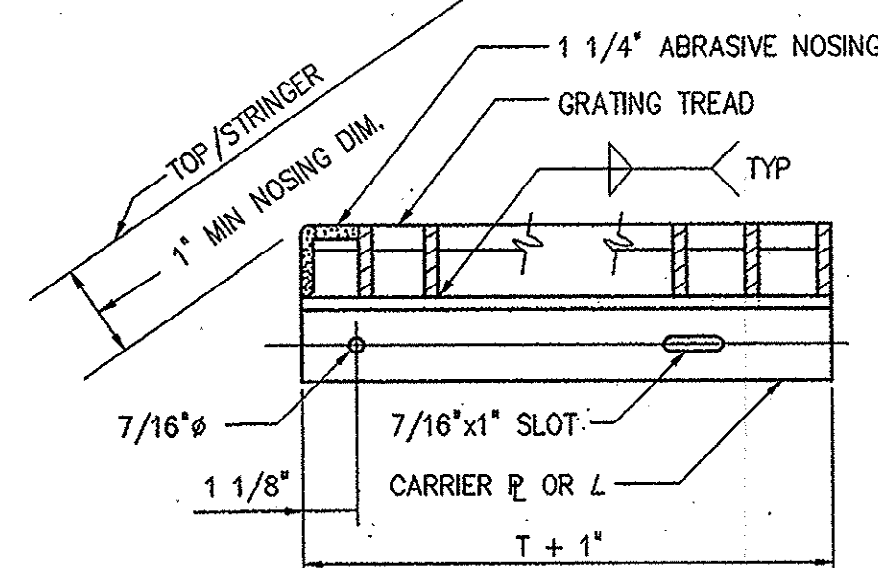
ELEVATION



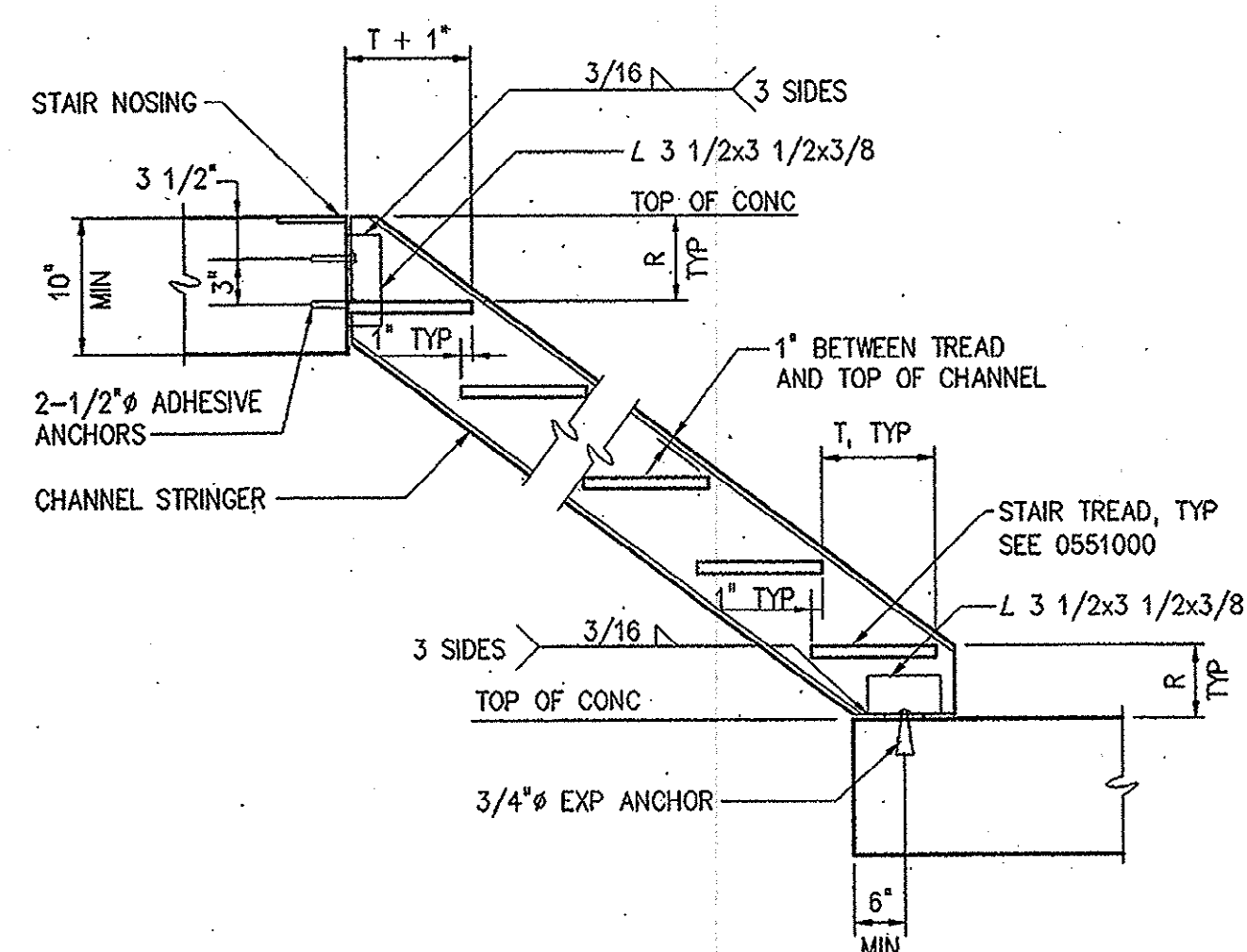
SIDE MOUNT TO METAL



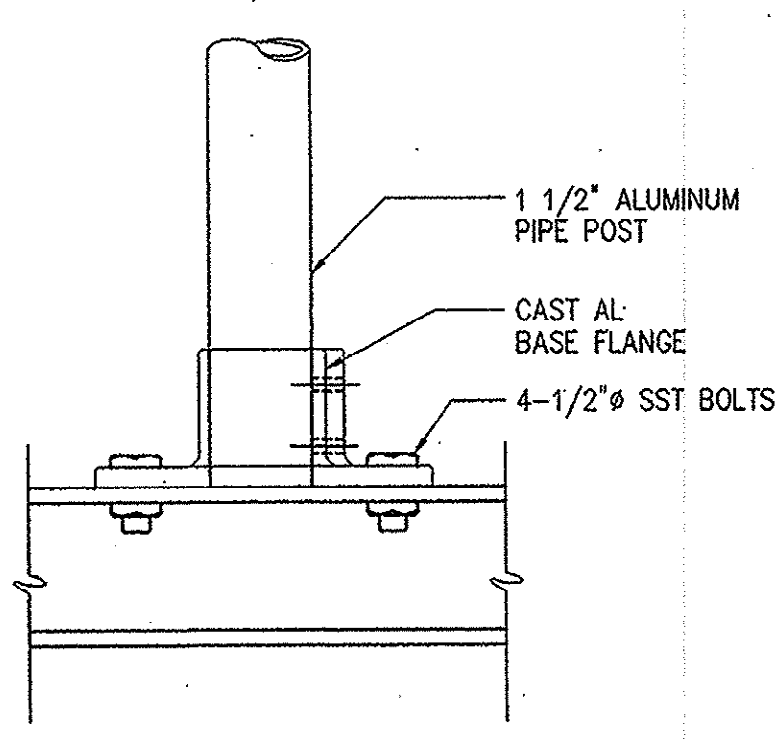
REMOVABLE POST IN CONCRETE



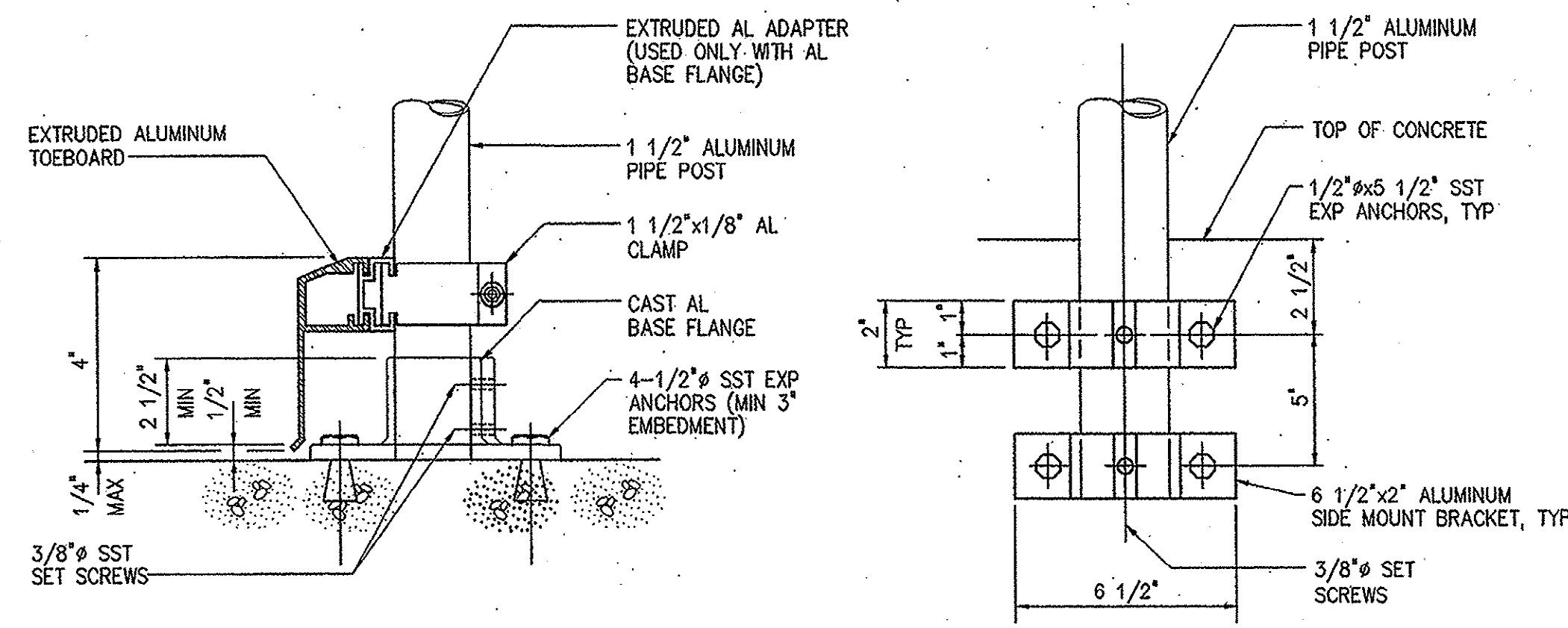
TYP TREAD DETAIL
0551000



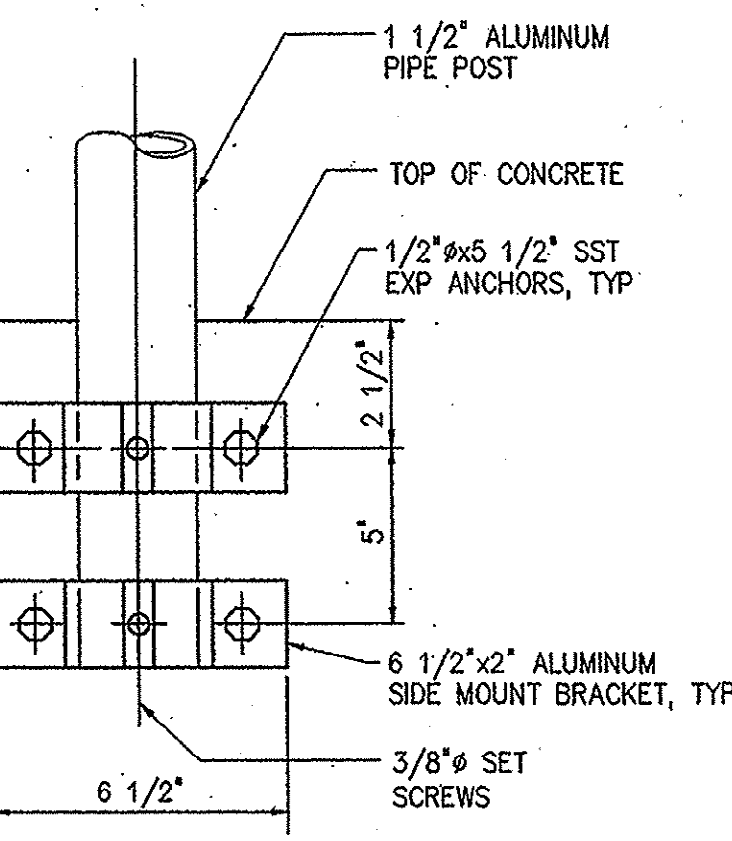
TYPICAL METAL STAIRS
0551001



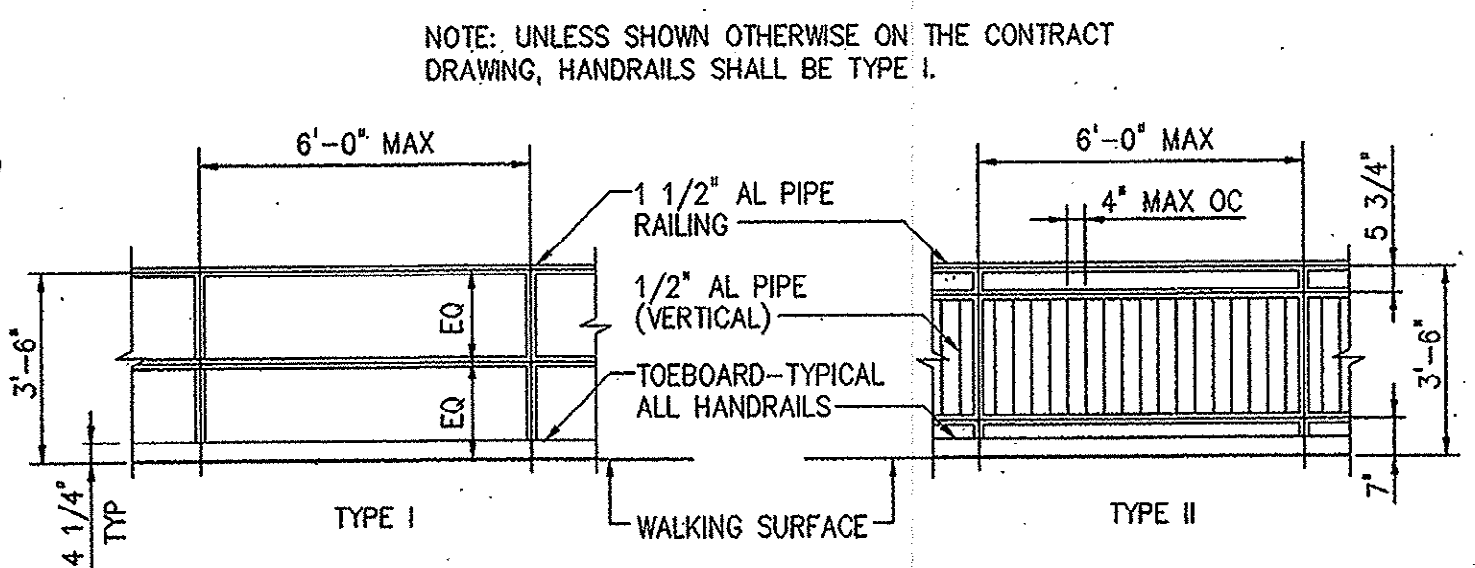
SURFACE MOUNTED TO METAL



SURFACE MOUNTED TO CONCRETE

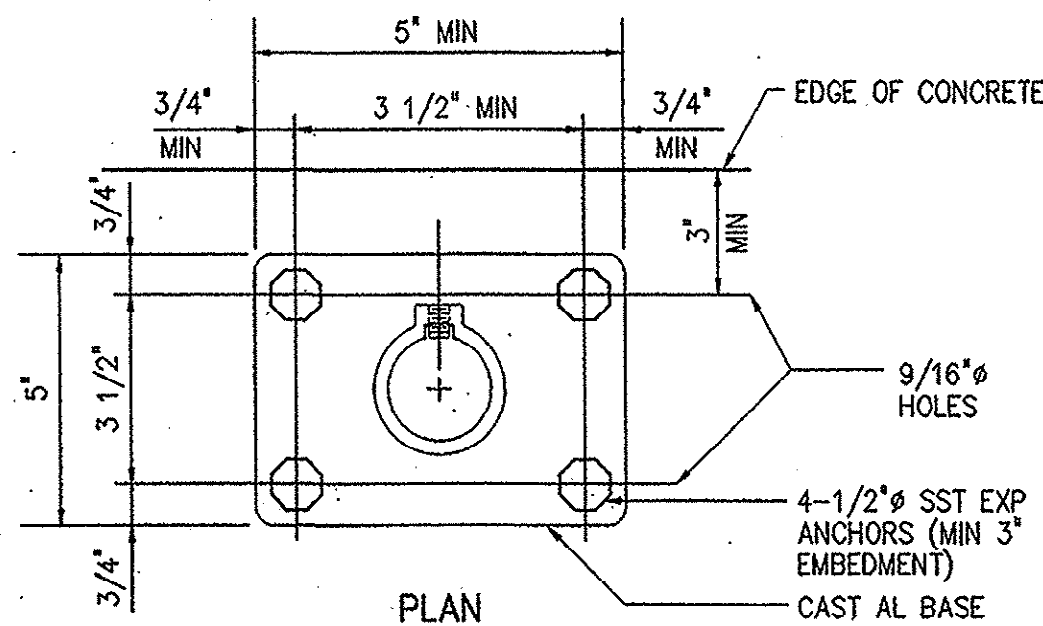


SIDE MOUNT TO CONCRETE

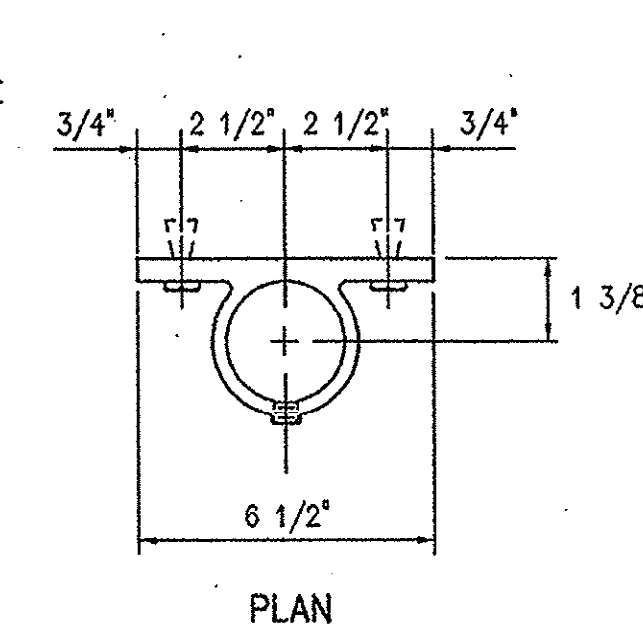


ELEVATION

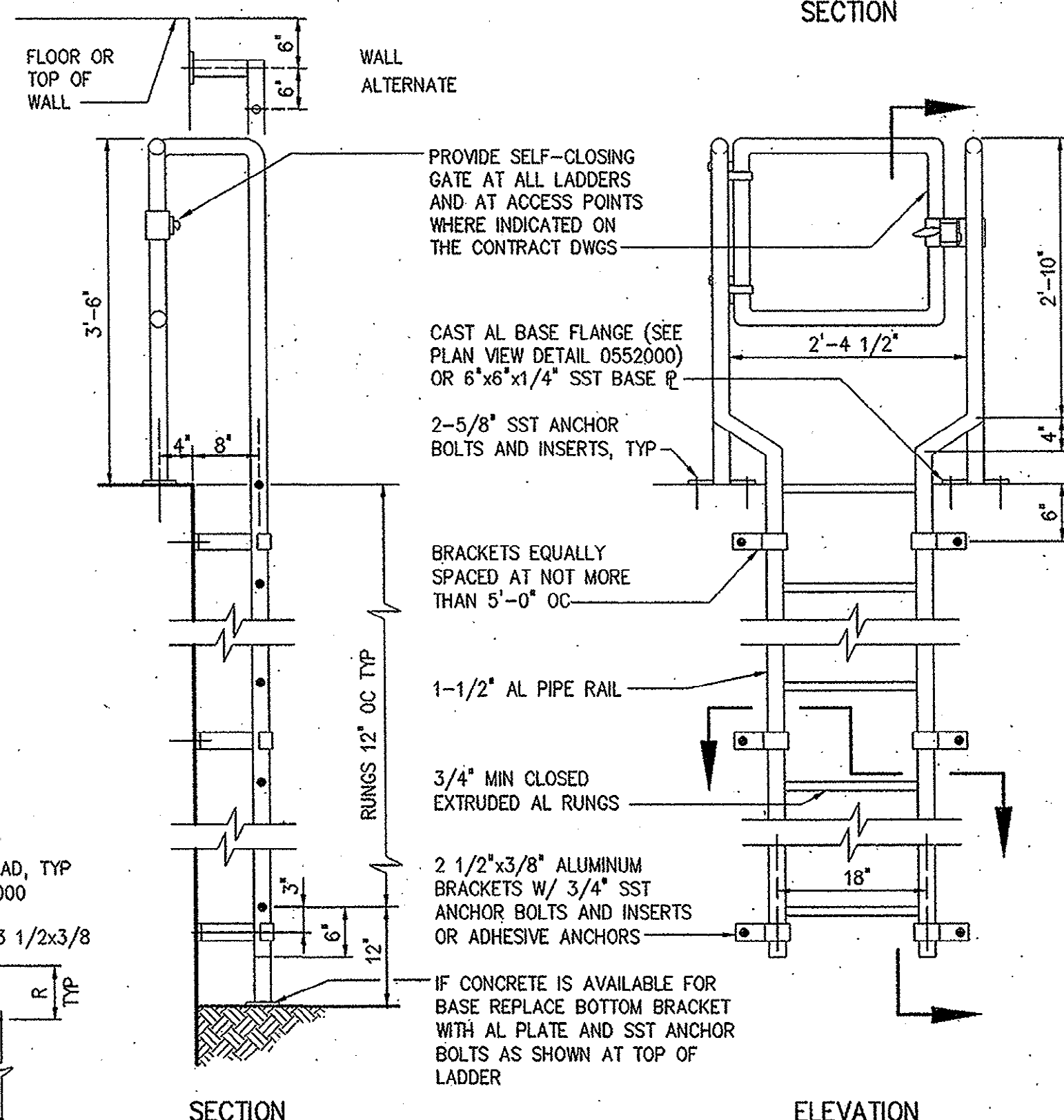
ALUMINUM HANDRAILS
0552000



PLAN

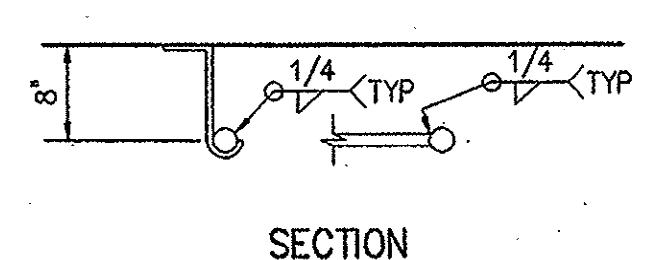


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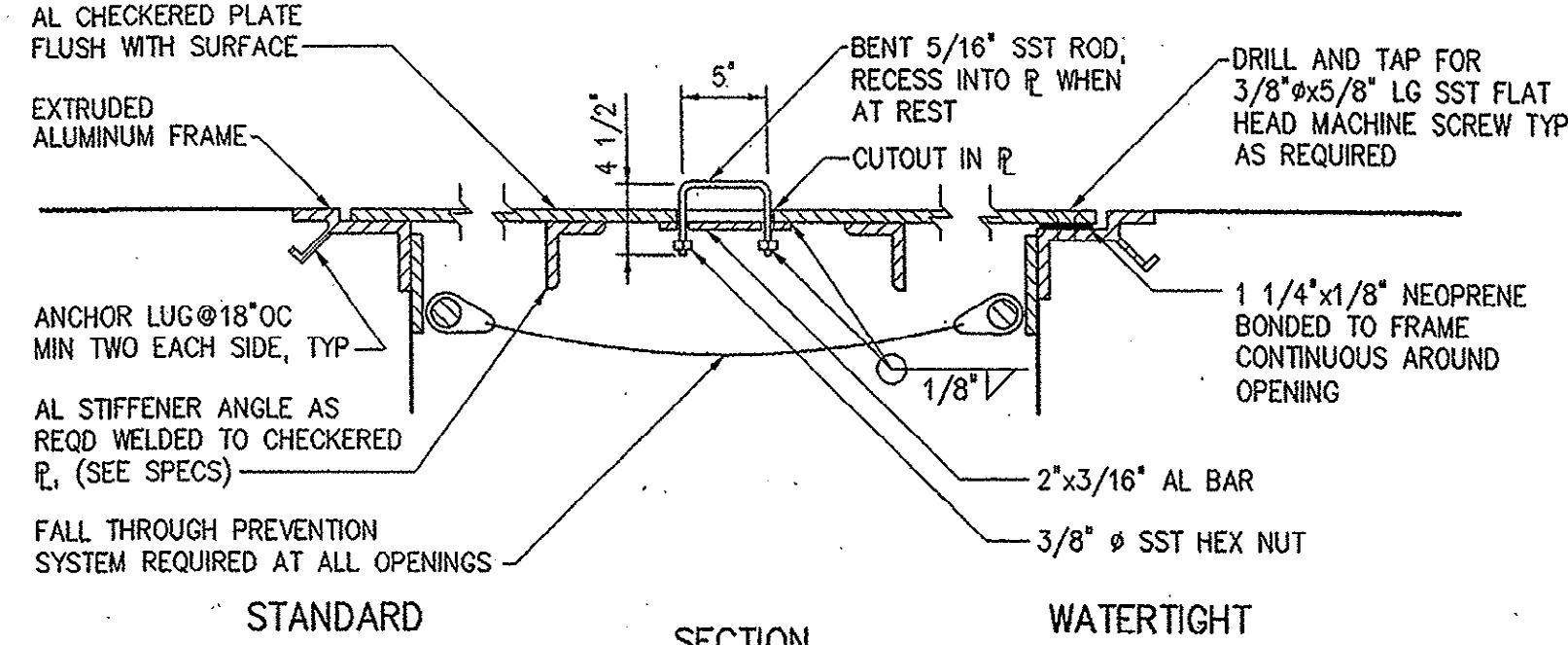


SECTION

ALUMINUM LADDER
0551500



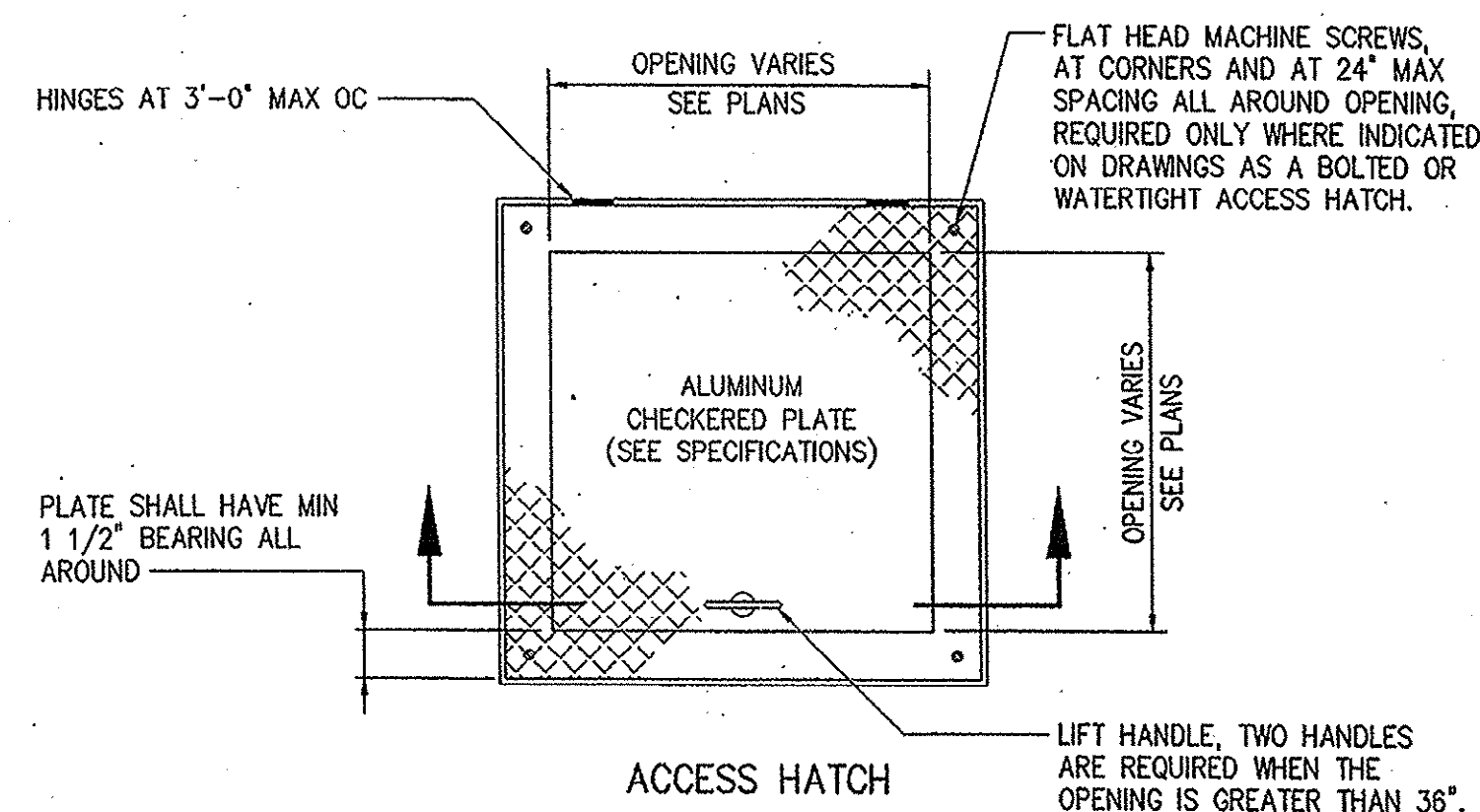
SECTION



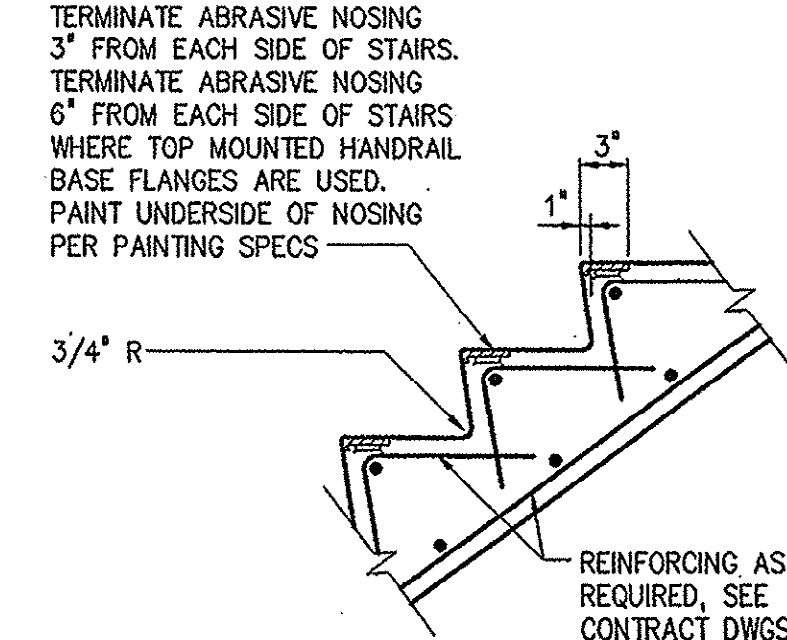
STANDARD

SECTION
ACCESS HATCH

WATERTIGHT



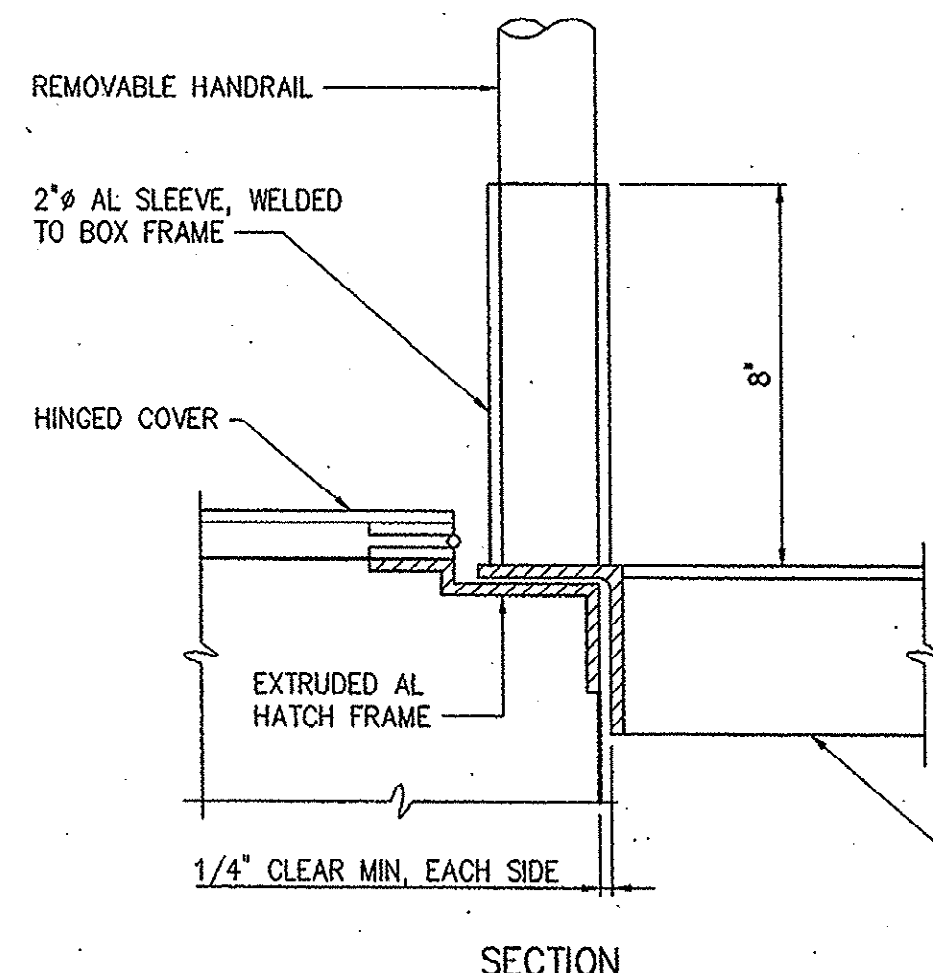
ACCESS HATCH
0553010



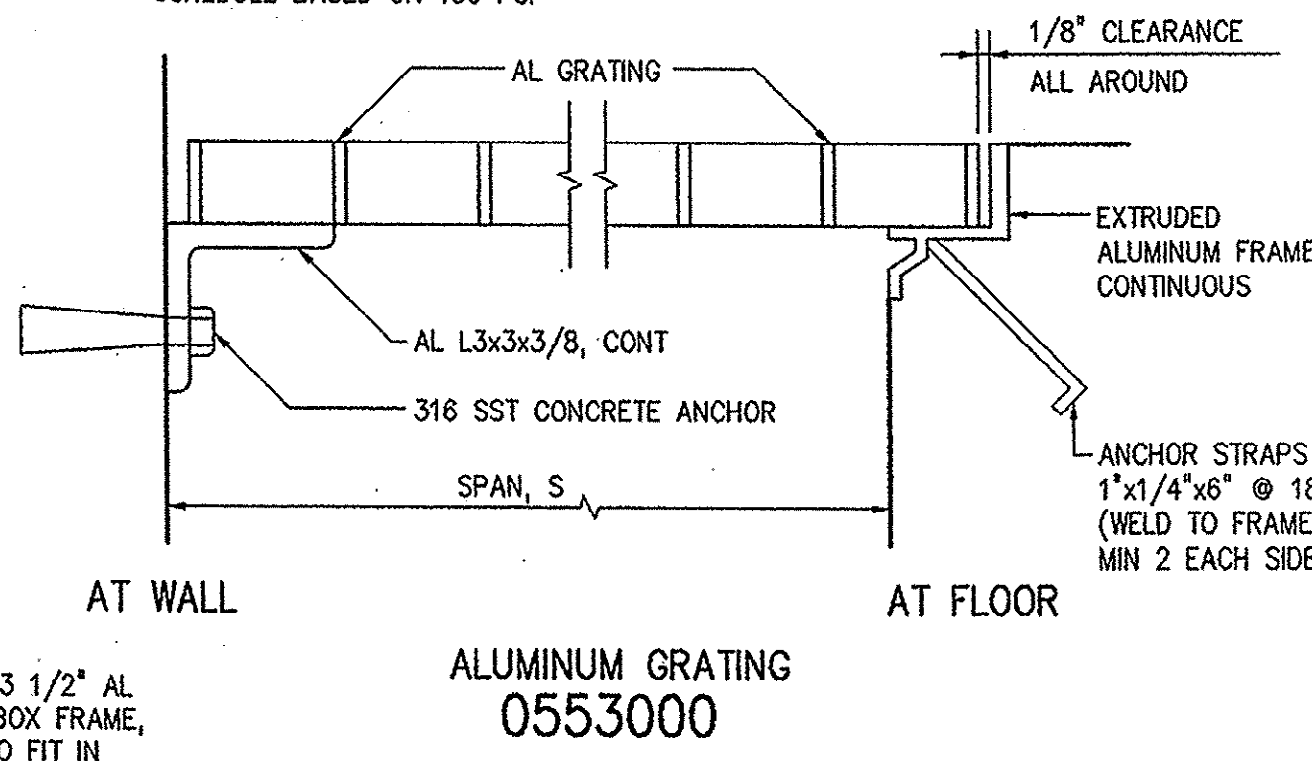
STAIR NOSING
0554000

SPAN, S	DEPTH (MIN)	CONCRETE ANCHOR (SIZE AND SPACING)
0'-0" < S ≤ 4'-0"	1 1/2"	1/2" x 5 1/2" @ 18"
4'-0" < S ≤ 5'-0"	1 3/4"	
5'-0" < S ≤ 5'-6"	2"	5/8" x 6" @ 18"
5'-6" < S ≤ 6'-0"	2 1/4"	
6'-0" < S ≤ 6'-6"	2 1/2"	

SCHEDULE BASED ON 150 PSF



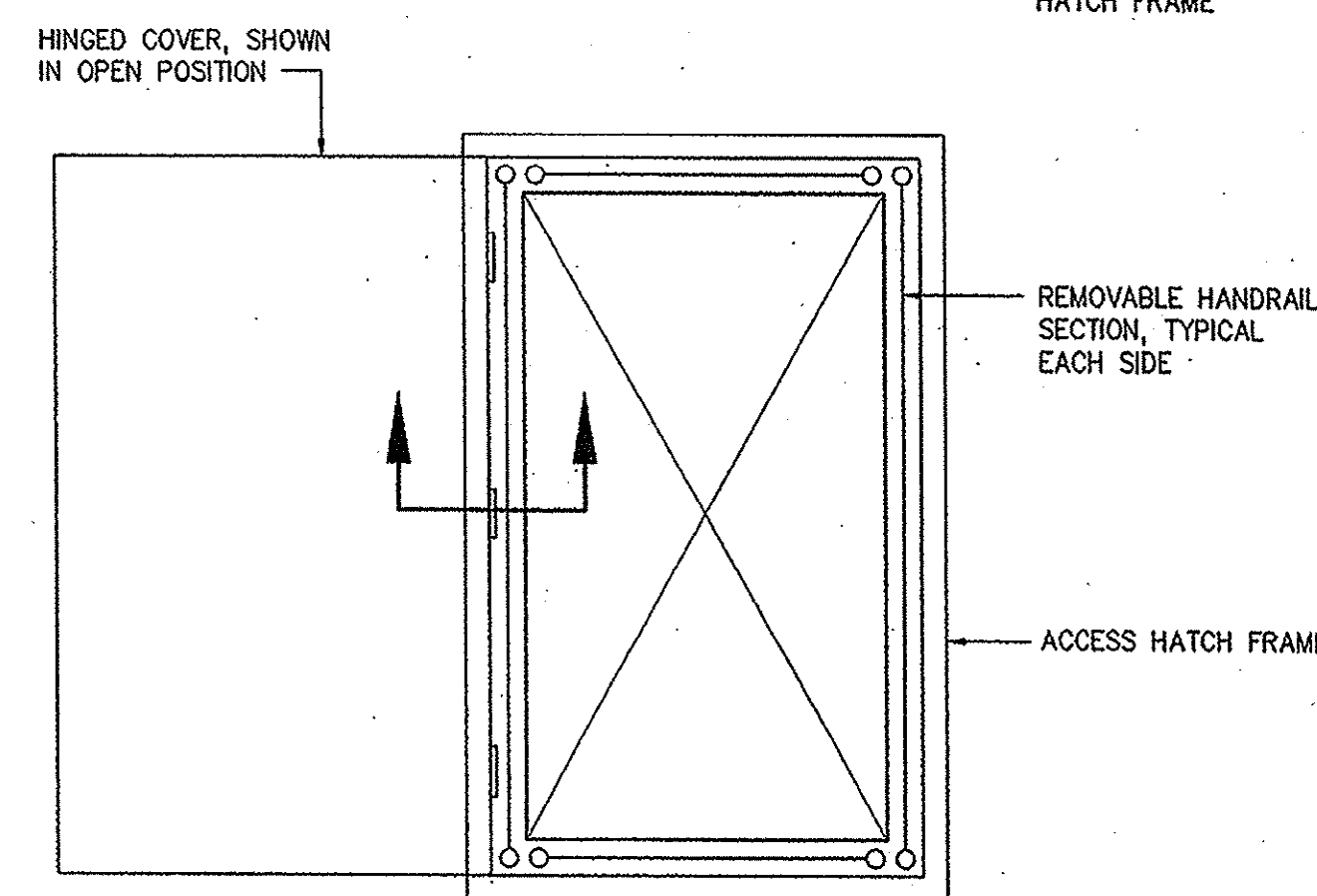
SECTION



AT WALL

ALUMINUM GRATING
0553000

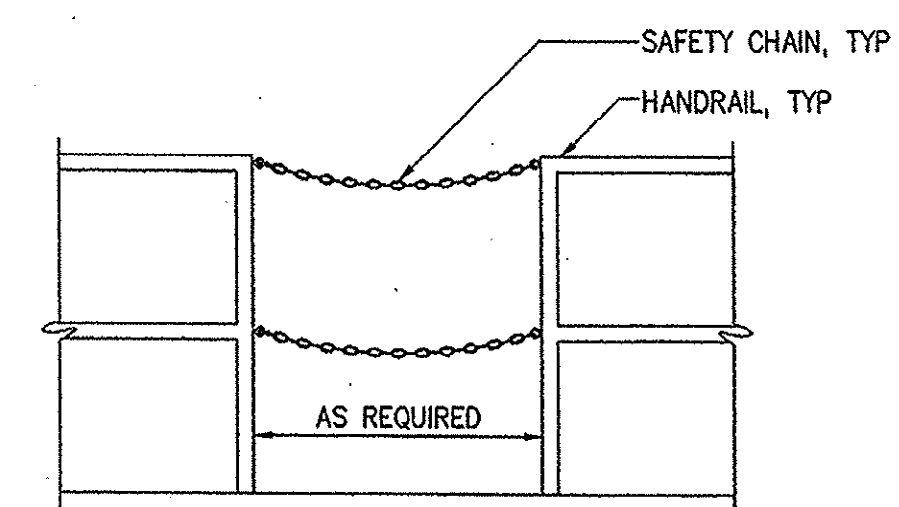
AT FLOOR



PLAN

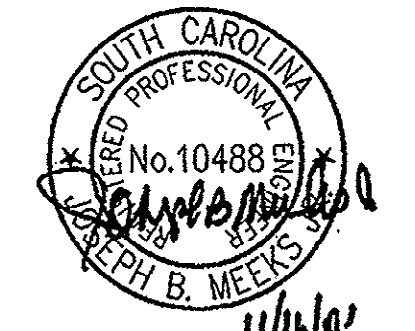
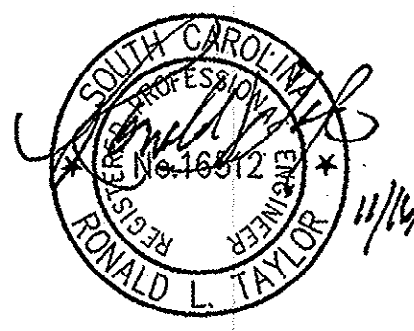
REMOVABLE SAFETY RAIL
AT ACCESS OPENING

0552004



HANDRAIL SAFETY CHAIN GATE
0552001

DESIGNED	H & S
DRAWN	H & S
CHECKED	JBM
PROJ. ENGR.	JBM
CONSTRUCTION	11/16/01 JBM
REGULATORY APPROVAL	8-31-01 JBM
ISSUED FOR	DATE BY APPROVED



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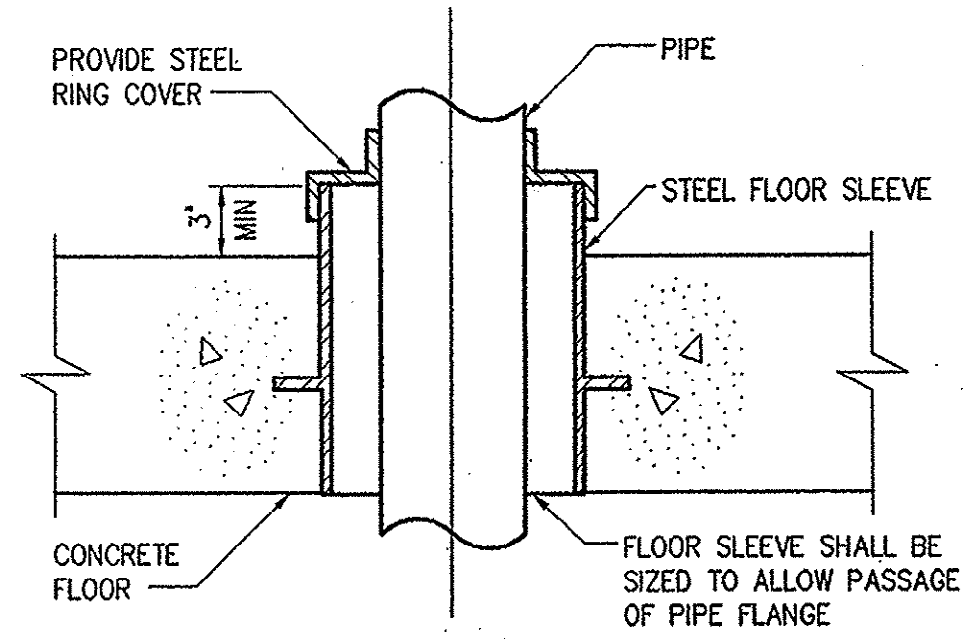
MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	D7
	H & S FILE NO.	56

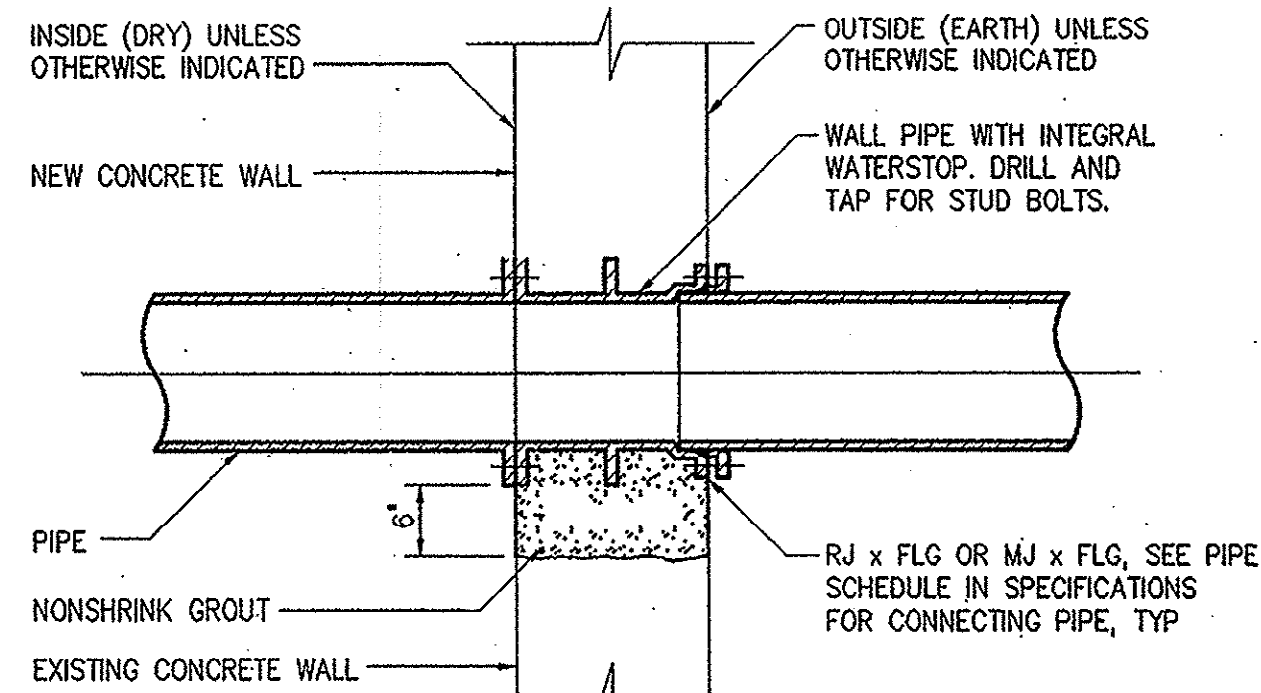
35-004-050

NOTES:

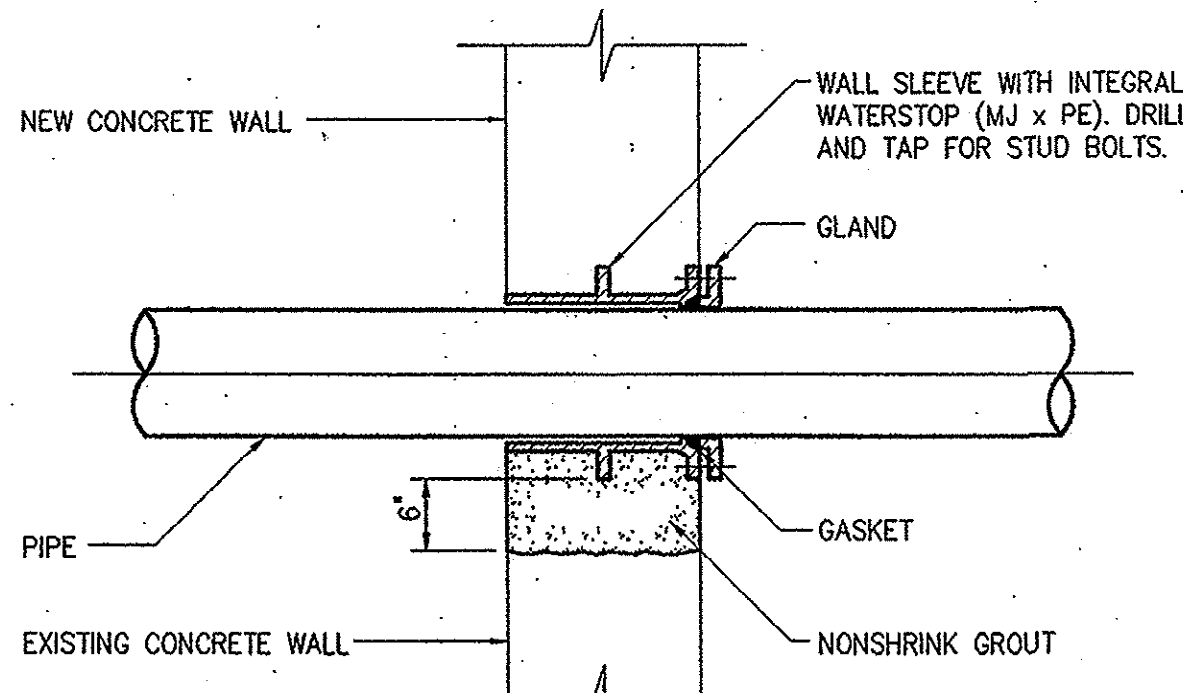
- 1 ALL WALL PIPES SHALL BE CAST UNLESS OTHERWISE NOTED.
- 2 PROVIDE PIPE JOINT WITHIN TWO (2) FEET OF EXTERIOR FACE OF WALL AT CONNECTION TO ALL NEW AND EXISTING STRUCTURES OR MANHOLES.
- 3 COMBINATION WATERSTOP SHALL BE REQUIRED AT ALL NEW PIPE PENETRATIONS THROUGH EXISTING CONCRETE WALLS UNLESS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS. SEE COMBINATION WATERSTOP DETAIL 1509222.
- 4 ALL NEW OPENINGS IN EXISTING CONCRETE WALLS SHALL BE ACCOMPLISHED WITH A CLEAN SAW-CUT. SURFACES SHALL BE ROUGHENED BY APPROVED METHODS.



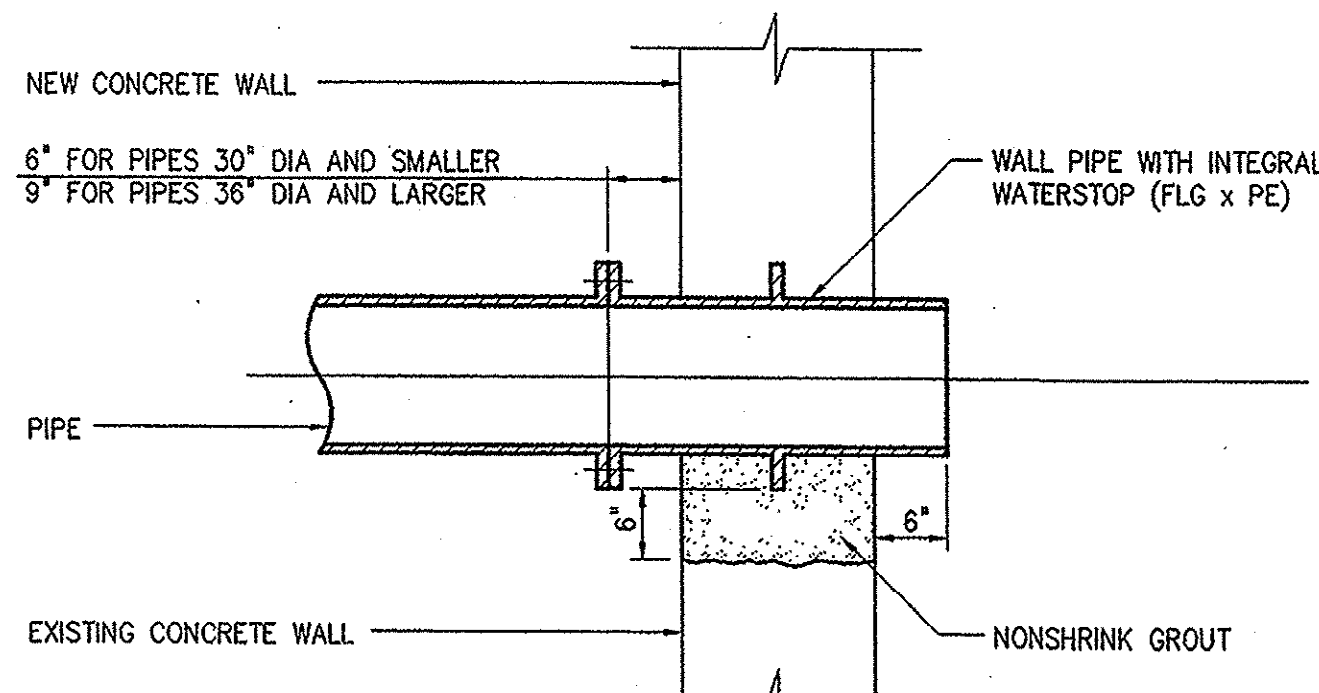
FLOOR PENETRATION
1509200



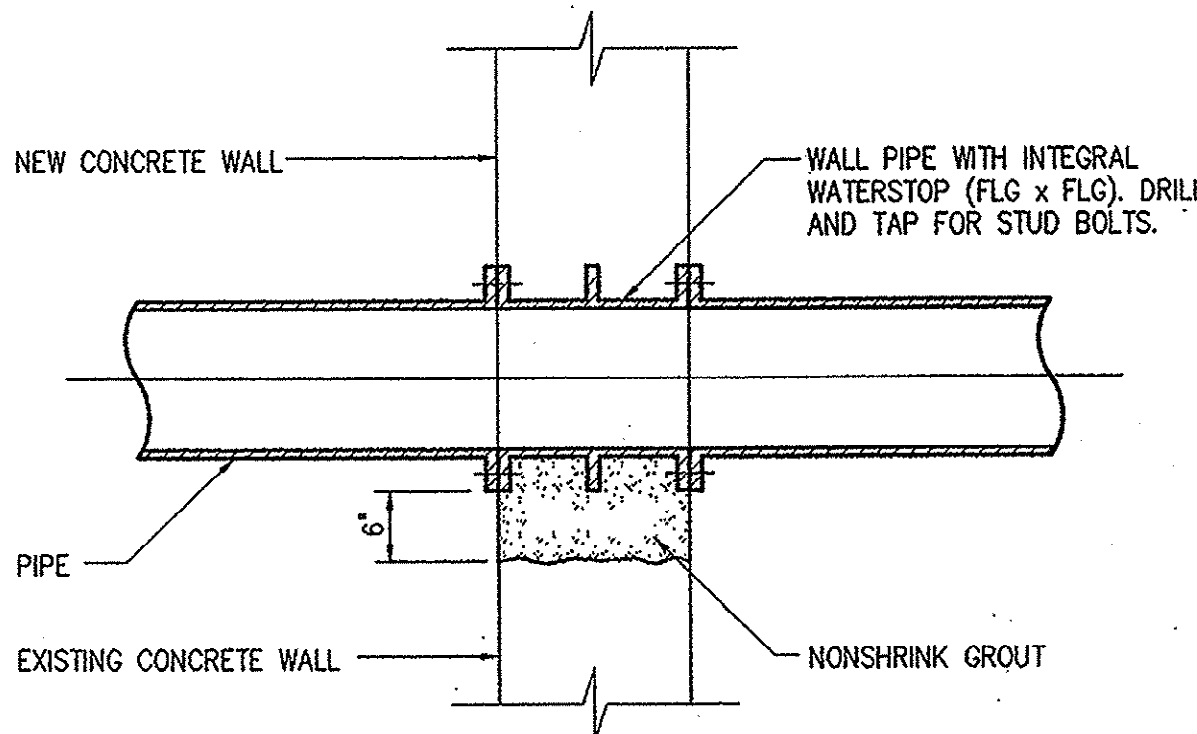
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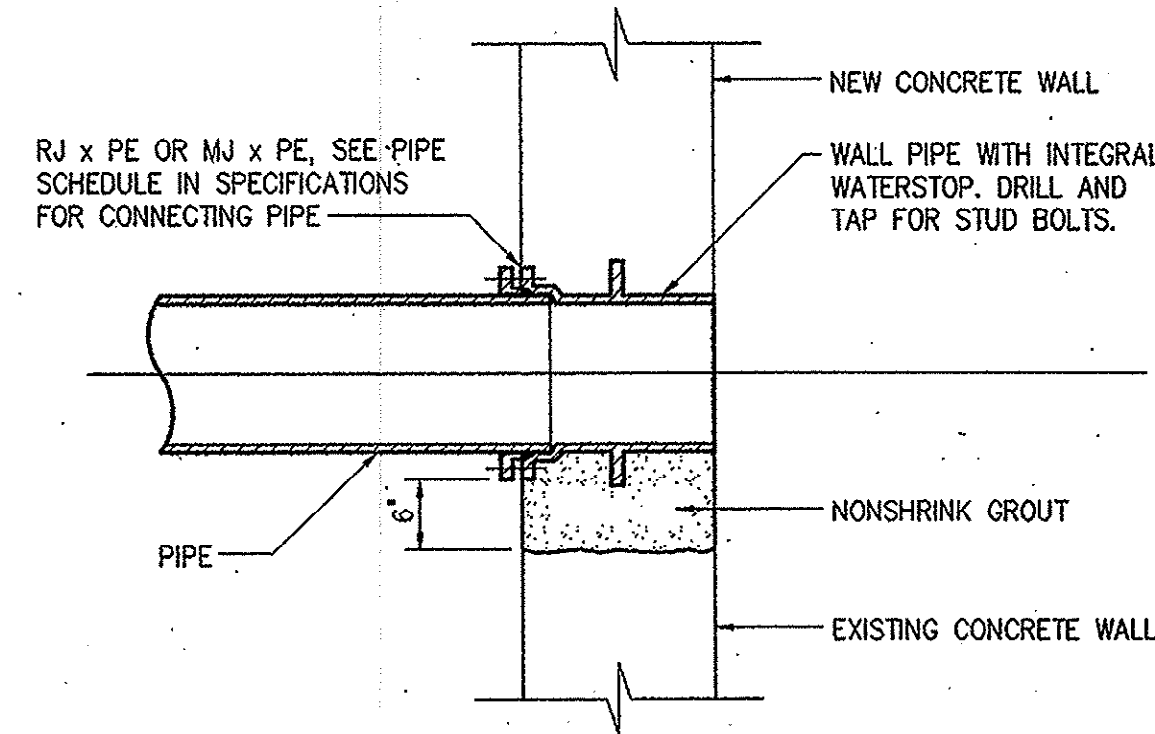
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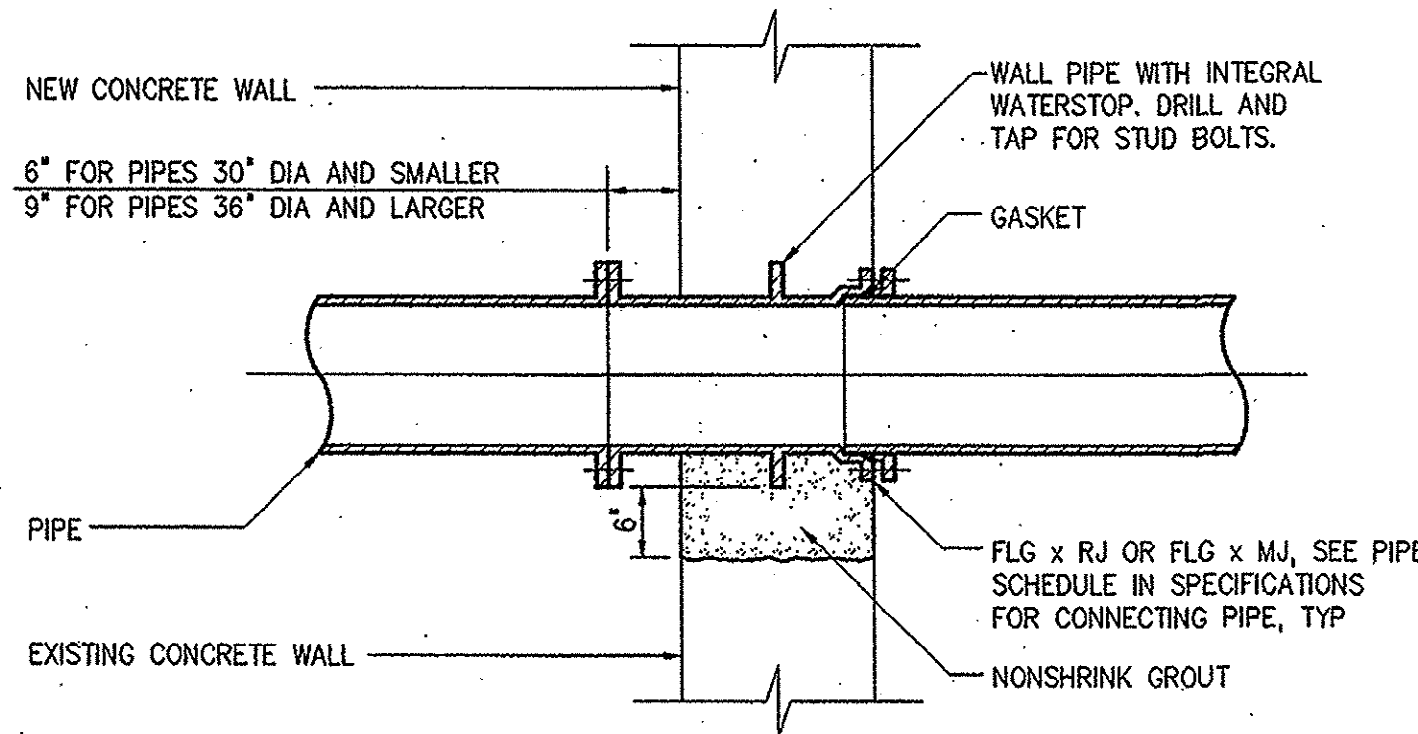
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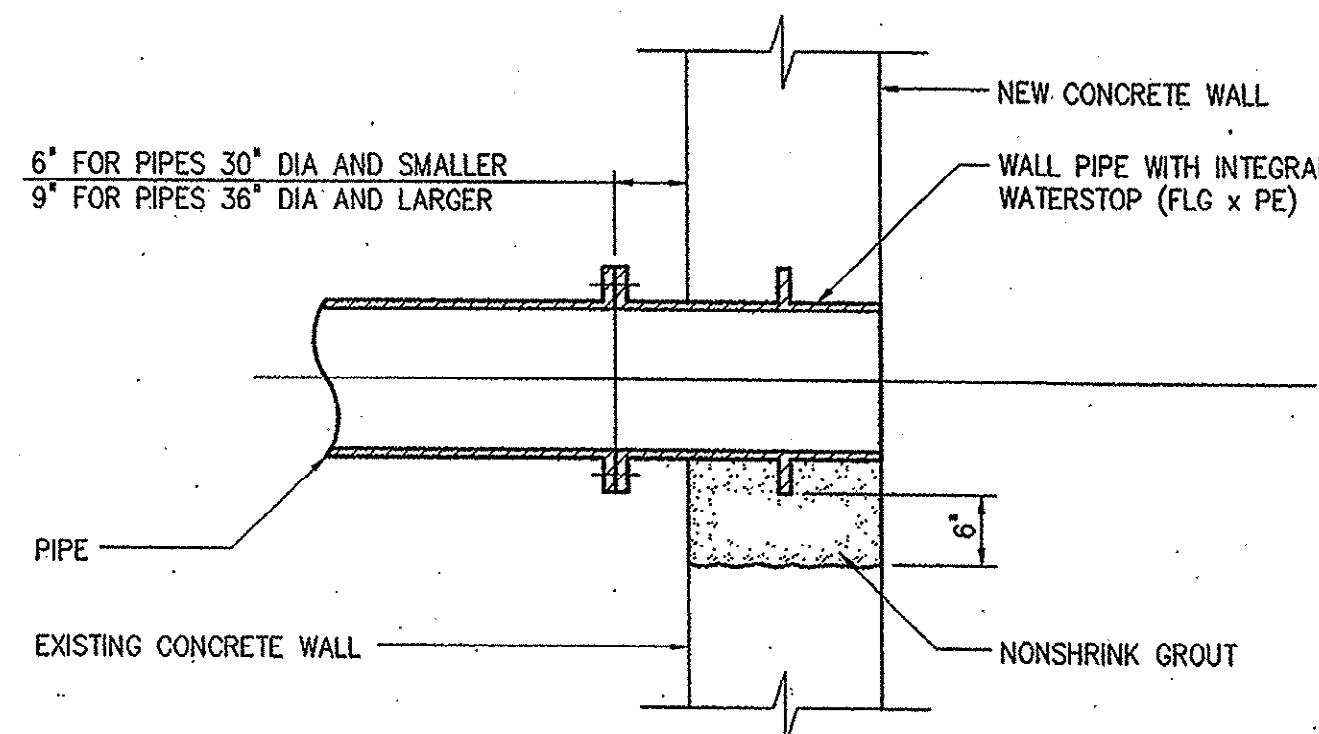
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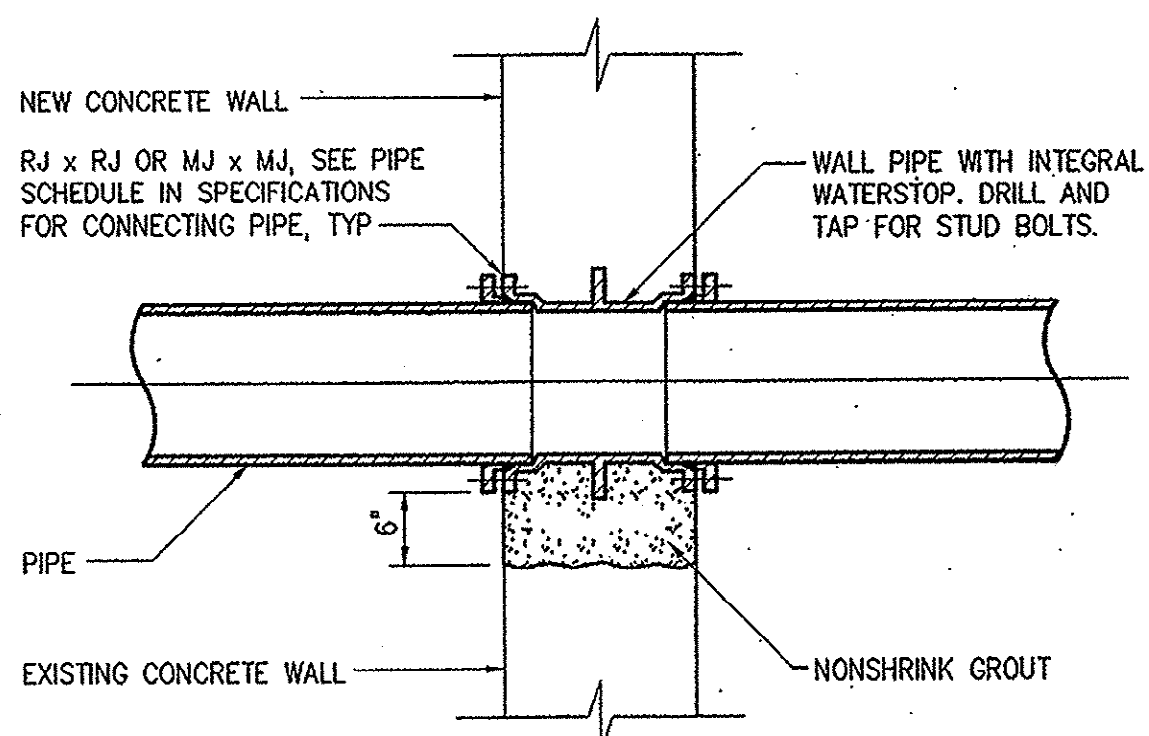
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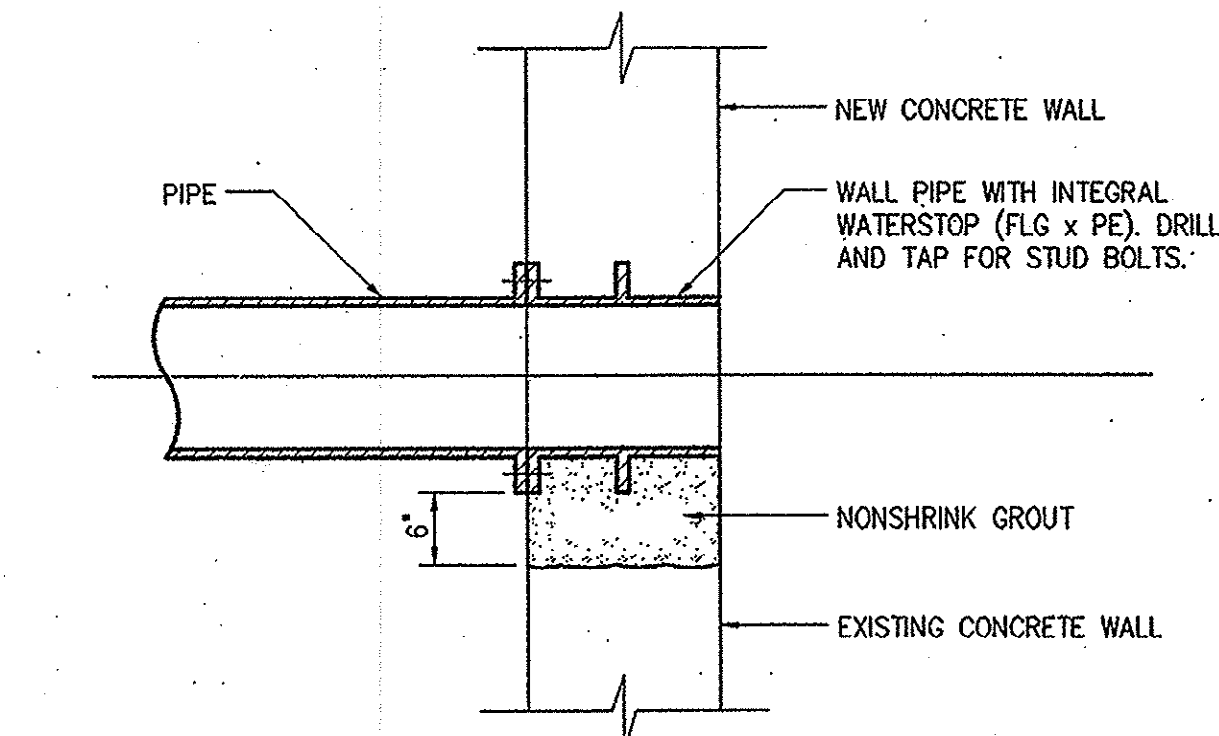
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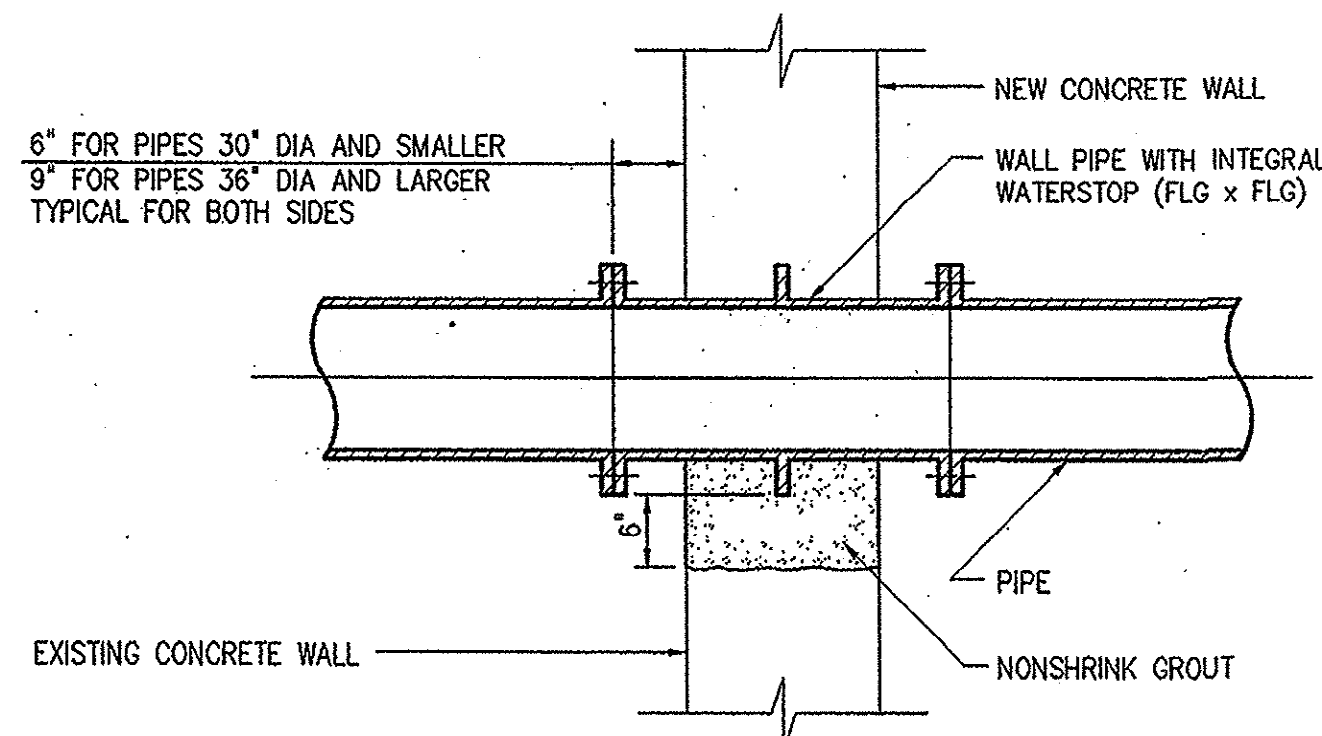
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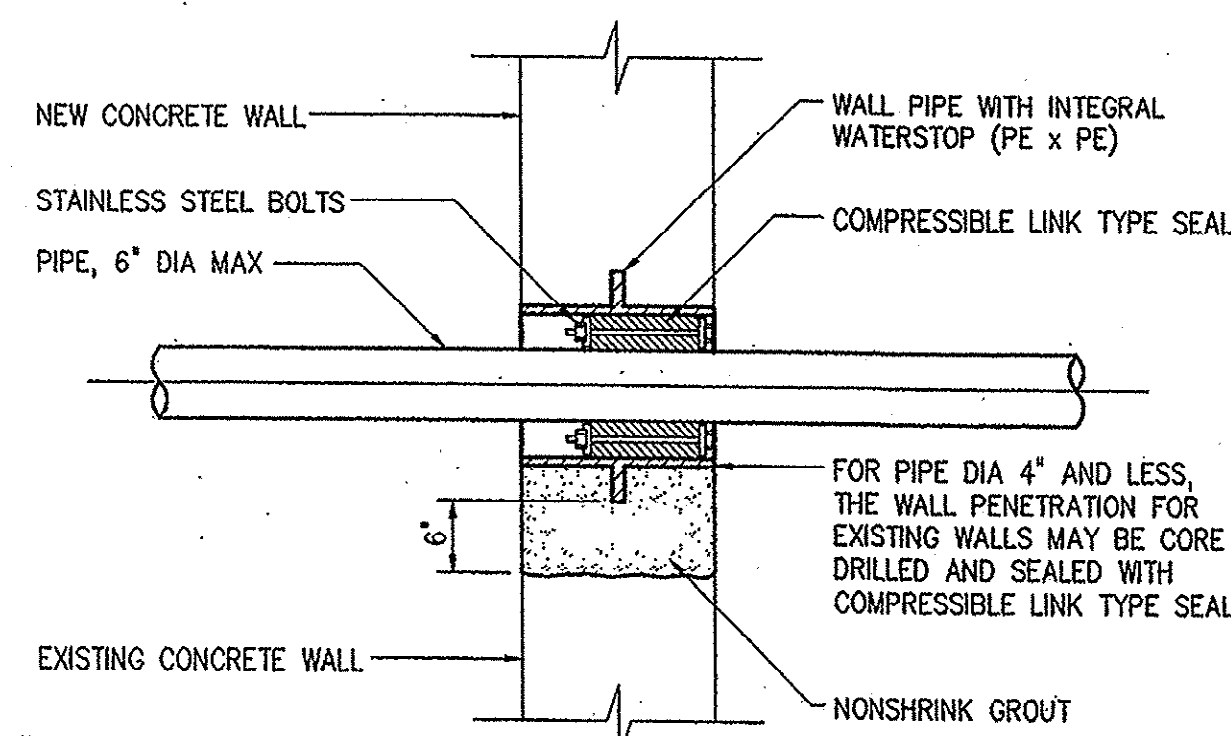
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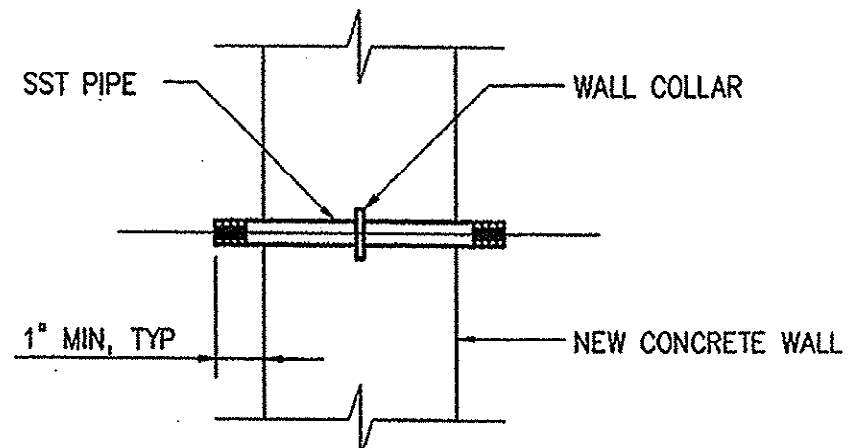
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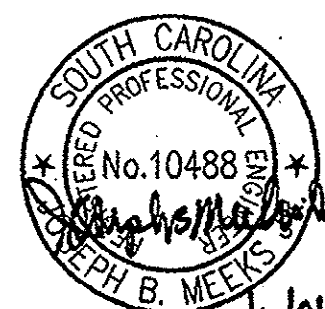
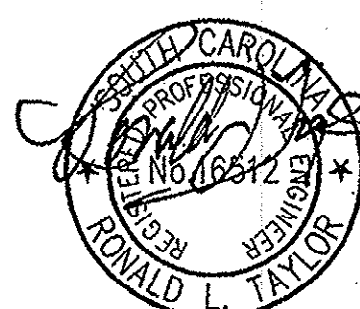


1509211



1509212

DESIGNED	H & S
DRAWN	H & S
CHECKED	JBM
PROJ. ENGR.	JBM
NO.	1
CONSTRUCTION	8-31-01
REGULATORY APPROVAL	8-31-01
ISSUED FOR	DATE



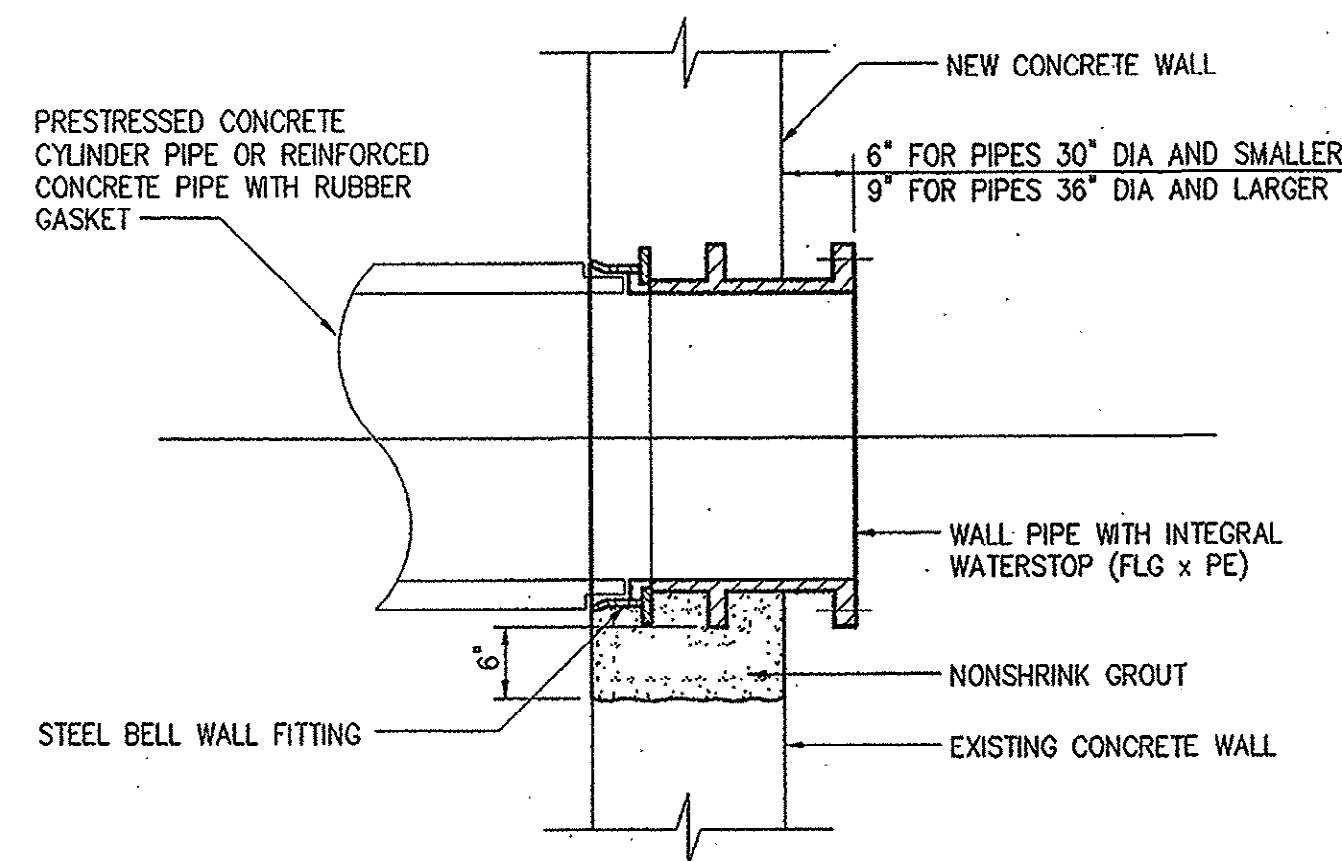
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GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

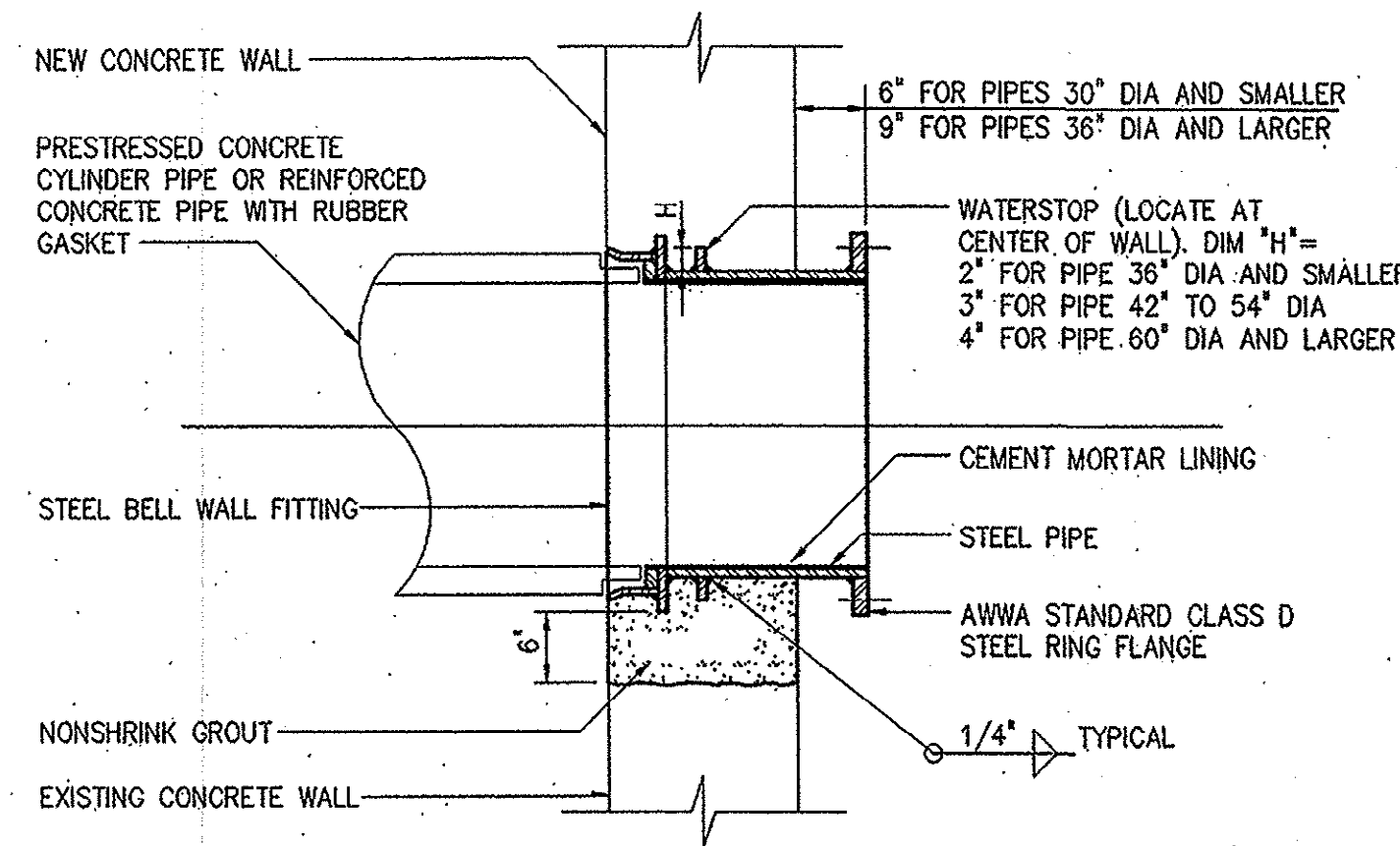
MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	D8
	H & S FLAT FILE NO.	56

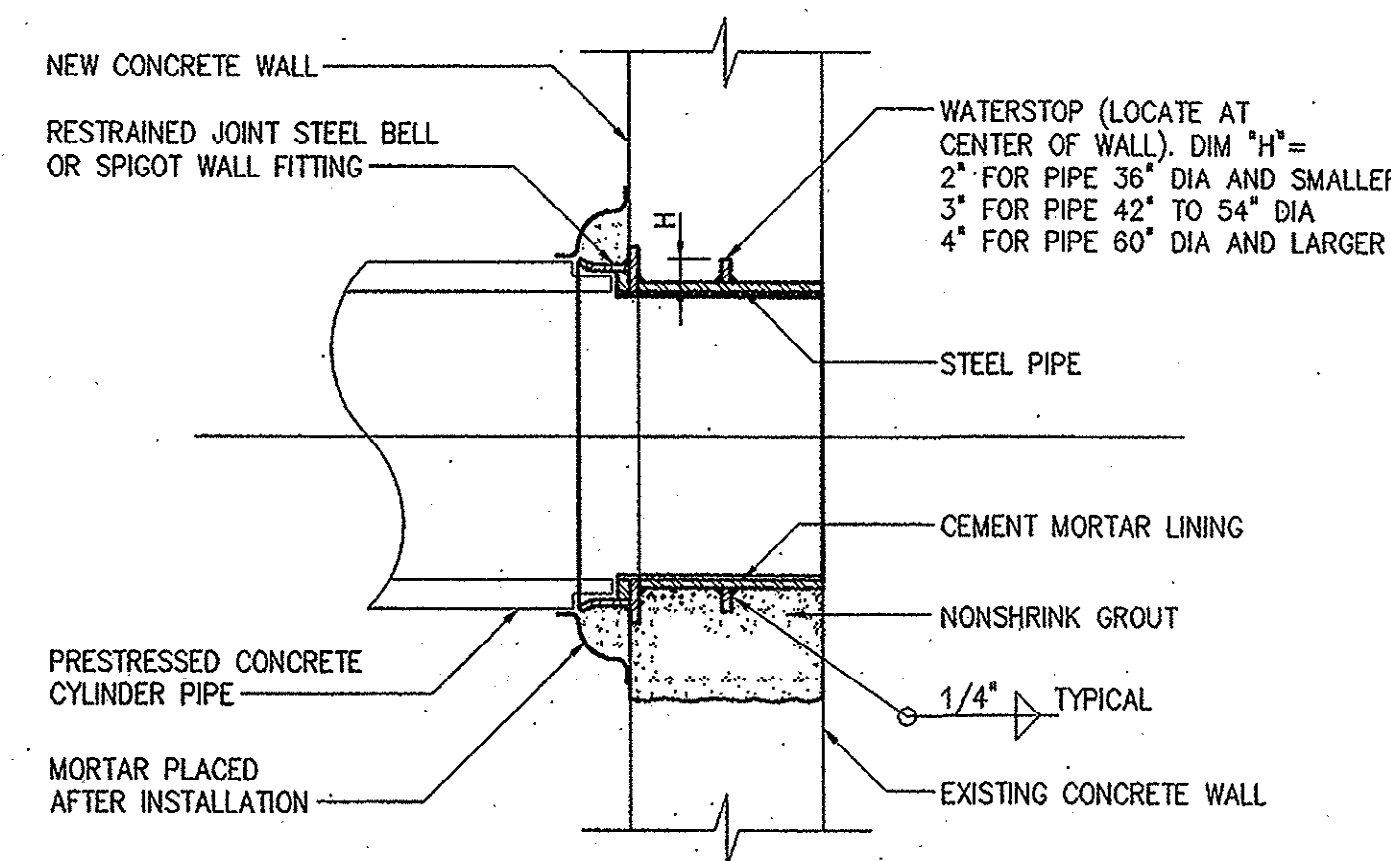
35-004-051



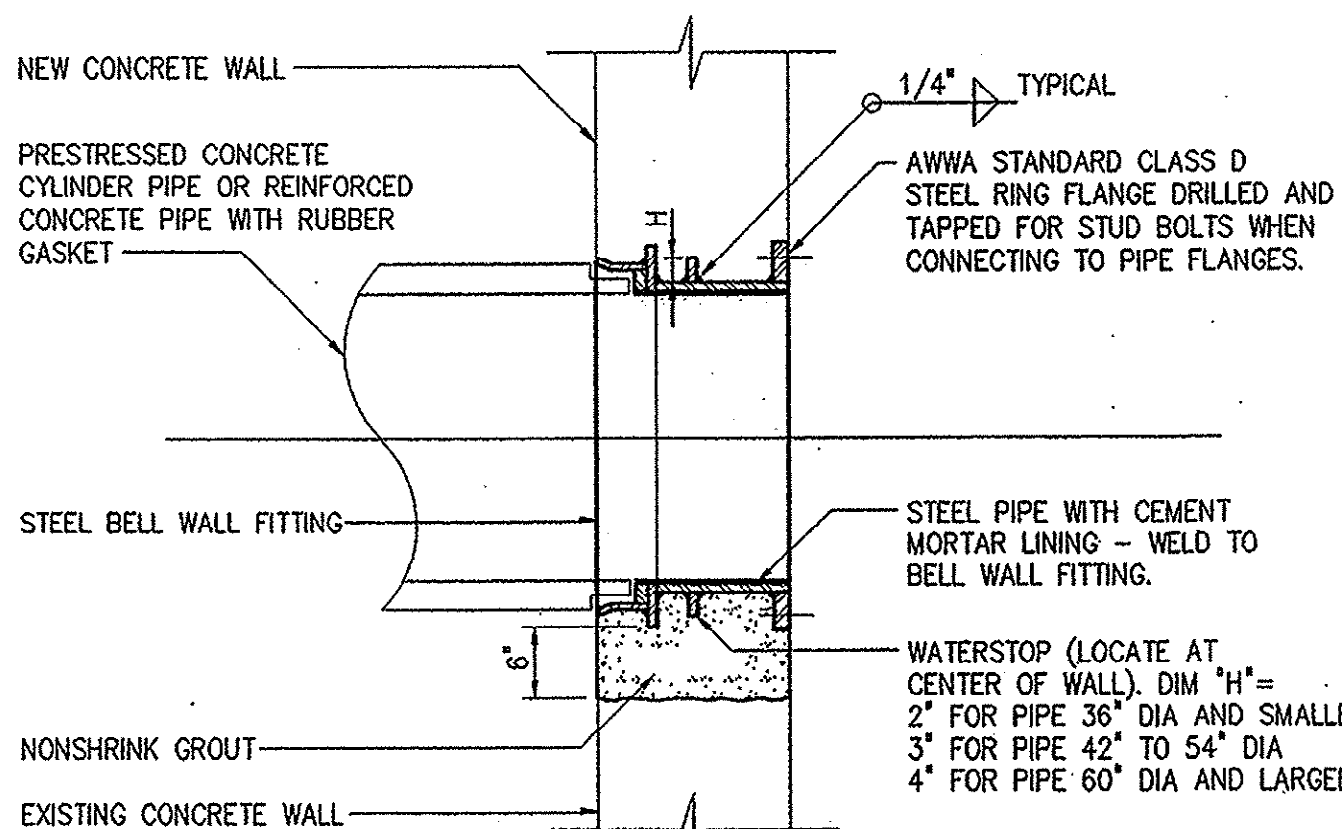
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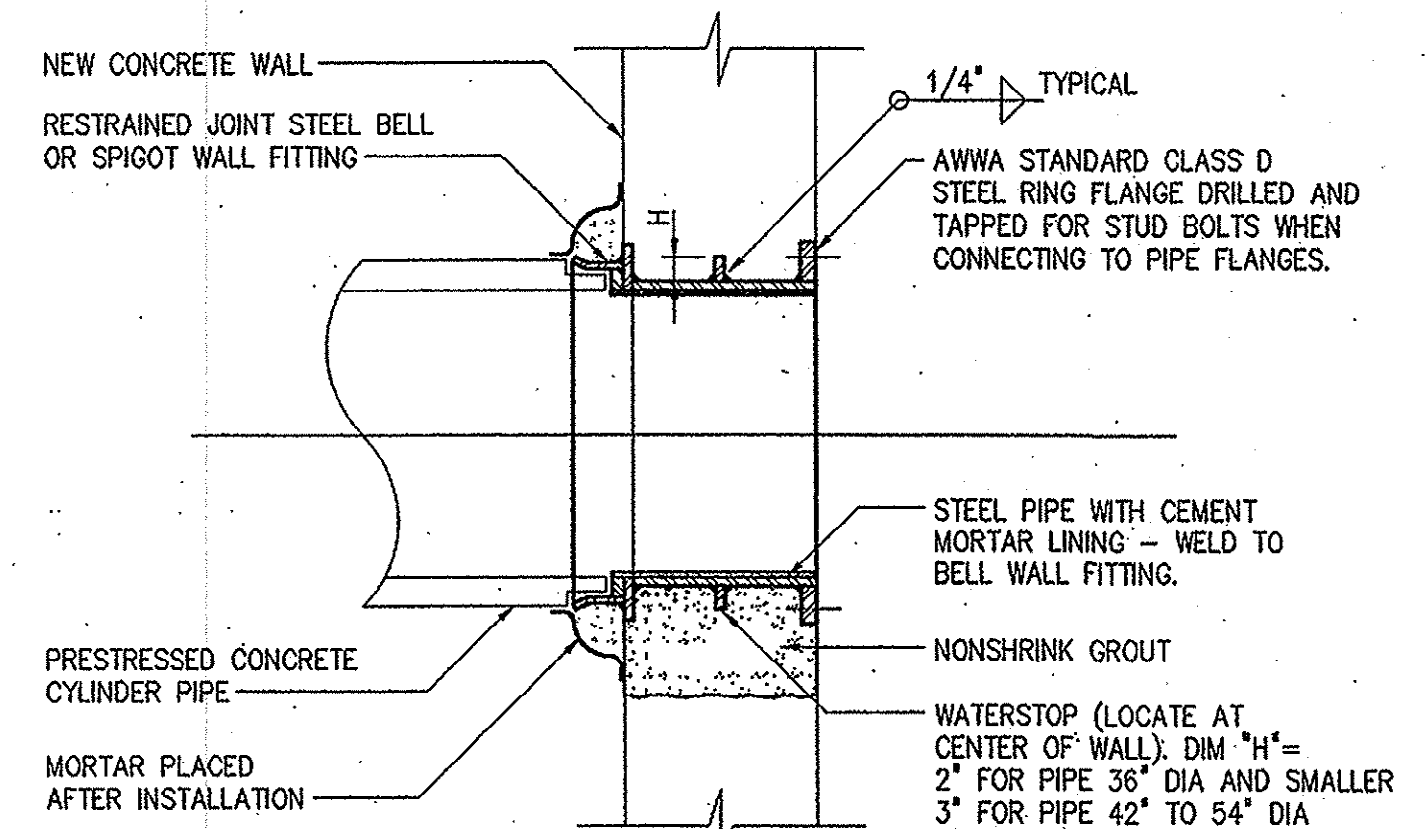
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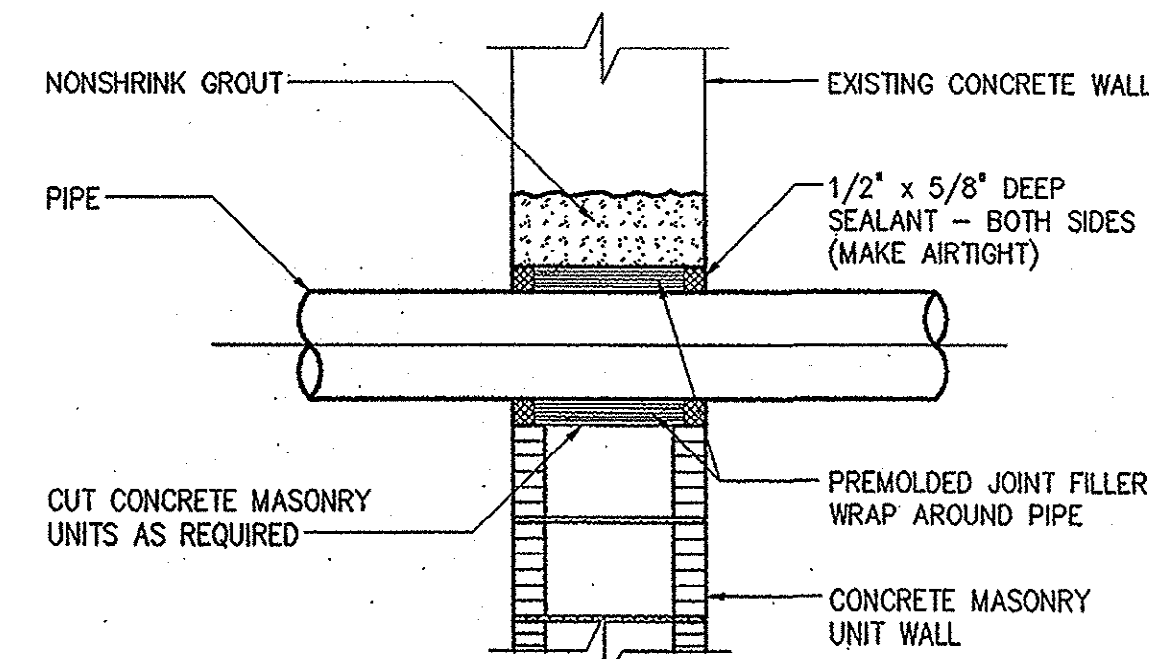
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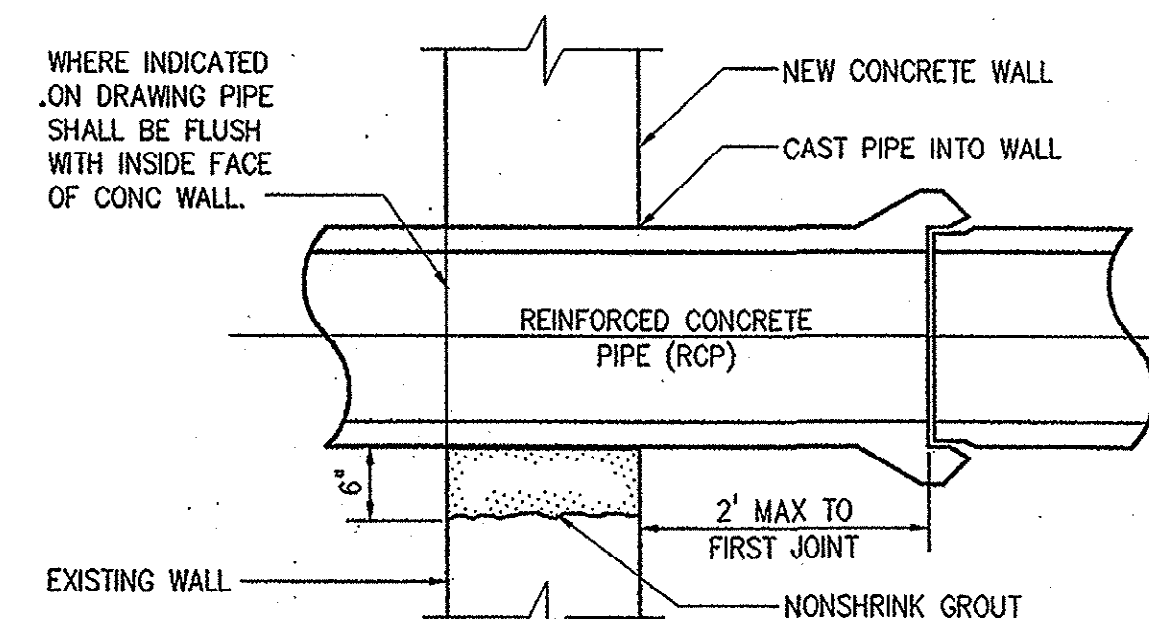
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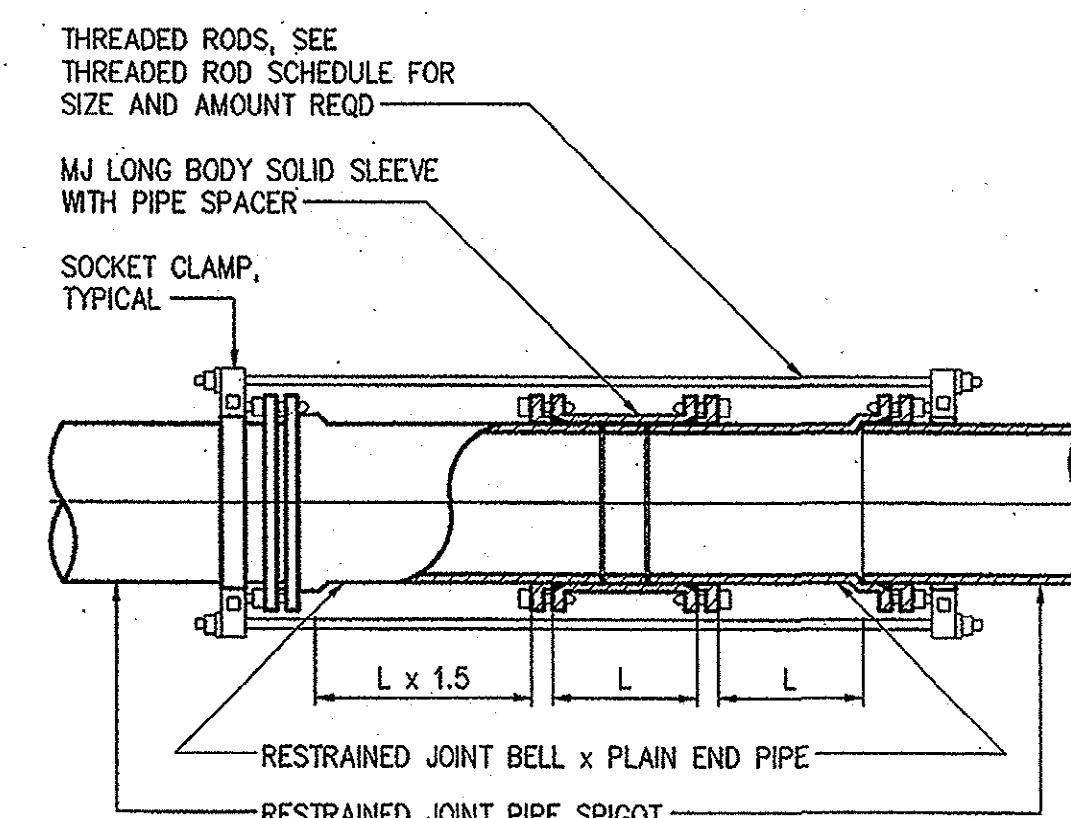
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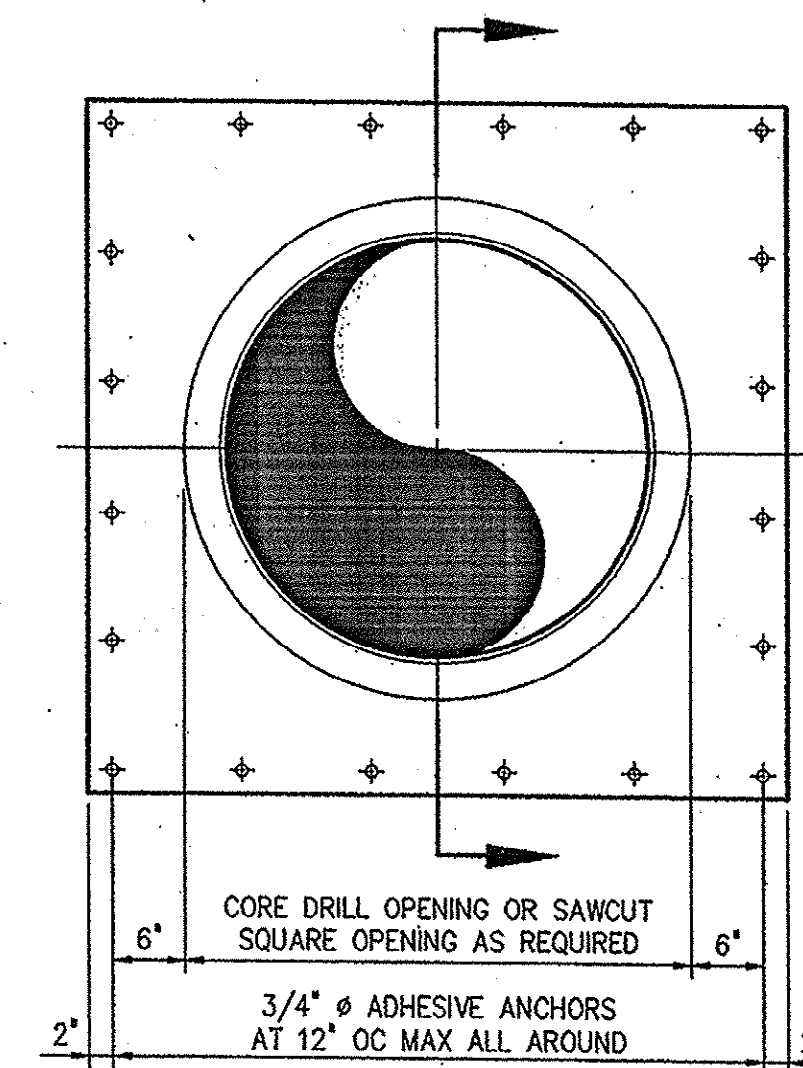
CAULKED WALL PENETRATION
1509217



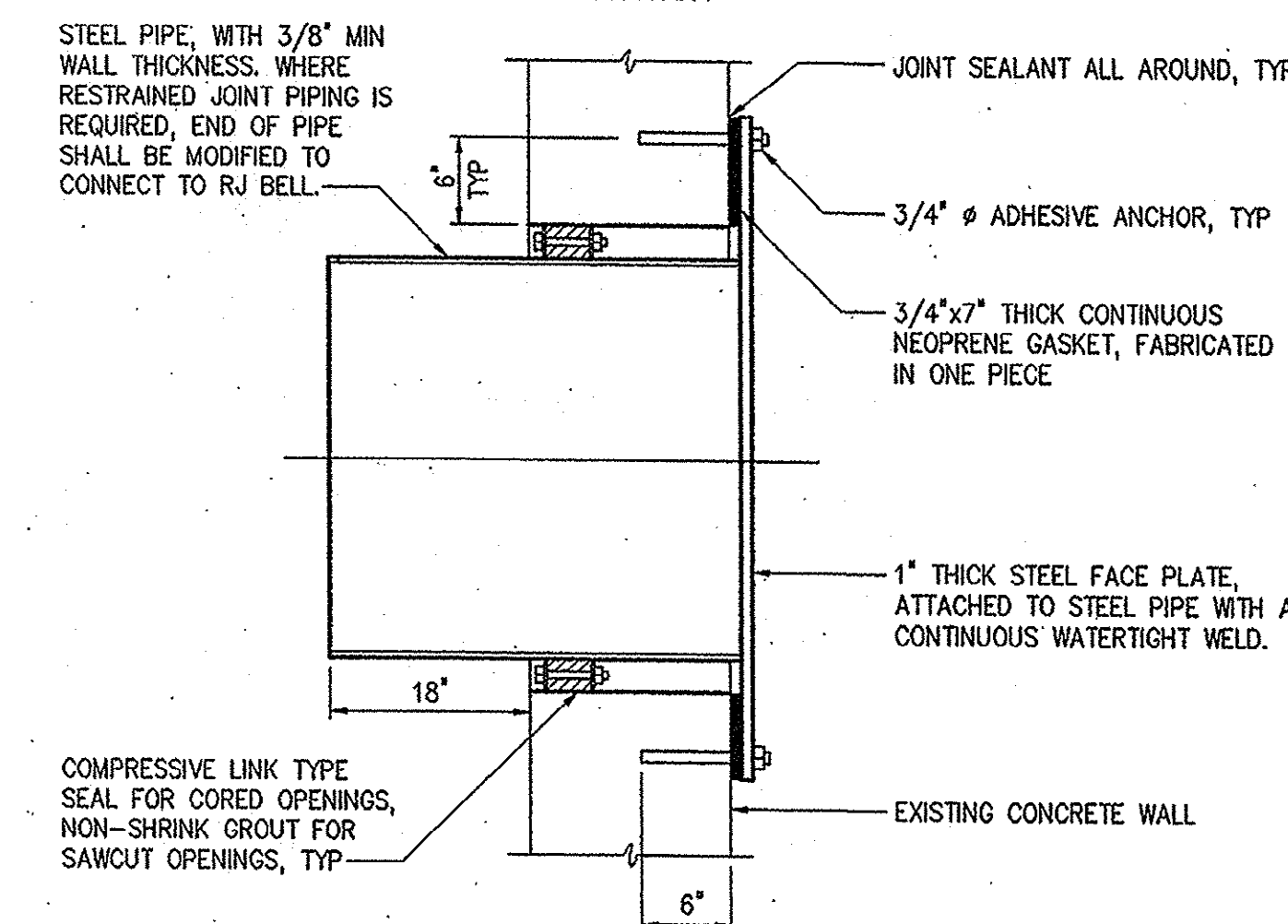
REINFORCED CONCRETE PIPE
WALL PENETRATION
1509218



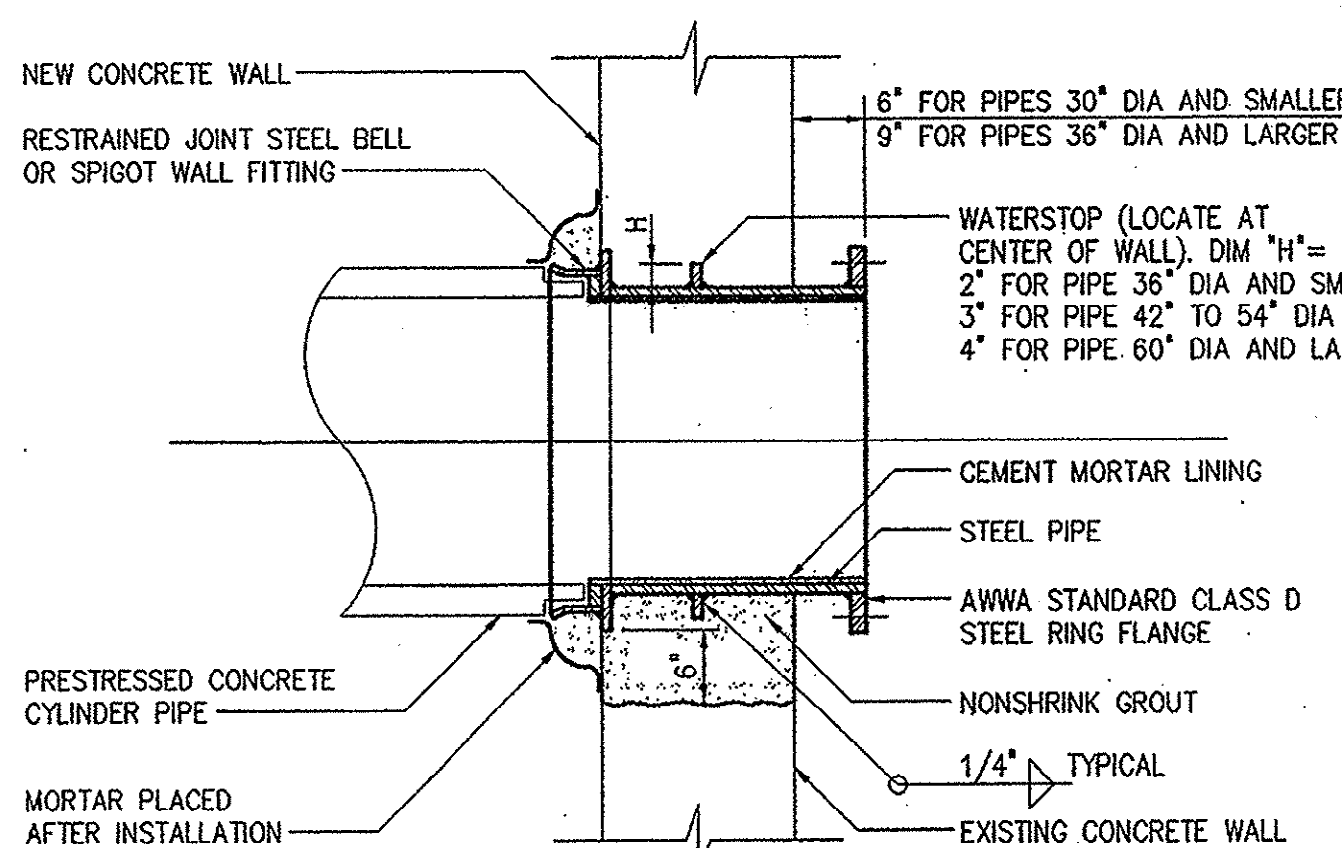
RESTRAINED MJ SOLID SLEEVE
1509221



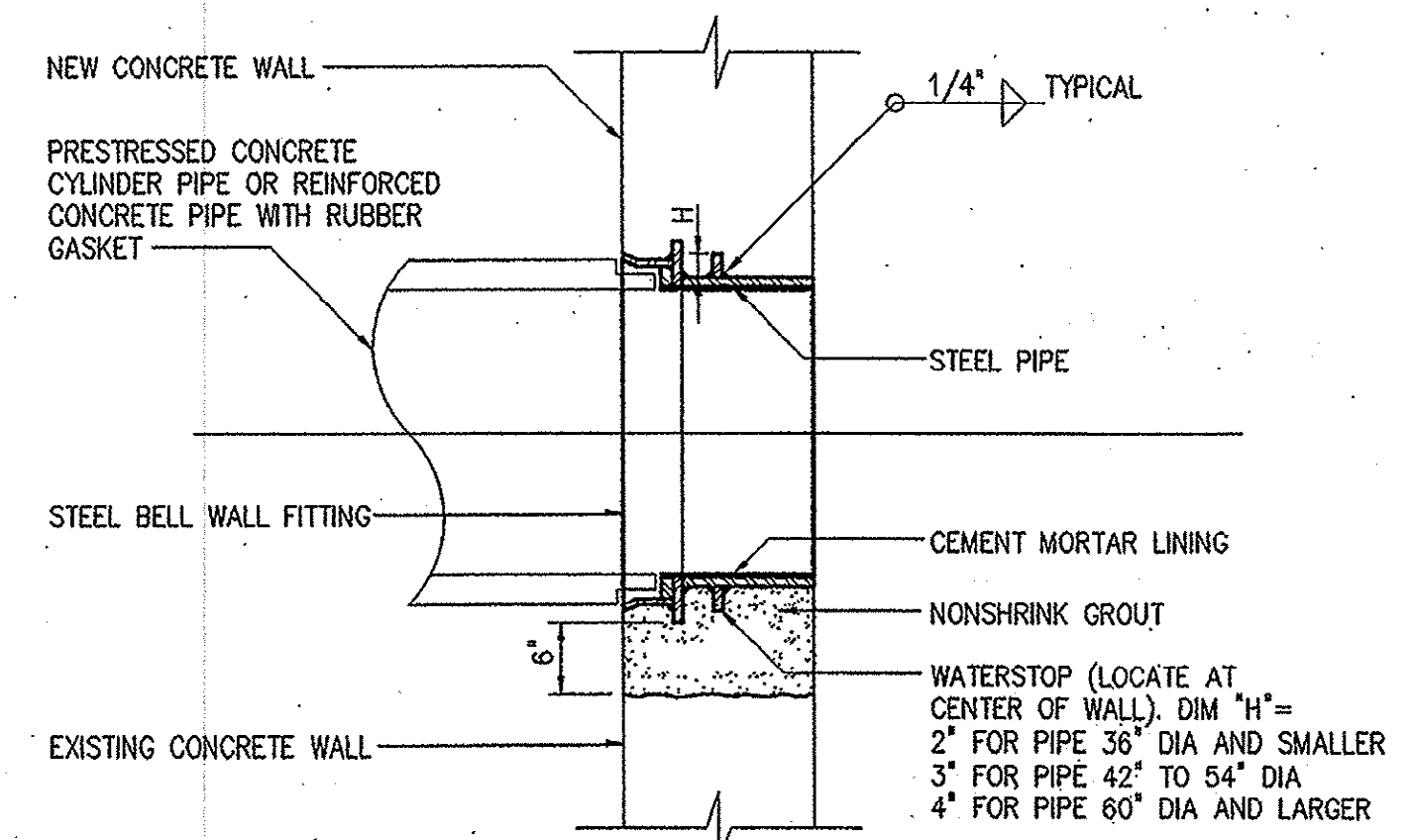
ELEVATION



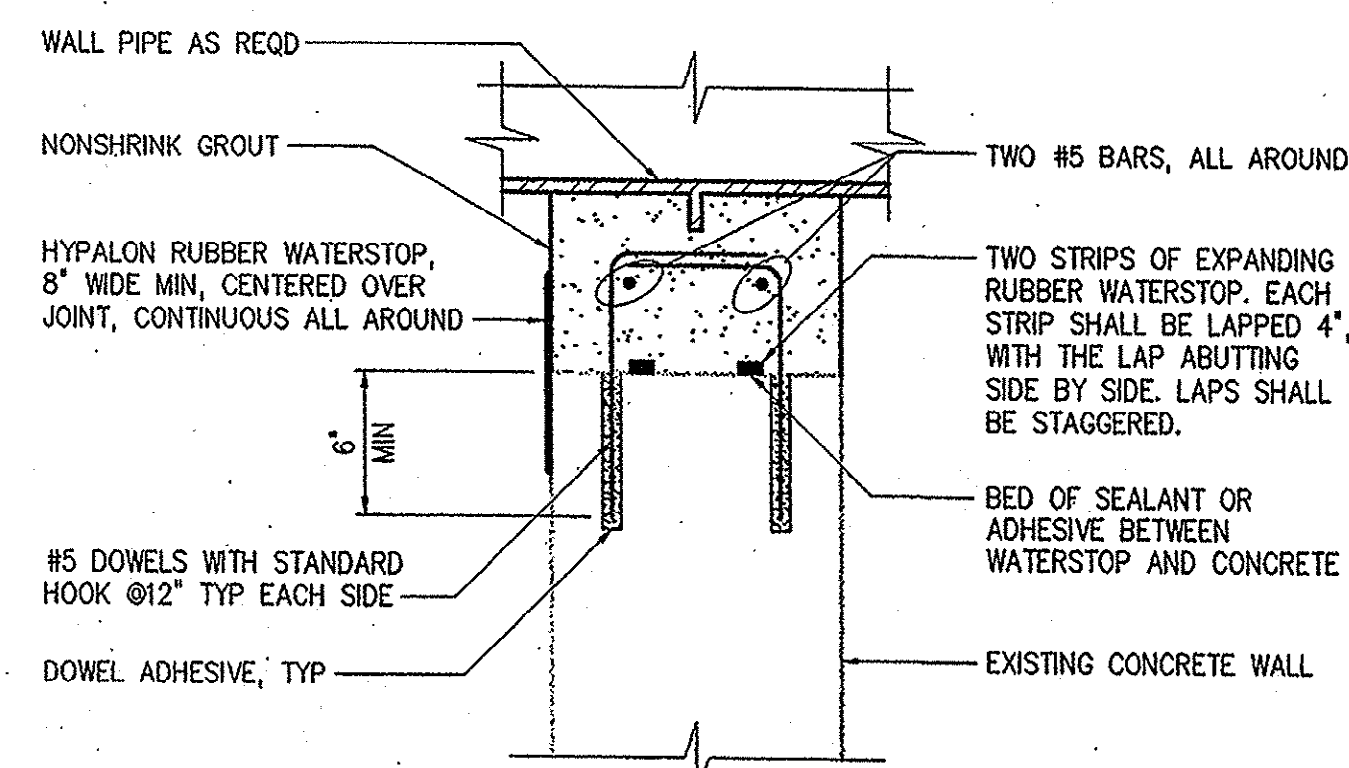
SECTION
1509230



1509215



1509228

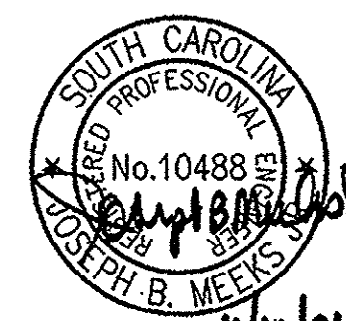
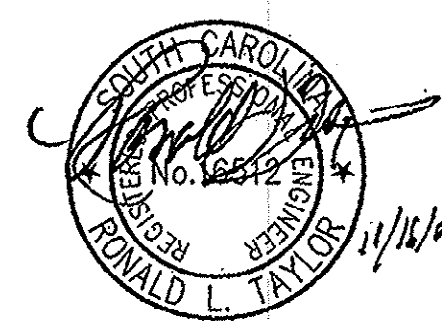


COMBINATION WATERSTOP
1509222

NOTES:

- 1 ALL WALL PIPES SHALL BE CAST UNLESS OTHERWISE NOTED.
- 2 PROVIDE PIPE JOINT WITHIN TWO (2) FEET OF EXTERIOR FACE OF WALL AT CONNECTION TO ALL NEW AND EXISTING STRUCTURES OR MANHOLES.
- 3 COMBINATION WATERSTOP SHALL BE REQUIRED AT ALL NEW PIPE PENETRATIONS THROUGH EXISTING CONCRETE WALLS UNLESS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS. SEE COMBINATION WATERSTOP DETAIL 1509222.
- 4 ALL NEW OPENINGS IN EXISTING CONCRETE WALLS SHALL BE ACCOMPLISHED WITH A CLEAN SAW-CUT. SURFACES SHALL BE ROUGHENED BY APPROVED METHODS.

DESIGNED	H & S
DRAWN	H & S
CHECKED	JBM
PROJ. ENGR.	JBM
ISSUED FOR	CONSTRUCTION
DATE	8-31-01
BY	JBM
APPROVED	JBM



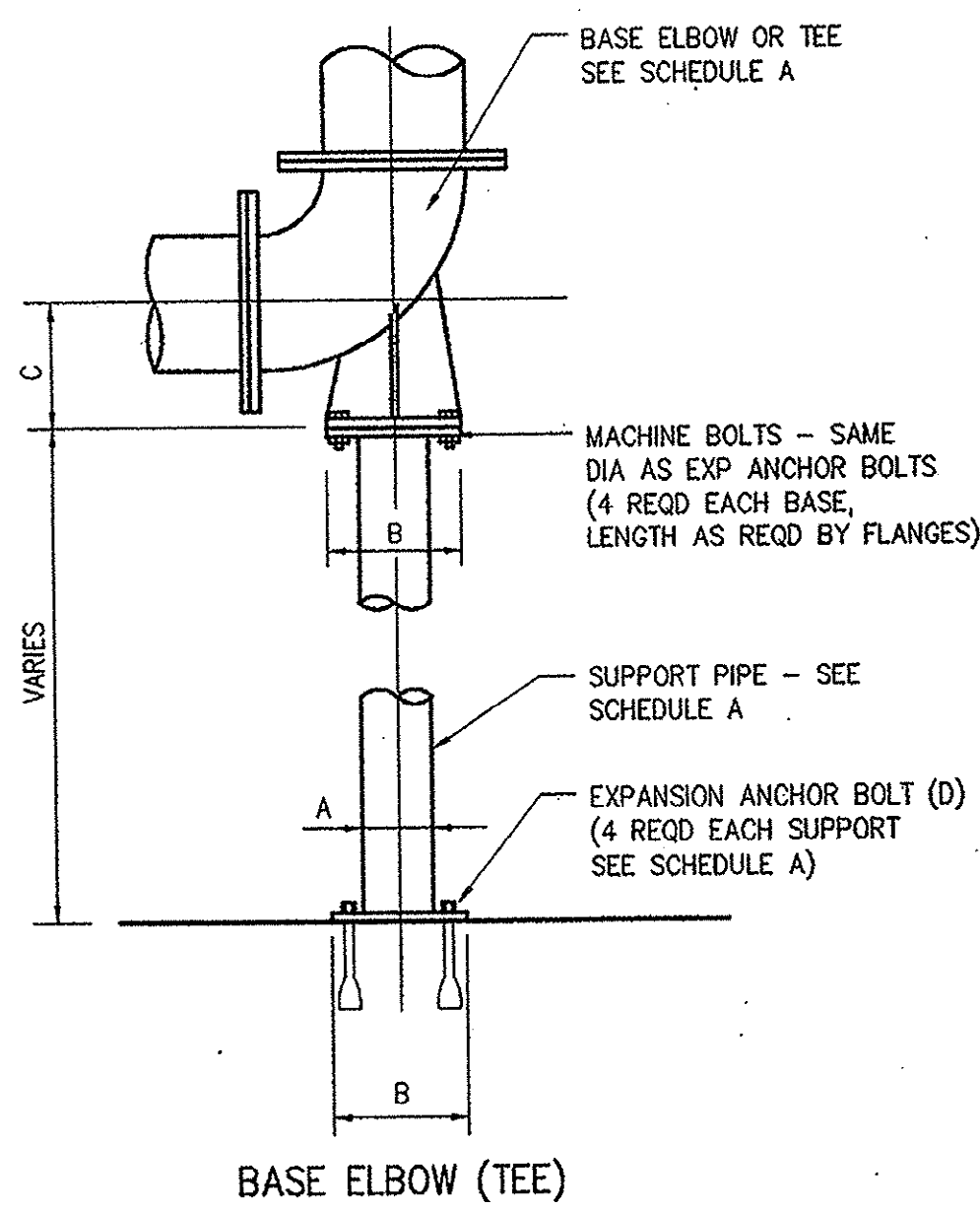
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GRAND STRAND WATER AND SEWER AUTHORITY
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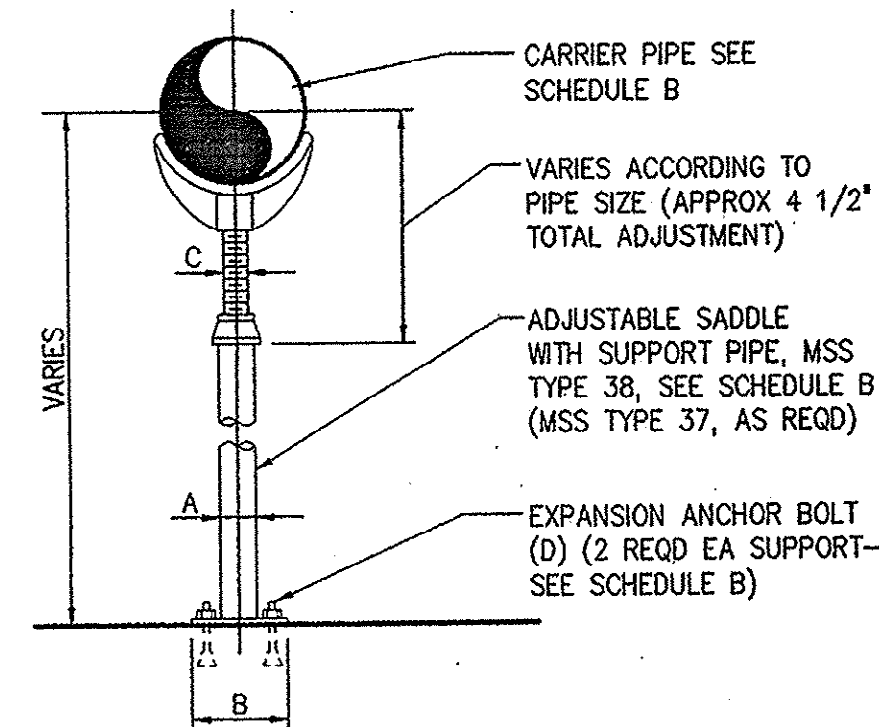
MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	D9
	H & S PLAT FILE NO.	56

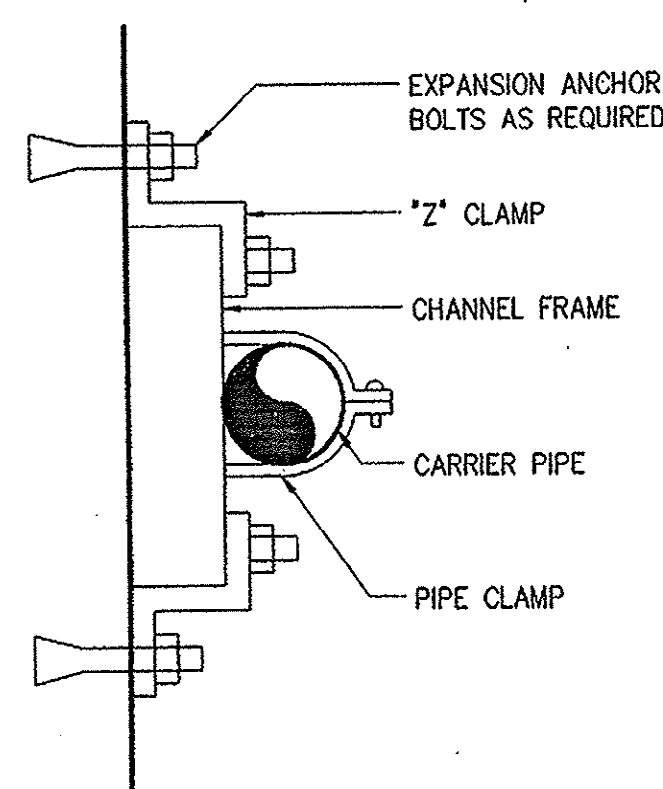
33-004-032



BASE ELBOW (TEE)
1509400



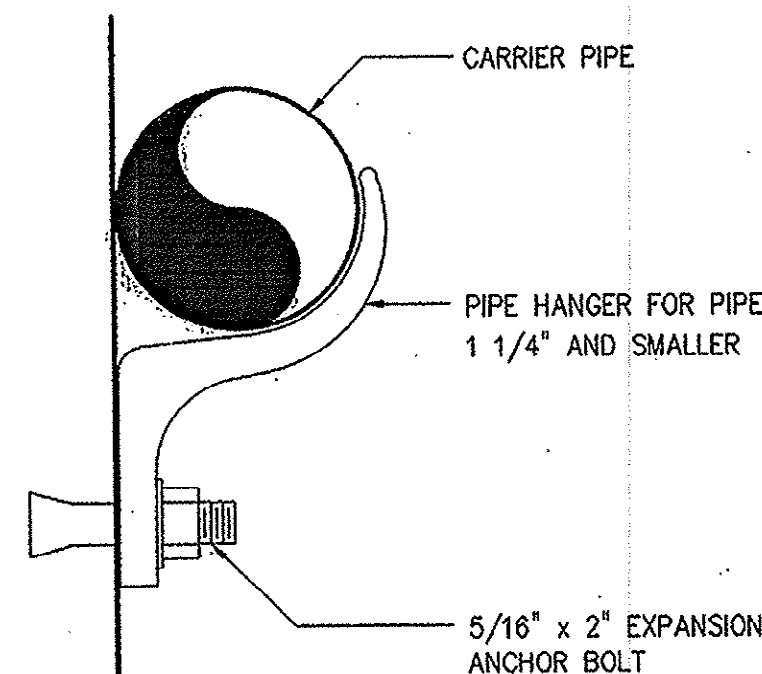
ADJUSTABLE SADDLE
1509405



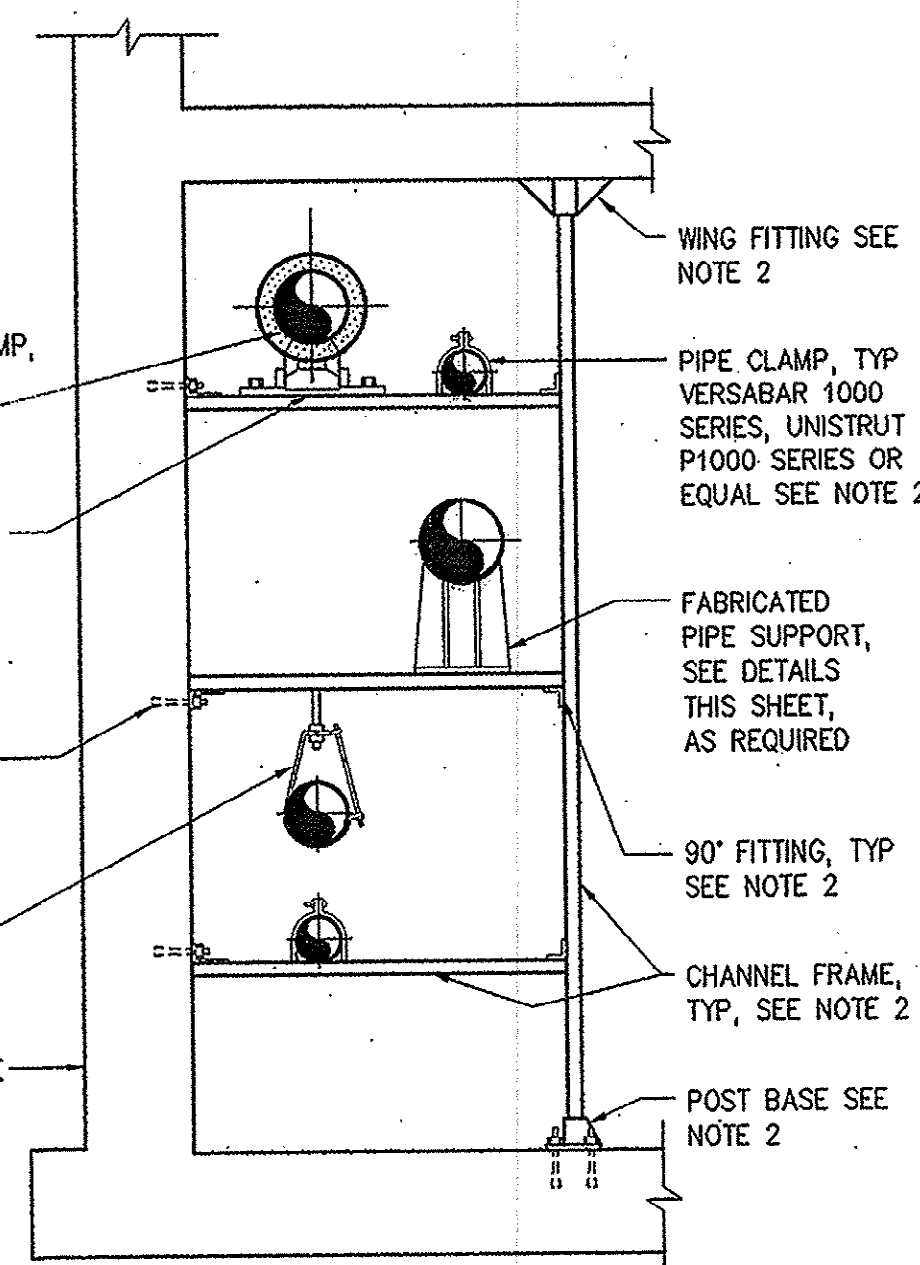
PIPE WALL SUPPORT
1509402

SCHEDULE A				
BASE ELBOW (TEE) (DIM IN INCHES)				
PIPE SIZE	A	B	C	D DIA x LG
3	1 1/2	5	4 7/8	1/2 x 5
4	2	6	5 1/2	5/8 x 5
5-6	2 1/2	7	VARIES	5/8 x 5
8-10	4	9	VARIES	5/8 x 5
12-16	6	11	VARIES	3/4 x 6
18-24	8	13 1/2	VARIES	3/4 x 6
30	10	16	23	7/8 x 7
36	12	19	26	7/8 x 7

SCHEDULE B				
ADJUSTABLE SADDLE (DIM IN INCHES)				
PIPE SIZE	A	B	C	D DIA x LG
3	2 1/2	7	1 1/2	5/8 x 5
4-12	3	7 1/2	2 1/2	5/8 x 5
14-16	4	9	3	5/8 x 5
18-20	6	11	3 1/2	3/4 x 6
24-36	6	11	4	3/4 x 6

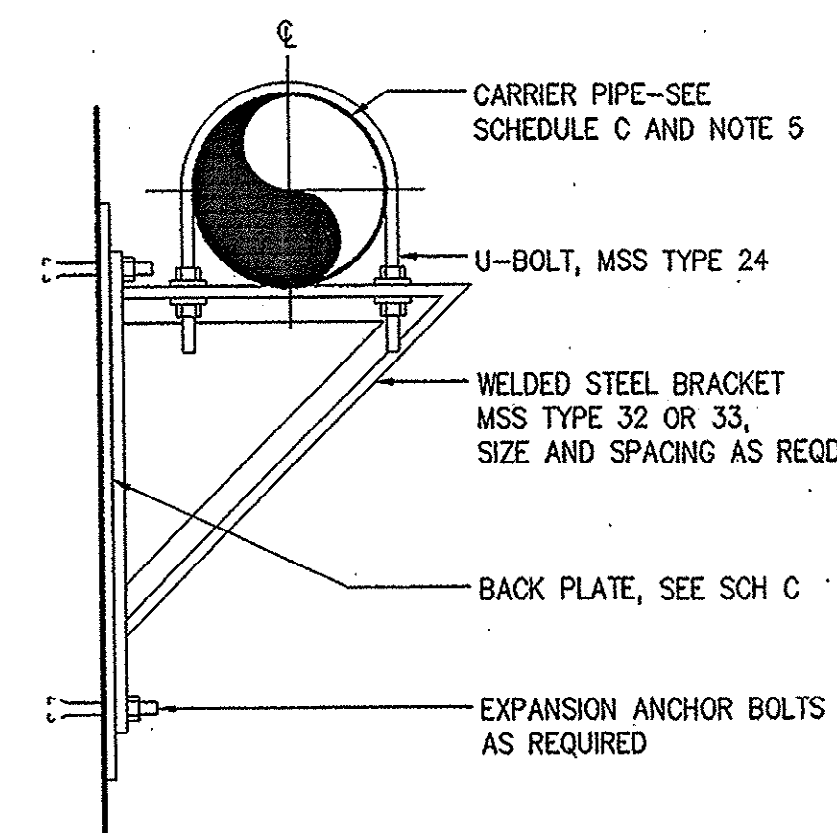


WALL HANGER PIPE SUPPORT
1509403

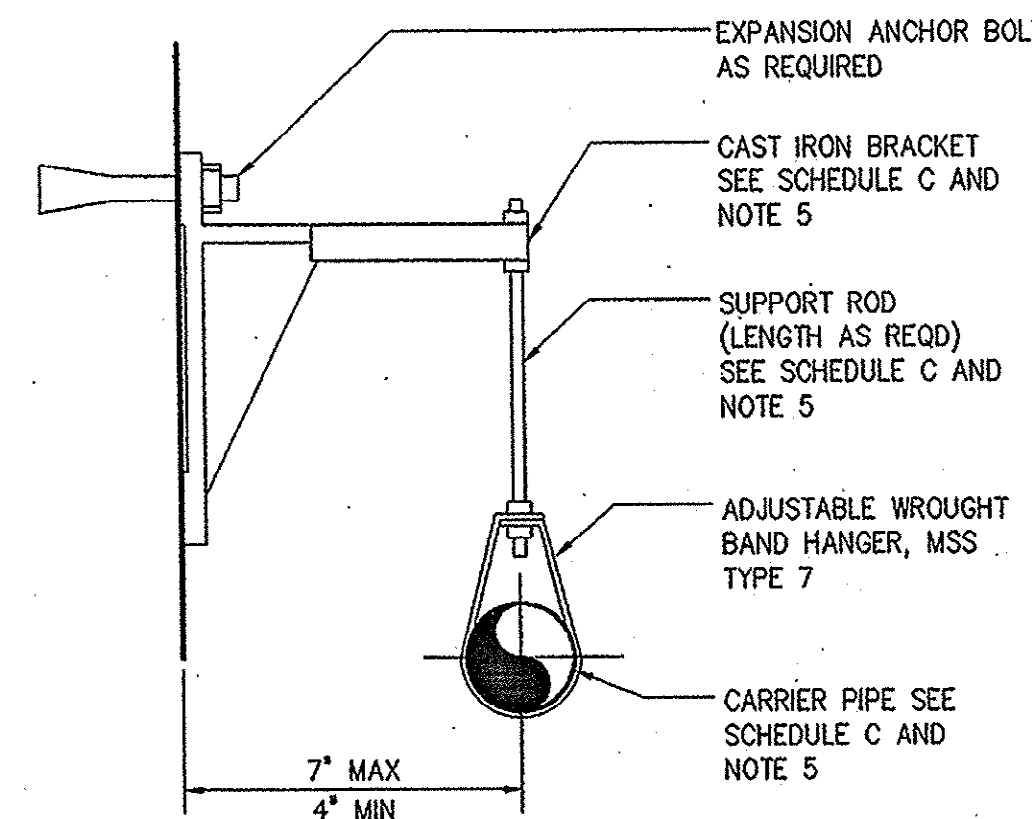


PIPE SUPPORT RACK
1509408

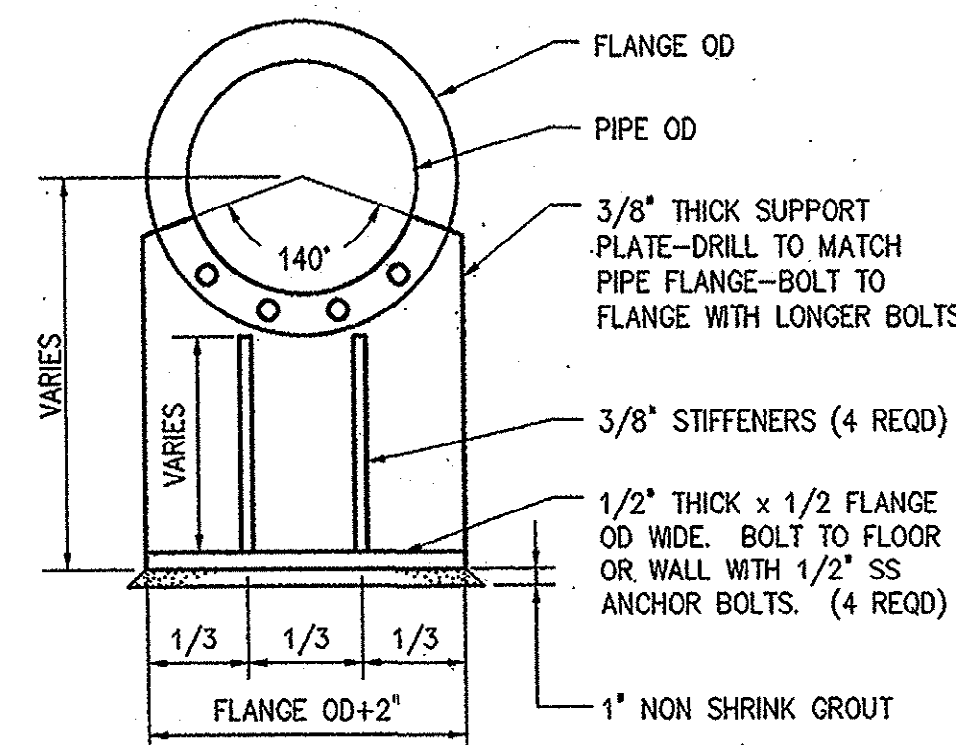
SCHEDULE C							
SUPPORT RODS AND BRACKET SPACING (FOR STANDARD WEIGHT PIPE)							
PIPE SIZE (INCHES)	BACK PLATE (INCHES)	MINIMUM ROD # (INCHES)		MAX SPAN IN FEET (SEE NOTE 8)			
		PROCESS PIPING	STEEL AIR PIPING	COPPER	PLASTIC	STEEL	DIP (SEE NOTE 7)
UP TO 1	SEE NOTE 4	3/8	3/8	5	5	6	-
1 1/4-2	"	3/8	3/8	8	5	10	-
2 1/2-3 1/2	"	3/8	3/8	8	5	12	6
4-5	"	1/2	3/8	-	5	14	8
6	"	5/8	3/8	-	5	15	9
8-12	"	3/4	1/2	-	5	15	9
14-16	"	7/8	1/2	-	5	15	9
18	"	1	1/2	-	5	18	10
20-24	"	1 1/4	5/8	-	5	18	10



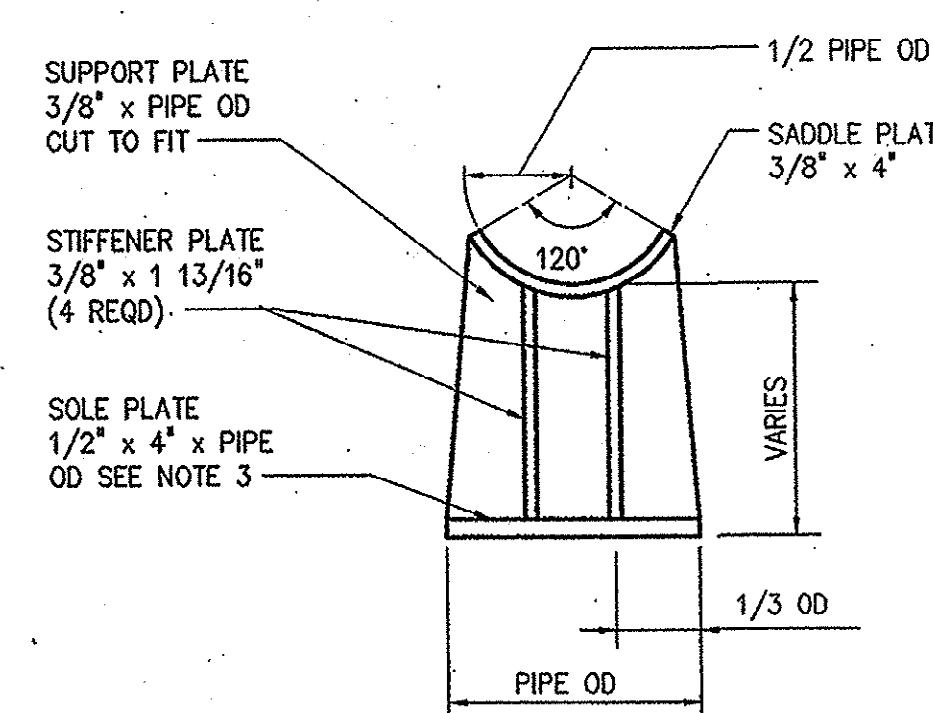
PIPE SUPPORT BRACKET
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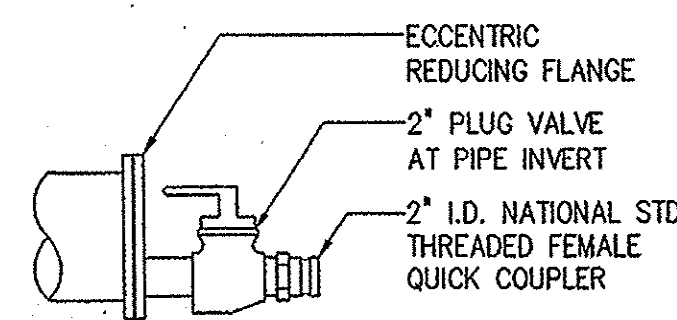
PIPE SUPPORT BRACKET
1509406



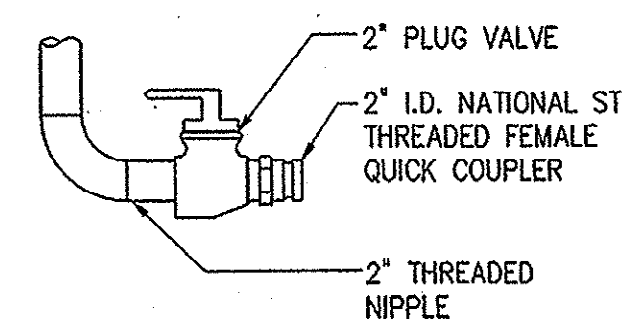
FABRICATED PIPE SUPPORT (AT FLANGE)
1509409



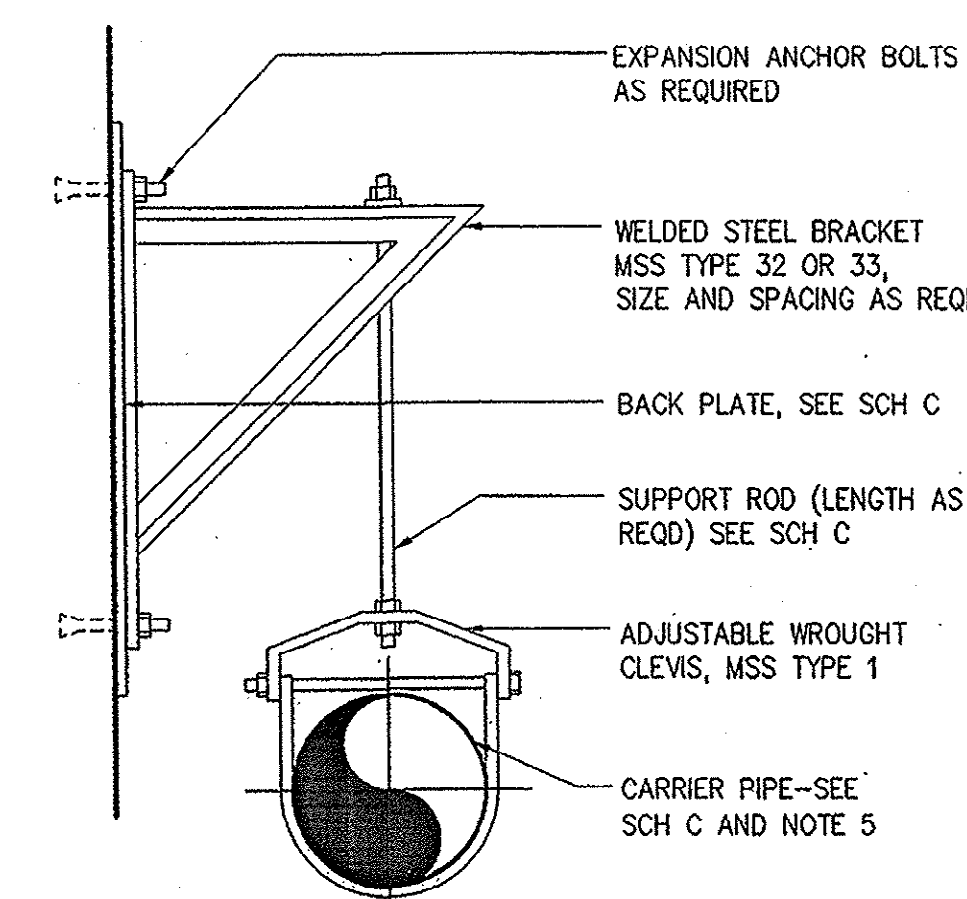
FABRICATED PIPE SUPPORT (AT PIPE)
1509410



TYPE I
FLUSHING CONNECTIONS
1511501

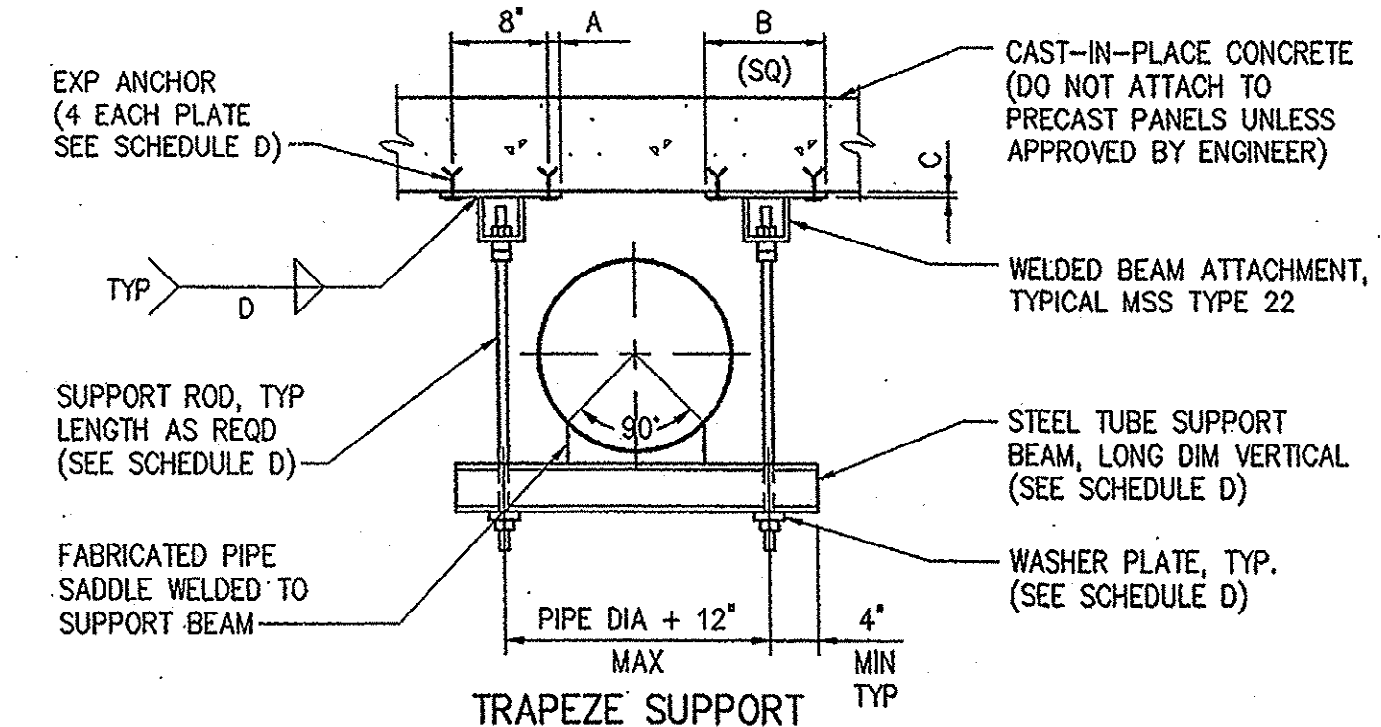


TYPE II

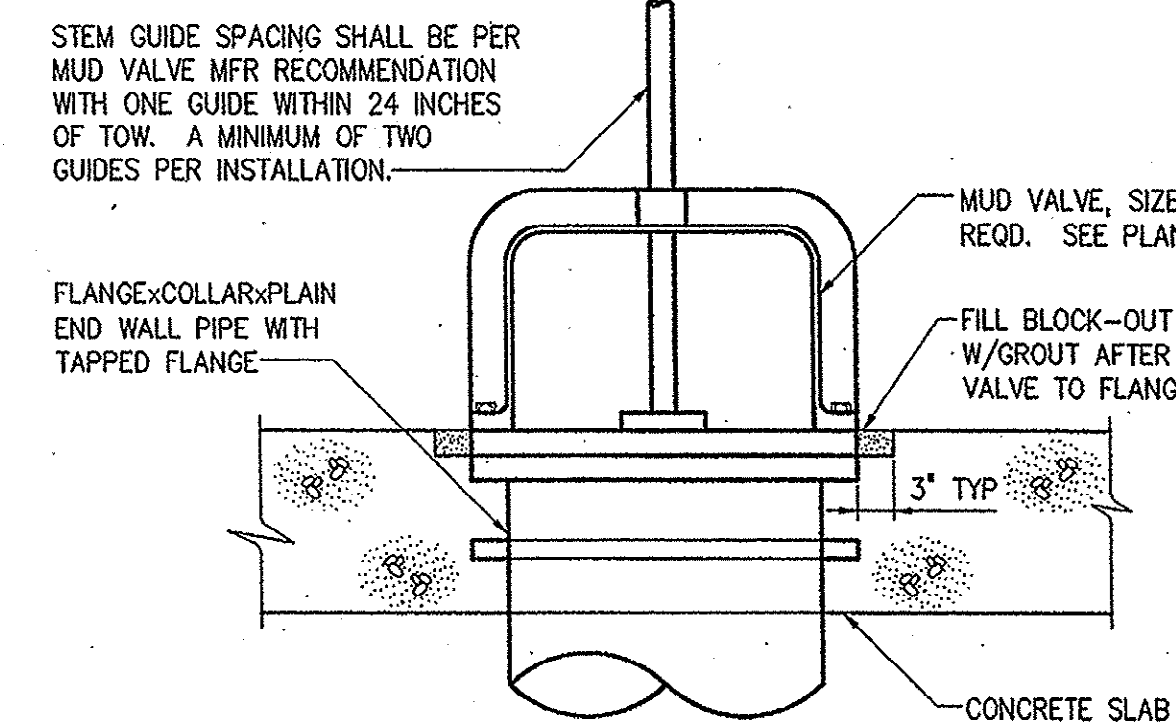


PIPE SUPPORT BRACKET
1509407

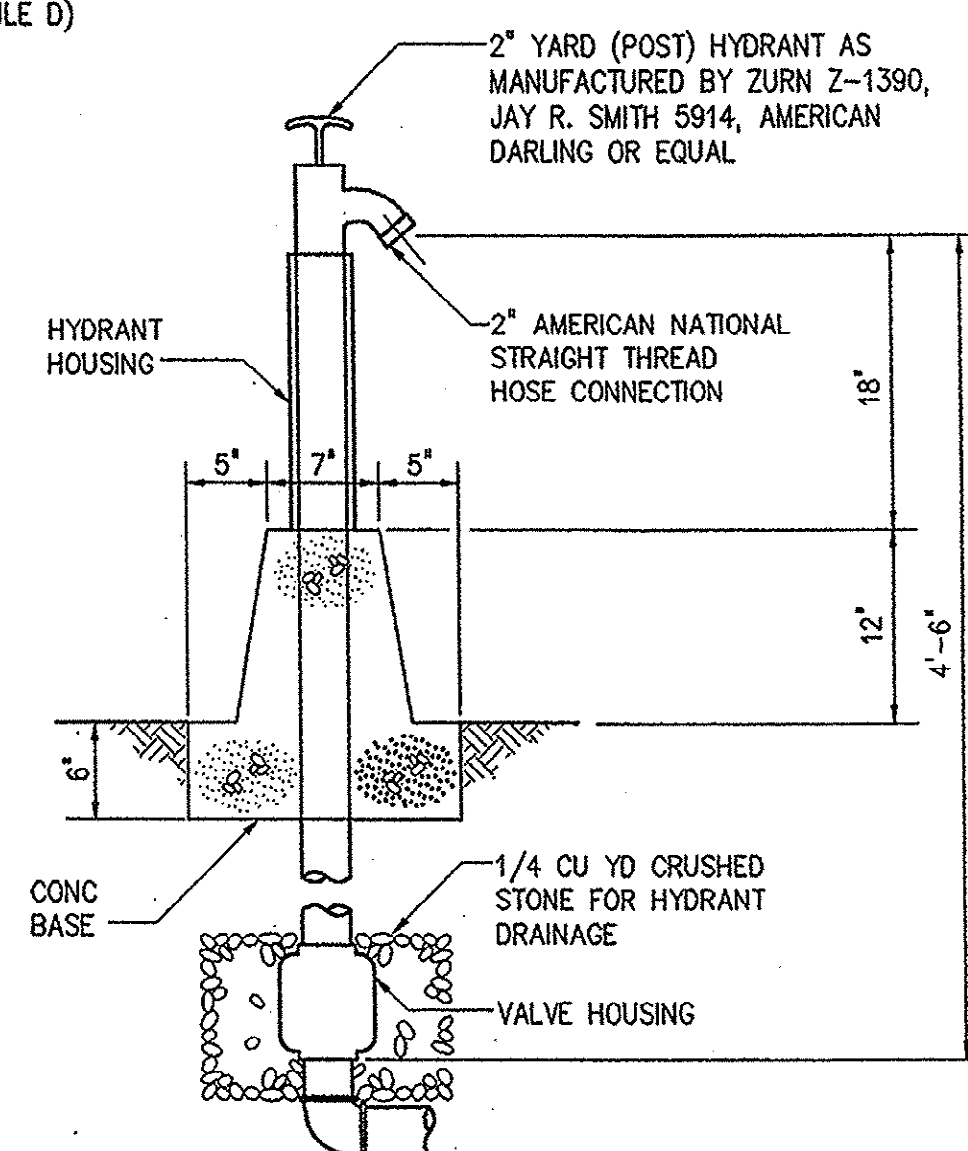
SCHEDULE D									
TRAPEZE SUPPORT (DIM. IN INCHES)									
PIPE SIZE	STEEL TUBE SUPPORT BEAM VERT. x HOR.	MINIMUM ROD # (INCHES) PROCESS PIPING	MINIMUM ROD # (INCHES) STEEL AIR PIPING	WASHER PLATE	BASE PLATE				MAX. SUPPORT SPACING IN FEET (SEE NOTE 8)
					A	B	C	D	
12-14	4x4x3/8	1/2	1/2	4x4x1/4	1	10	3/8	3/16	1 1/2 x 4
16-24	4x4x3/8	3/4	5/8	4x4x3/8	1	10	1/2	3/16	5/8 x 5
30-36	6x4x3/8	1	3/4	4x4x1/2	2	12	1/2	1/4	3/4 x 6
42	6x4x3/8	1 1/4	3/4	5x5x1/2	2	12	3/4	1/4	7/8 x 6
48	8x4x3/8	1 1/2	1	5x5x3/4	2	12	1	1/4	1 x 7



TRAPEZOID SUPPORT
1509413



MUD VALVE INSTALLATION
1510401

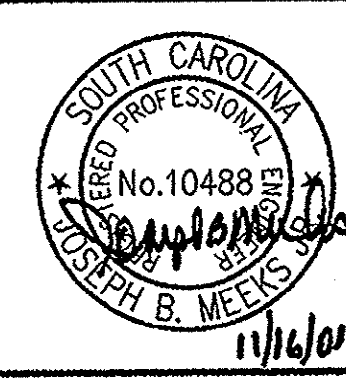
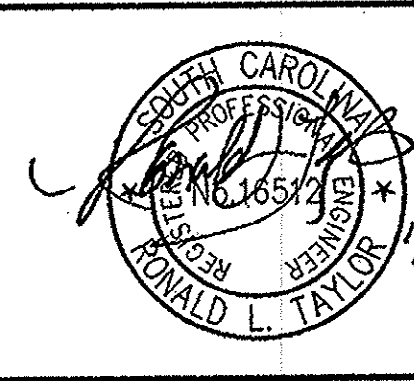


YARD HYDRANT
1511502

NOTES:

- MSS REFERS TO THE MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, STANDARD PRACTICE SP-58 AND SP-69.
- PIPE WALL SUPPORT AND PIPE SUPPORT RACK SHALL BE ASSEMBLED WITH CHANNEL FRAMES AND ACCESSORIES AS MANUFACTURED BY UNISTRUT CORP, OR VERSABAR CORP, OR EQUAL.
- FABRICATED PIPE SUPPORT MAY BE USED AS SHOWN IN PIPE SUPPORT RACK DETAIL, OR TO SUPPORT PIPE FROM THE FLOOR.
- BACK PLATES SHALL BE DESIGNED BY THE CONTRACTOR ACCORDING TO WALL TYPES AND THE WEIGHTS INVOLVED. BACK PLATE TO BE SUPPLIED BY BRACKET MANUFACTURER.
- PIPE HANGERS, SUPPORTS AND BRACKETS ARE SHOWN HERE IN VARIOUS COMBINATIONS AS GENERAL DETAILS. THE CONTRACTOR SHALL DESIGN THE SUPPORT SYSTEM BASED ON ACTUAL WEIGHTS AND CONDITIONS AS SPECIFIED OR AS SHOWN ON THE CONTRACT DRAWINGS.
- ALL INSULATED PIPES SHALL USE A SHIELD (MSS TYPE 40) WITH THE APPLICABLE PIPE SUPPORT.
- MINIMUM OF ONE HANGER PER PIPE SECTION, CLOSE TO JOINT, ON THE BARREL ALSO AT CHANGE IN DIRECTION AND BRANCH CONNECTIONS.
- RODS AND SPACING ARE BASED ON STANDARD WEIGHT MATERIALS ACCORDING TO MSS SP-69. AND ARE FOR REFERENCE ONLY. THE CONTR SHALL SPACE HIS HANGERS BASED ON ACTUAL CONDITIONS.

DESIGNED	H & S
DRAWN	H & S
CHECKED	JBM
PROJ. ENGR.	JBM
CONSTRUCTION	8-31-01
REGULATORY APPROVAL	8-31-01
ISSUED FOR	DATE BY APPROVED



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MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	D10
	H & S FLAT FILE NO.	56

33-004-053



Diagram illustrating the standard safety shower and eye wash unit. Key components and dimensions are labeled:

- 2'-0"**: Width of the shower head assembly.
- 10"**: Height of the shower head assembly.
- 7'-0"**: Total height of the unit.
- 3'-6"**: Height from the floor to the eye wash basin.
- 10"**: Width of the eye wash basin.
- DRENCH SHOWER HEAD SHOWN ROTATED 90° OUT OF POSITION**: Label for the shower head.
- EYE WASH BASIN**: Label for the eye wash basin.
- HANDLE SHOWN IN STAY-OPEN POSITION**: Label for the eye wash basin handle.
- SUPPLY 1 1/4" IPS**: Label for the water supply line.
- FLOOR DRAIN, IF REQD**: Label for the floor drain.
- 1/4" VALVE DRAIN**: Label for the valve drain.
- PIPE TO NEAREST DRAIN LINE OR SUMP**: Label for the drain pipe.

EMERGENCY SHOWER AND EYEWASH

1545100

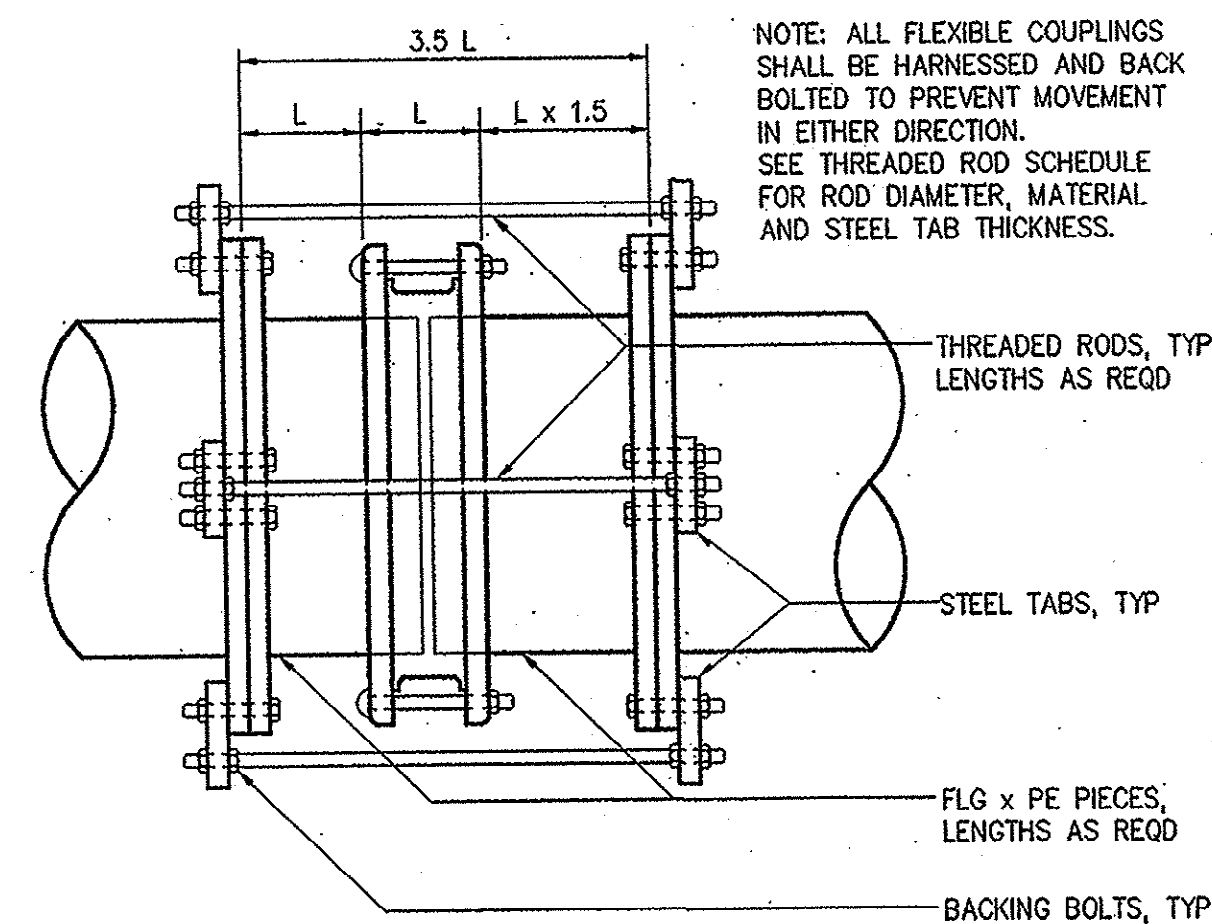
THREADED ROD SCHEDULE

DESIGN PRESSURE (DIMENSIONS IN INCHES)														
PIPE SIZE	50 PSI		100 PSI		150 PSI		200 PSI		250 PSI		300 PSI		350 PSI	
	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK
4/6	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1
8	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4
10	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4
12	2-3/4	1 1/4	2-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	4-3/4	1 1/4	6-3/4	1 1/4	6-3/4	1 1/4
14	2-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2
16	2-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2
18	2-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4
20	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4
24	4-3/4	2	4-3/4	2	6-3/4	2	6-3/4	2	6-3/4	2	10-3/4	2	10-3/4	2
36	4-1	2 1/4	4-1	2 1/4	4-1	2 1/4	6-1	2 1/4	6-1	2 1/4	10-1	2 1/4	10-1	2 1/4
48	4-1	2 1/2	4-1	2 1/2	6-1	2 1/2	6-1	2 1/2	6-1	2 1/2	12-1	2 1/2	14-1	2 1/2
42	4-1 1/4	2 3/4	4-1 1/4	2 3/4	6-1 1/4	2 3/4	6-1 1/4	2 3/4	10-1 1/4	2 3/4	12-1 1/4	2 3/4	14-1 1/4	2 3/4
48	6-1 1/4	2 3/4	4-1 1/4	2 3/4	6-1 1/4	2 3/4	6-1 1/4	2 3/4	12-1 1/4	2 3/4	12-1 1/4	2 3/4	14-1 1/4	2 3/4
54	8-1 1/4	3	6-1 1/4	3	8-1 1/4	3	12-1 1/4	3	14-1 1/4	3	16-1 1/4	3	18-1 1/4	3

1. THREADED RODS FOR ALL PIPE DIAMETERS IN THE SHADED AREA SHALL BE ASTM A193 (GRADE B7).
2. ALL OTHER THREADED RODS SHALL BE ASTM A36. ALL TABS SHALL BE ASTM A572 GR50.
3. ASTM A193 (GRADE B7) RODS SHALL BE LABELED AND BUNDLED SEPARATELY.
4. THIS SCHEDULE SHALL APPLY FOR HARNESSSED FLANGED ADAPTERS, HARNESSSED FLEXIBLE COUPLINGS AND ALL MECHANICAL JOINT COUPLINGS (INCLUDING NUTS, BEND, PLUG, ETC.) THAT ARE REQUIRED TO BE HARNESSSED.
5. RODS THREADED AT ENDS (INCLUDING NUTS) SHALL BE EQUALLY SPACED AROUND PIPE BETWEEN ALL MECHANICAL JOINT FITTINGS (TEE, VALVES, BEND, PLUG, ETC.) OR AS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. THREADED RODS SHALL BE AS SHOWN IN THE THREADED ROD SCHEDULE. SEE NOTE 6.
6. RODS, NUTS, ETC., IN CONTACT WITH SOIL SHALL BE PAINTED WITH TWO COATS COAL TAR (MIN 26 DRY MIL THICKNESS) NEMEC 46-465 HI-BUILD OR EQUAL.

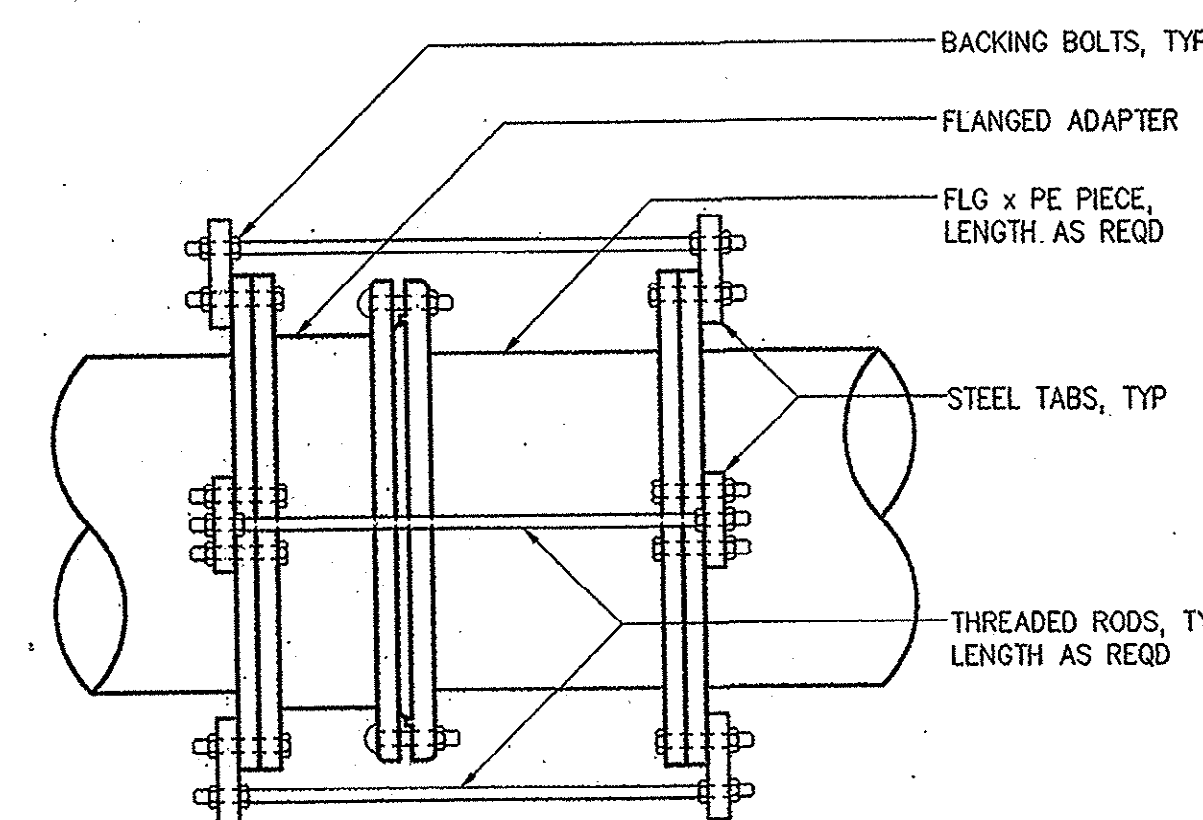


HAND OPENING DETAIL



HARNESSED FLEXIBLE COUPLING

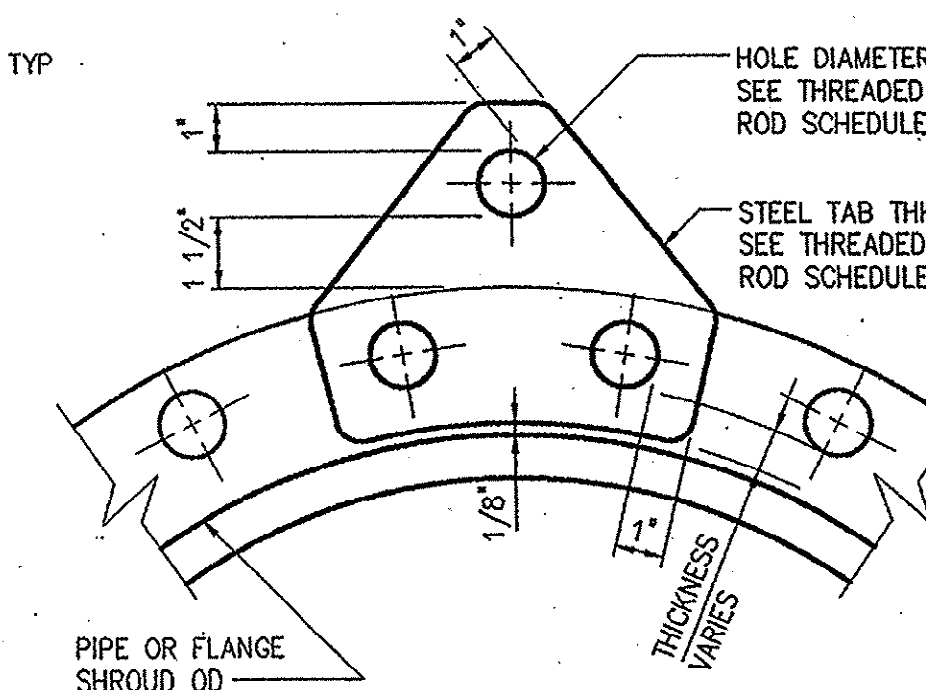
1516400



NOTE: ALL FLANGED ADAPTERS SHALL BE HARNESSSED AND BACK BOLTED TO PREVENT MOVEMENT IN EITHER DIRECTION. SEE THREADED ROD SCHEDULE FOR ROD DIAMETER, MATERIAL AND STEEL TAB THICKNESS.

HARNESSED FLANGED ADAPTER

1516402

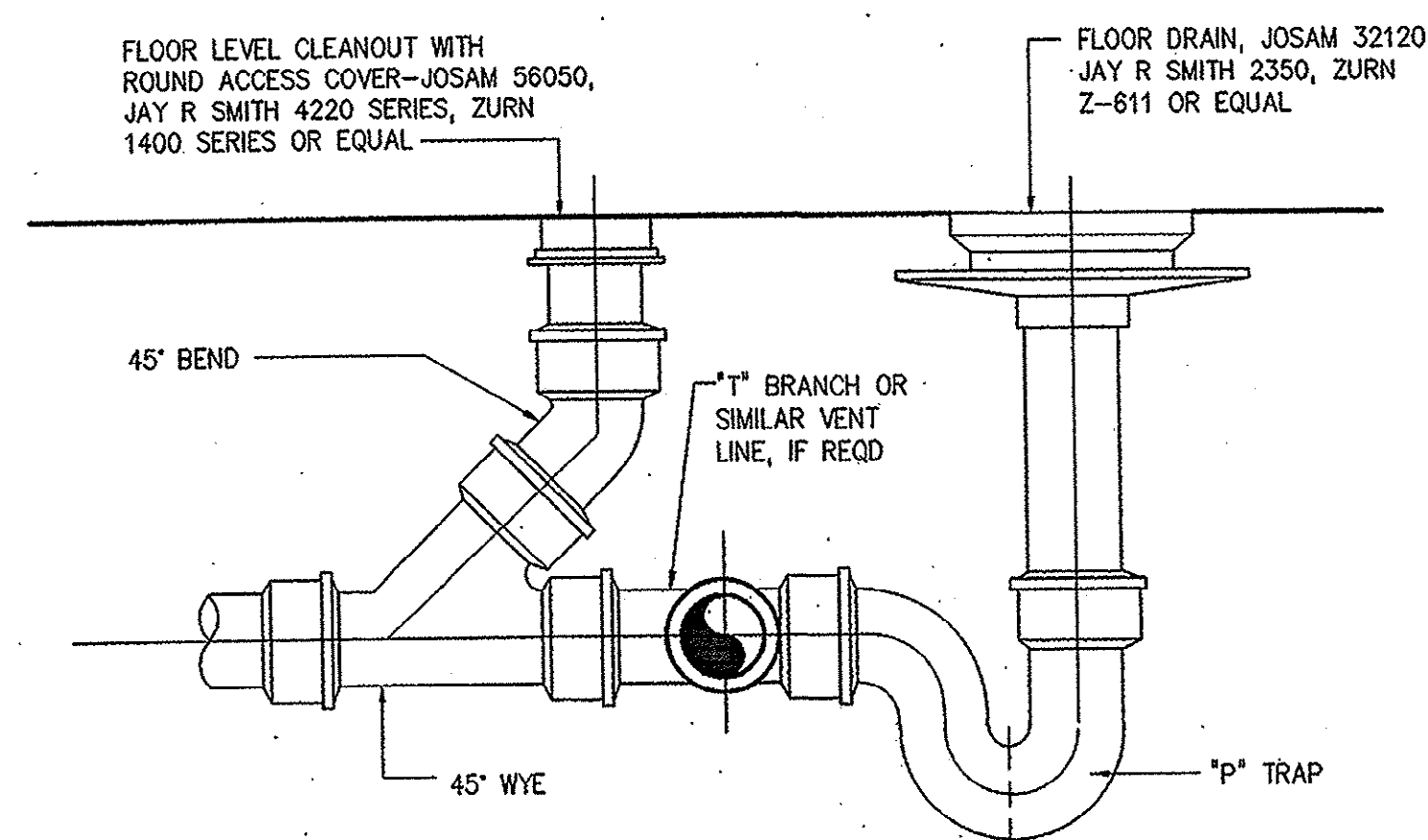


STEEL TAB

1516401

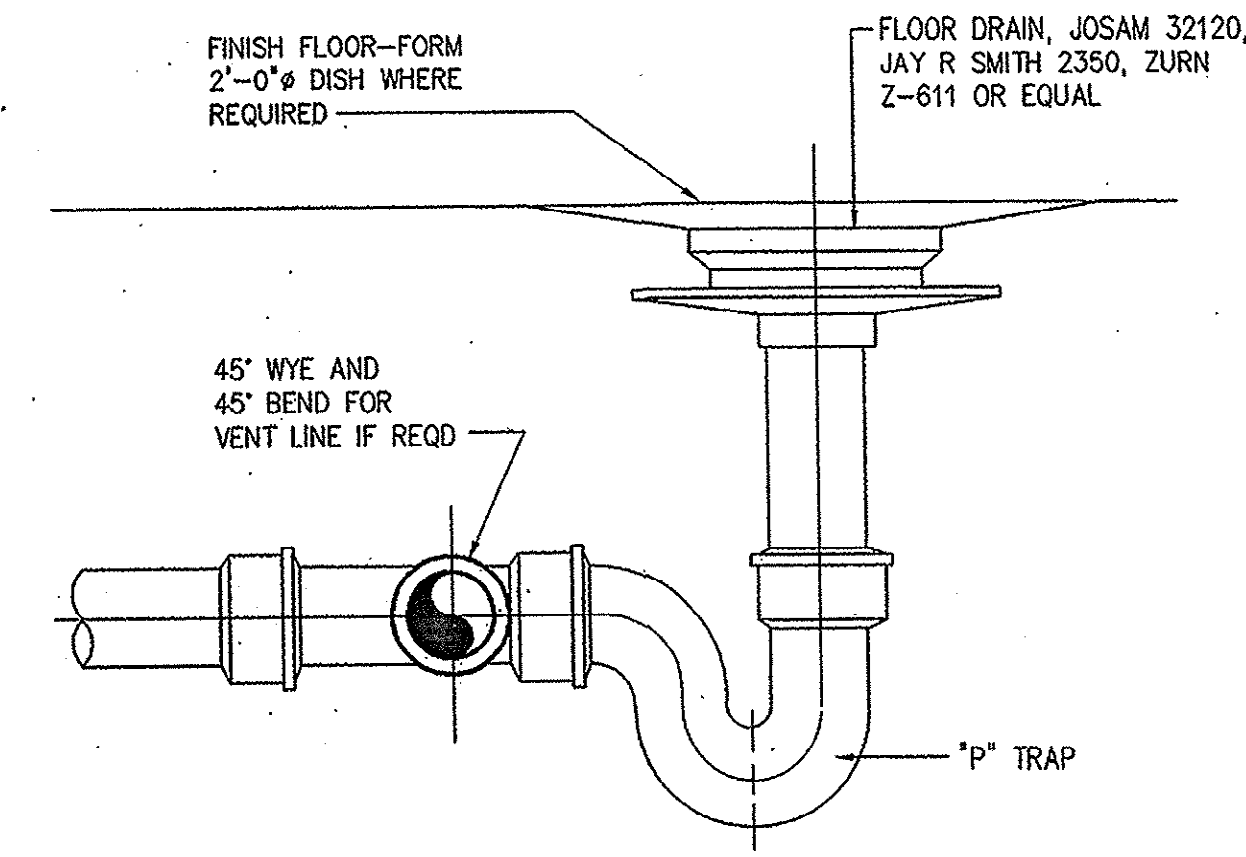


1513600



FLOOR DRAIN WITH CLEANOUT

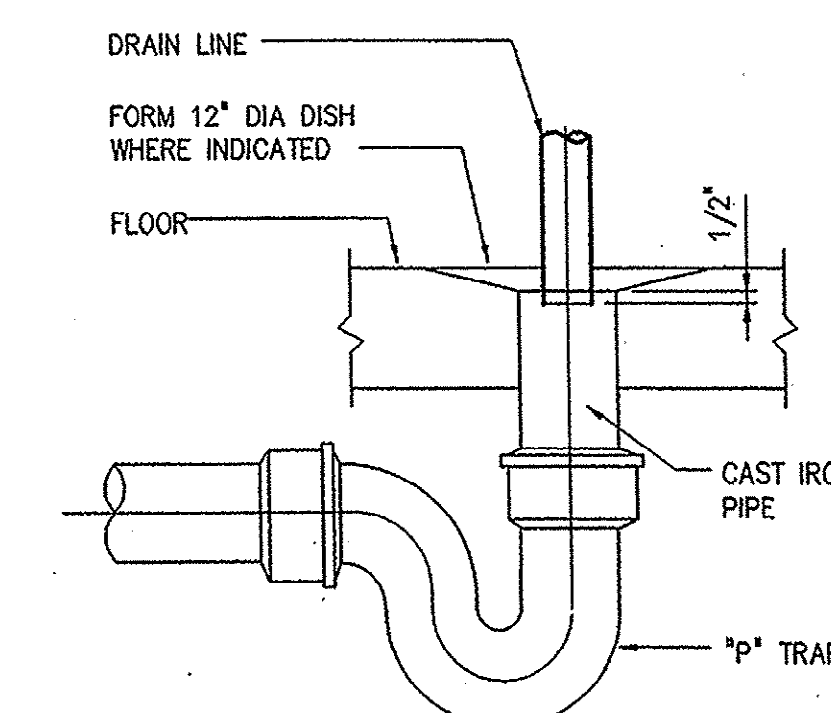
1542100



NOTE: INTERIOR FLOOR DRAIN AND CLEANOUTS TO HAVE NICKEL BRONZE TOPS. EXTERIOR FLOOR DRAINS AND CLEANOUTS TO HAVE LACQUERED CAST IRON TOPS.

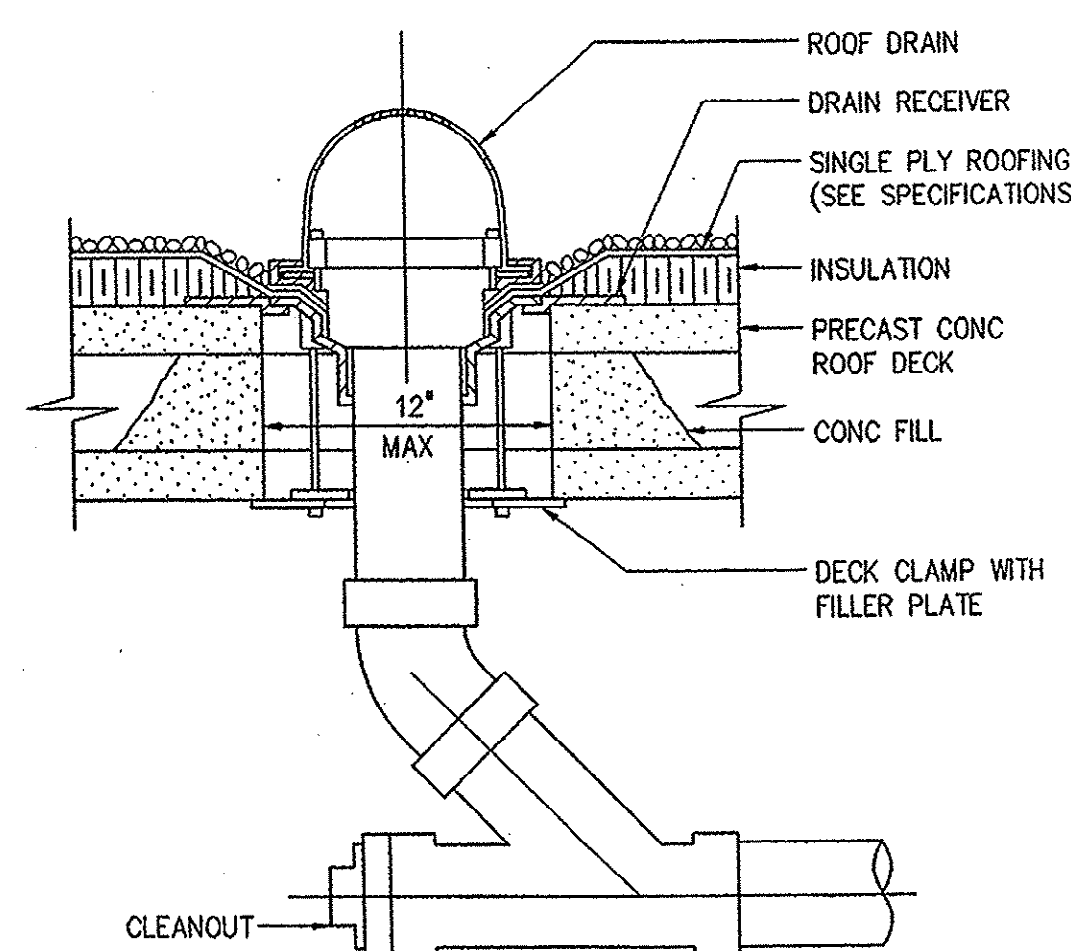
FLOOR DRAIN

1542102



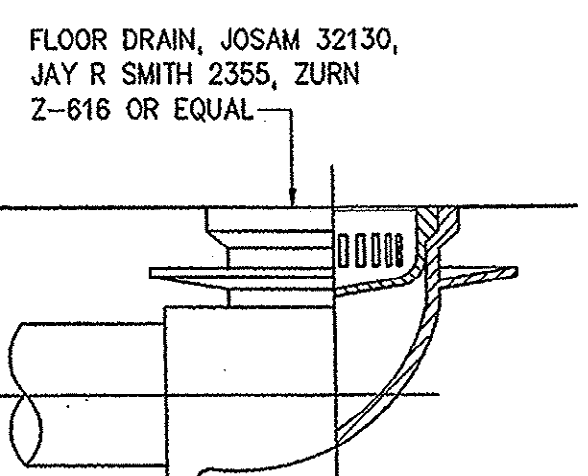
TYPICAL FLOOR DRAIN

1542101



ROOF DRAIN

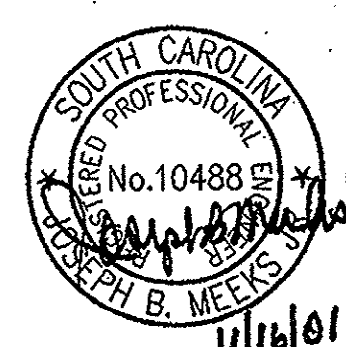
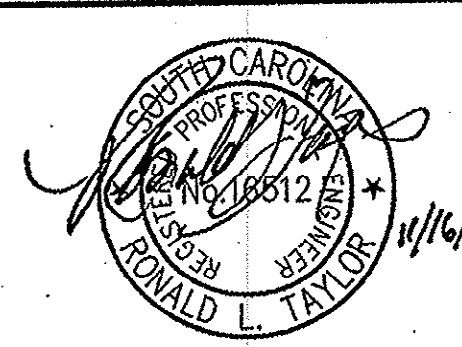
1542201



FLOOR DRAIN

1542103

				DESIGNED	H & S
				DRAWN	H & S
				CHECKED	JBM
				PROJ. ENGR.	JBM
2	CONSTRUCTION	11/10/01	JBM		
1	REGULATORY APPROVAL	8-31-01	JBM		
NO.	ISSUED FOR	DATE	BY	APPROVED	



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SOUTH CAROLINA

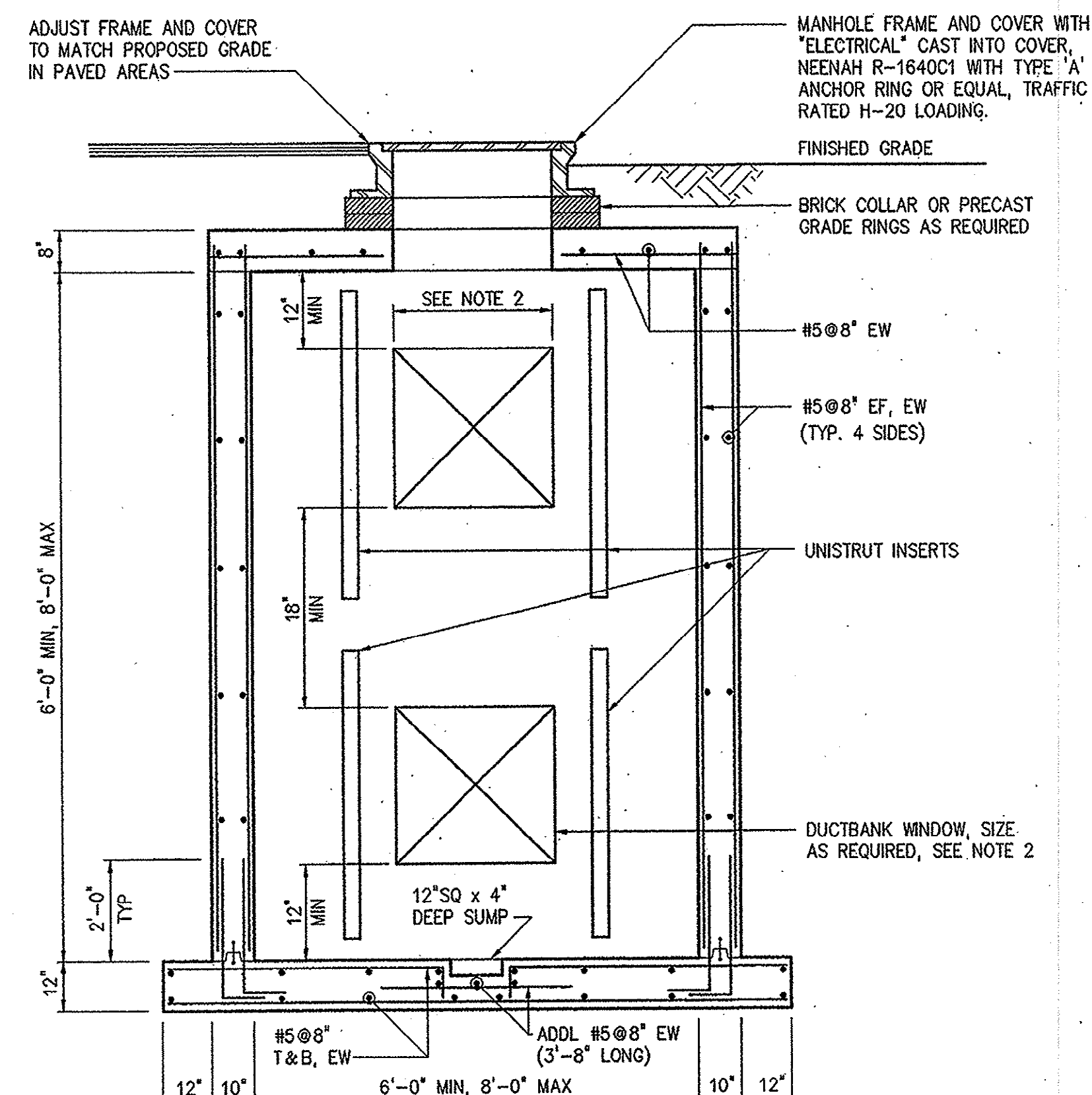
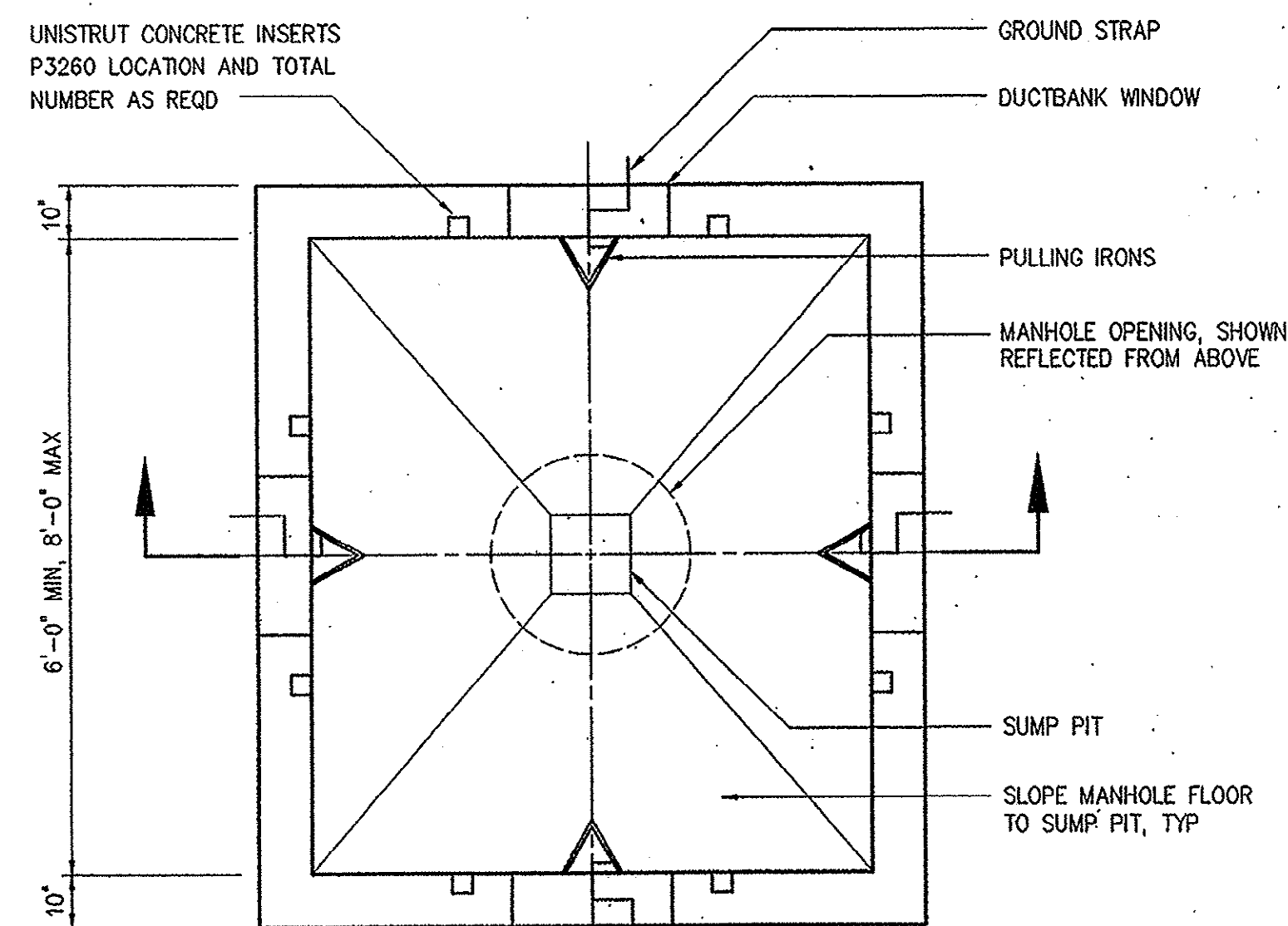
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001	
	H & S JOB NUMBER 30631	
	CONTRACT NUMBER 1	DRAWING NUMBER D11
H&S FLAT FILE NO. 56		

03/10/01 11:15am FILED H:\30631\DETAILS\011 by EWING XREFs\1513400, 1513600, 1516400, 1516401, 1516402, 1516403, 1545100, 1542100, 1542101, 1542102, 1542103, 1542201, 1553000, MISC\30631-TB

35-009-054

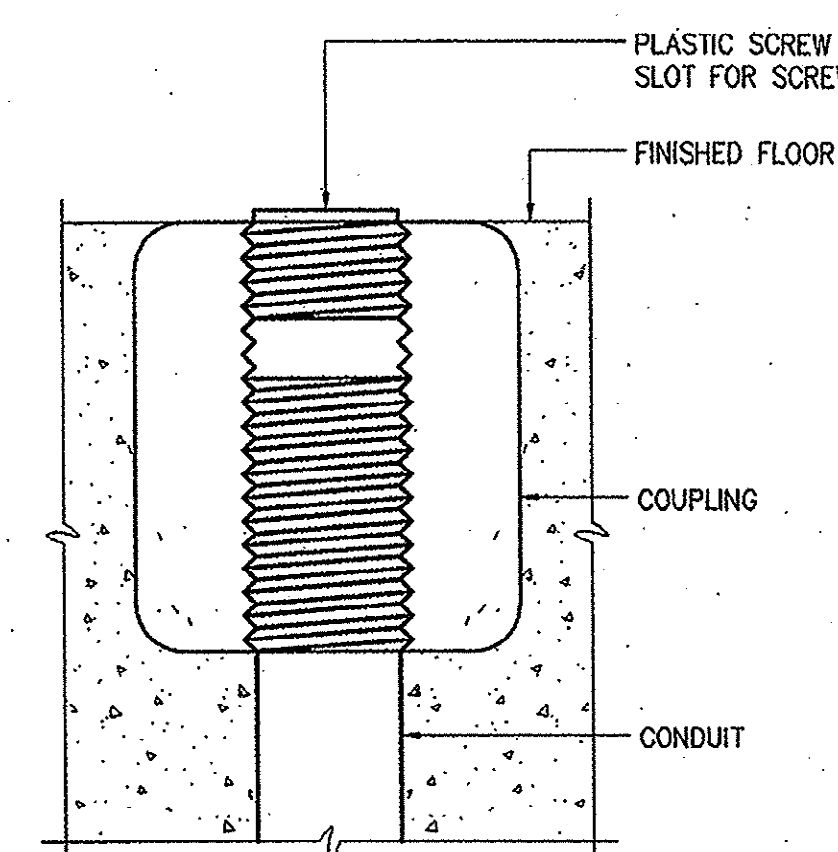


ELECTRICAL MANHOLE NOTES:

- 1 EPOXY PAINT ALL INTERIOR SURFACES IN ACCORDANCE WITH PAINT SPECIFICATIONS IN DIVISION 9.
- 2 DUCTBANK WINDOW WIDTH SHALL BE LIMITED TO ONE-THIRD (1/3) OF THE WALL WIDTH, I.E. 2'-0" FOR A 6'-0" WALL.
- 3 PRECAST MANHOLES MAY BE USED IN LIEU OF THE CAST-IN-PLACE CONCRETE MANHOLE SHOWN AT THE CONTRACTOR'S OPTION. PRECAST MANHOLES SHALL BE RATED FOR H-20 TRAFFIC LOADS. SEE SPECIFICATIONS FOR GENERAL REQUIREMENTS FOR PRECAST UTILITY STRUCTURES.

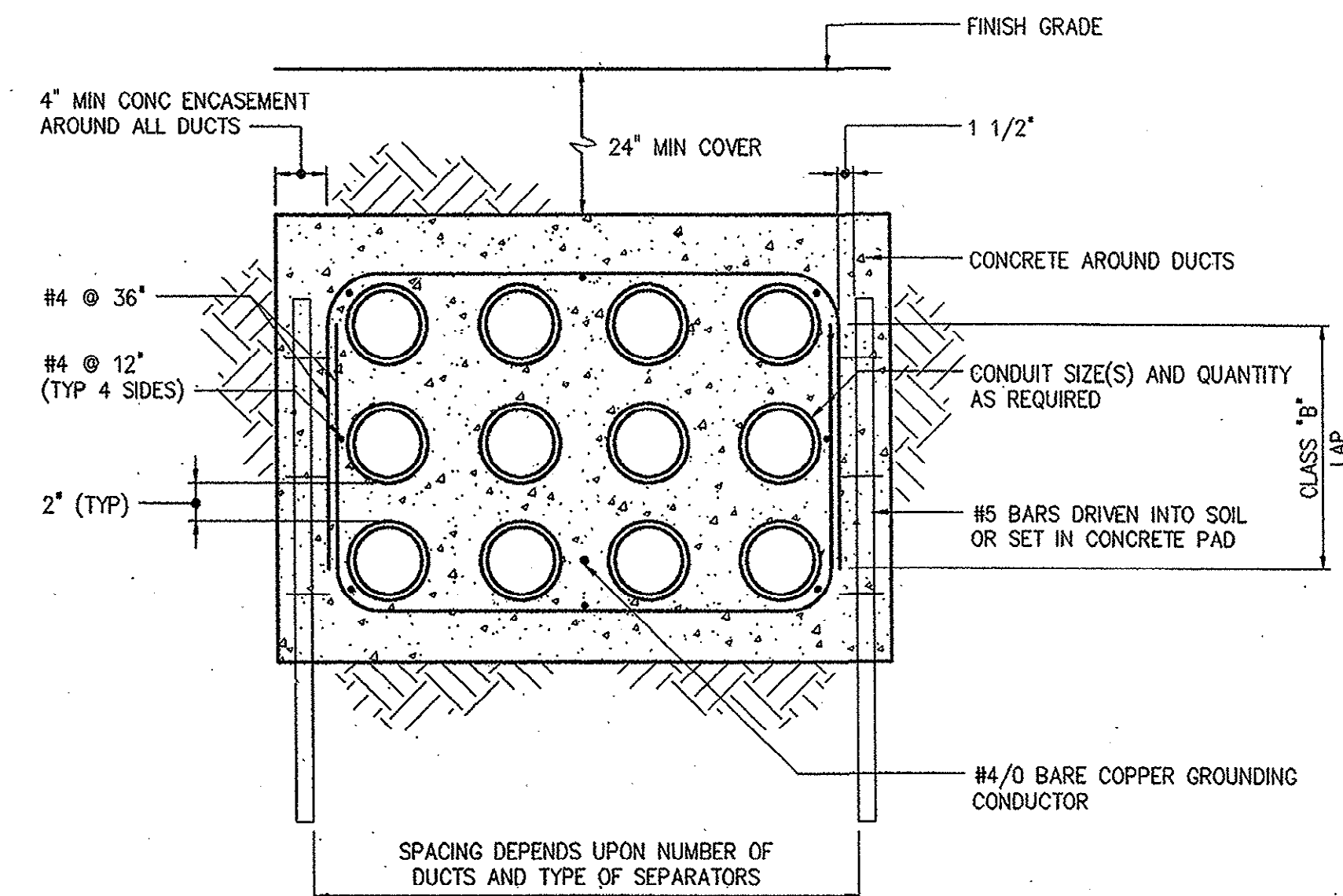
TYPICAL ELECTRICAL MANHOLE - SECTION

1611802



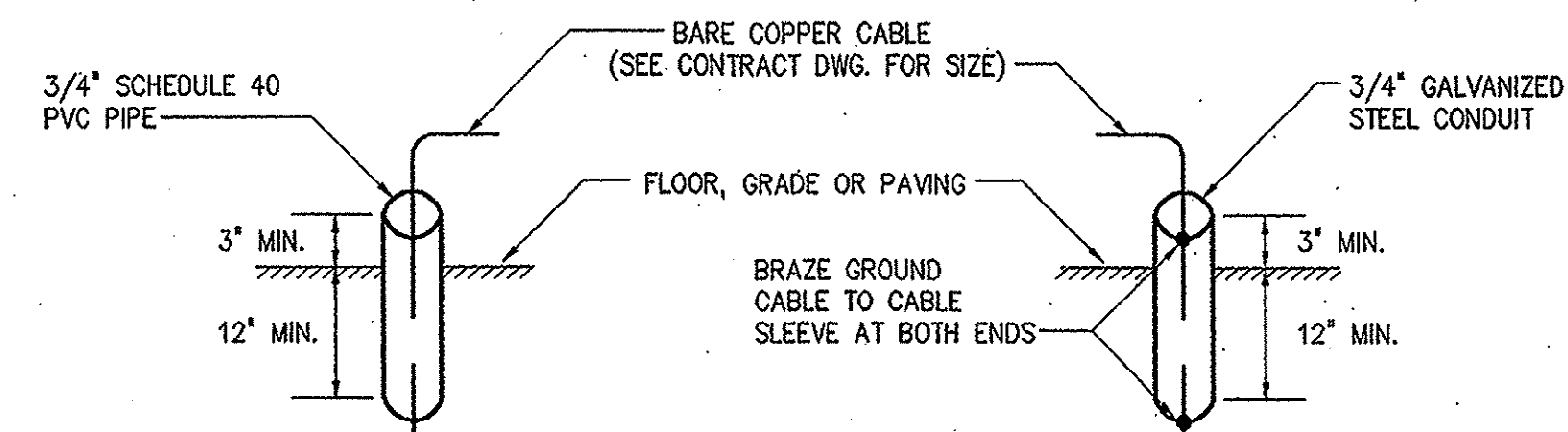
CONDUIT, FLOOR STUB-UP

1611101

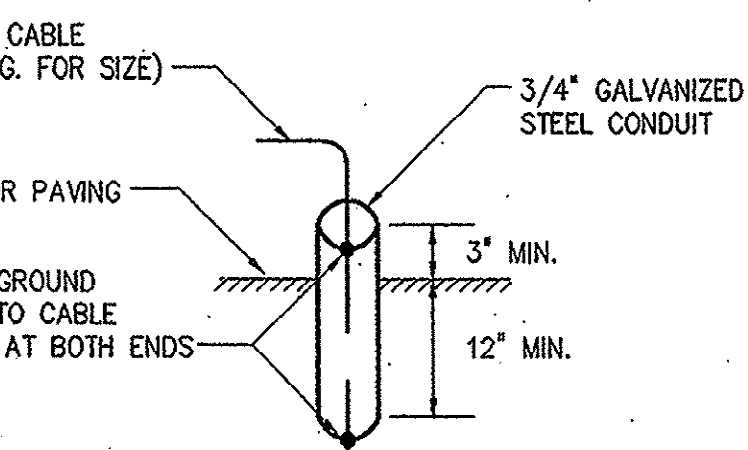


TYPICAL DUCT BANK DETAIL

1611801



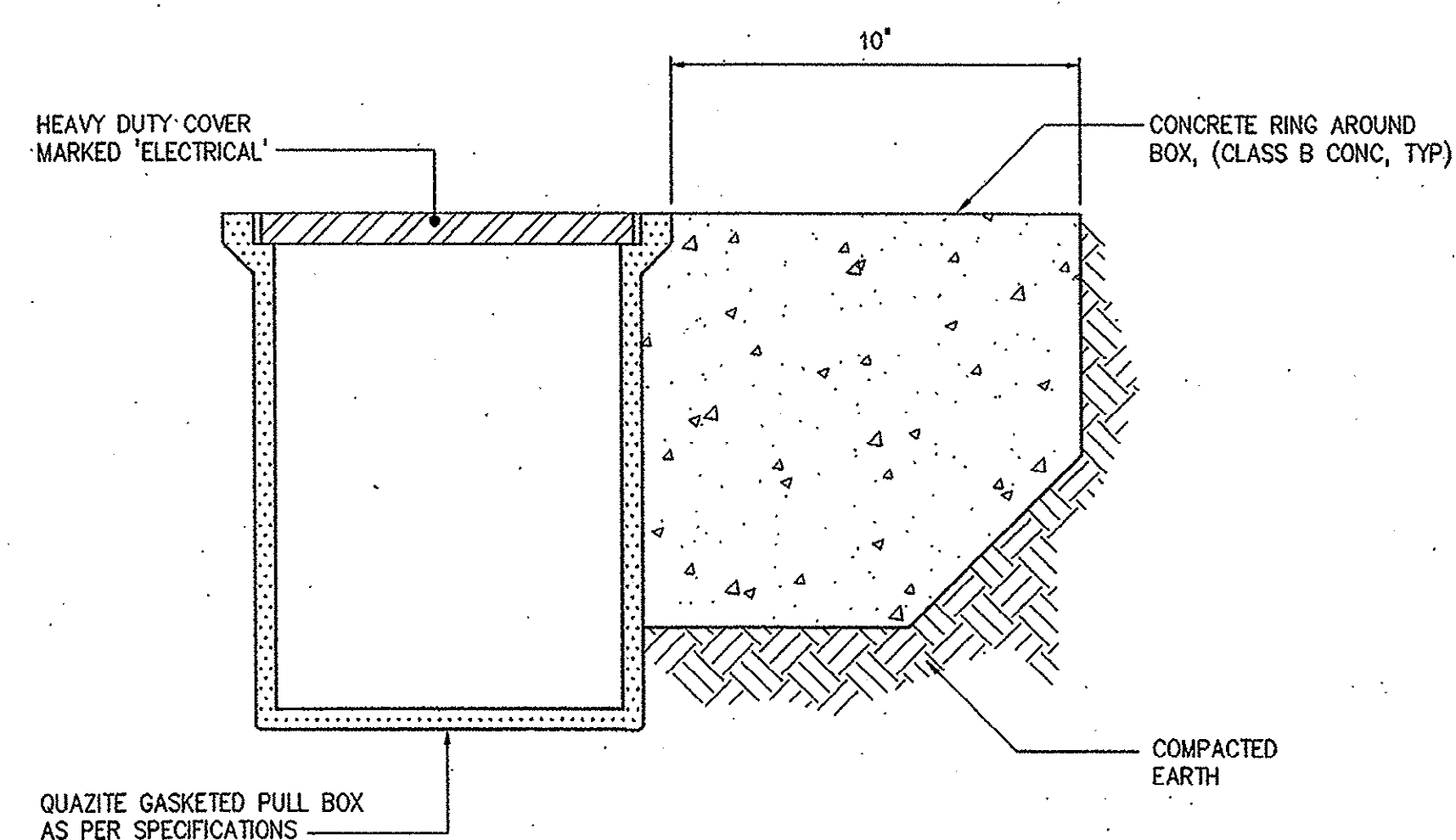
PREFERRED SLEEVE INSTALLATION



ALTERNATIVE SLEEVE INSTALLATION

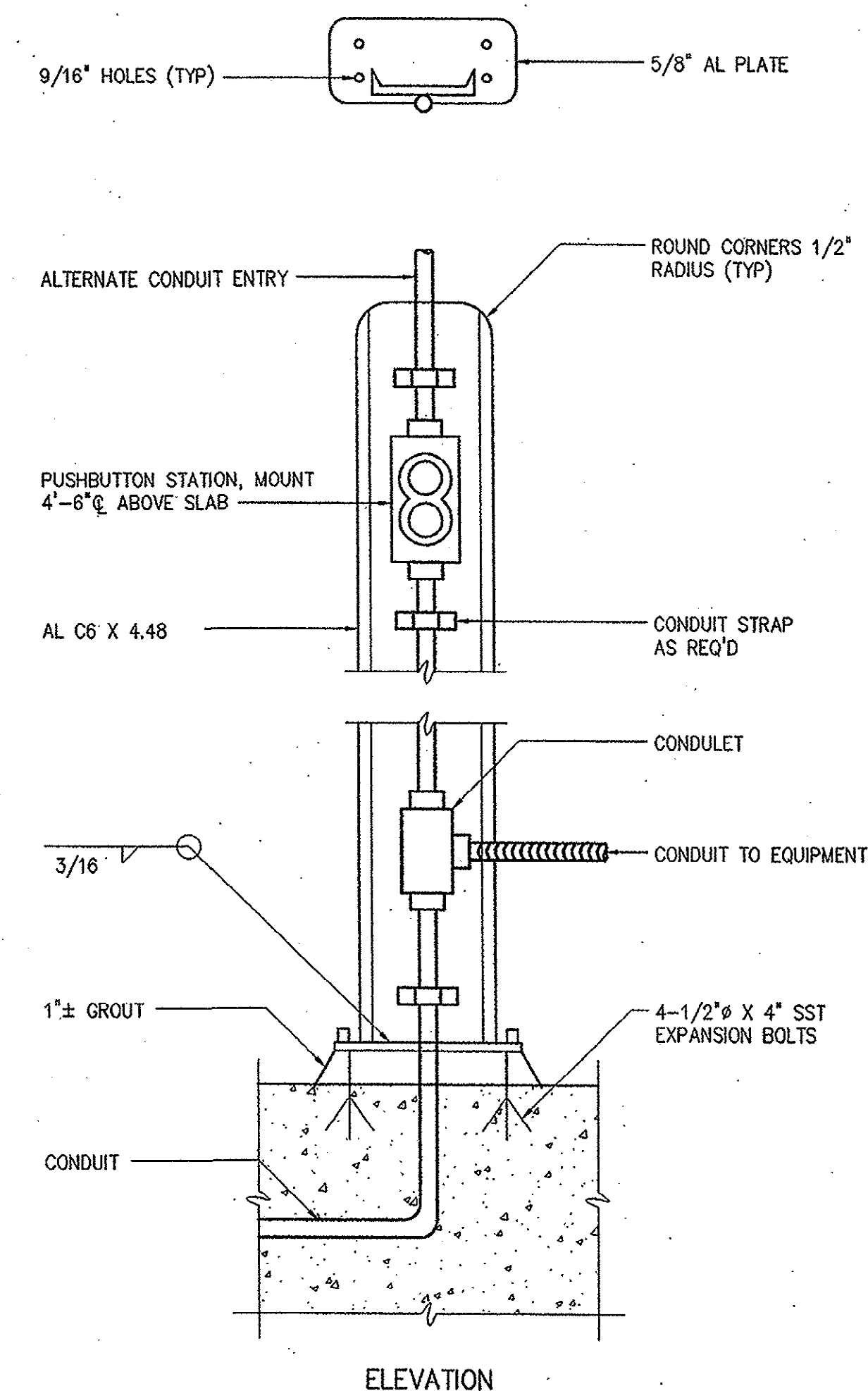
GROUND CABLE SLEEVE INSTALLATION

1617001



PULL BOX AND HAND HOLE (HH) INSTALLATION DETAIL

1611803

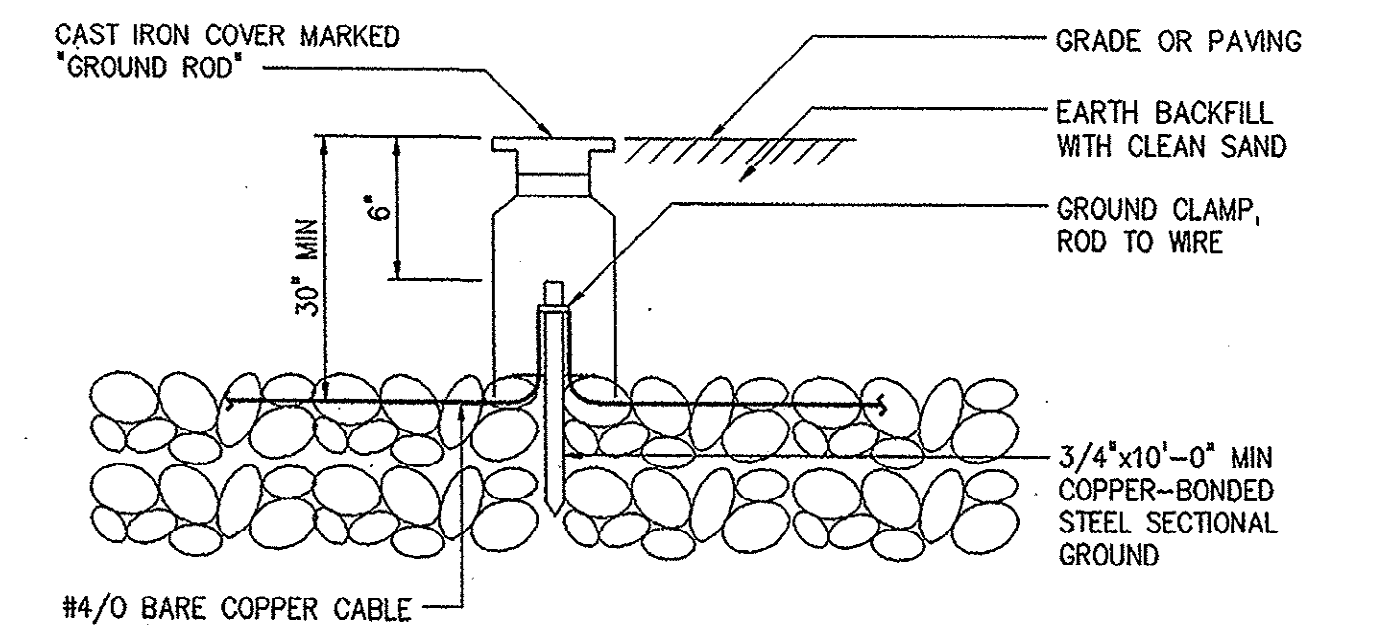


NOTES:

- 1 COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
- 2 SUPPLY 1'-2" DIAMETER X 2'-6" DEEP FOUNDATION WHERE MOUNTING SURFACE IS NOT AVAILABLE.
- 3 USE SST WASHERS, NUTS AND BOLTS FOR MOUNTING DEVICES.

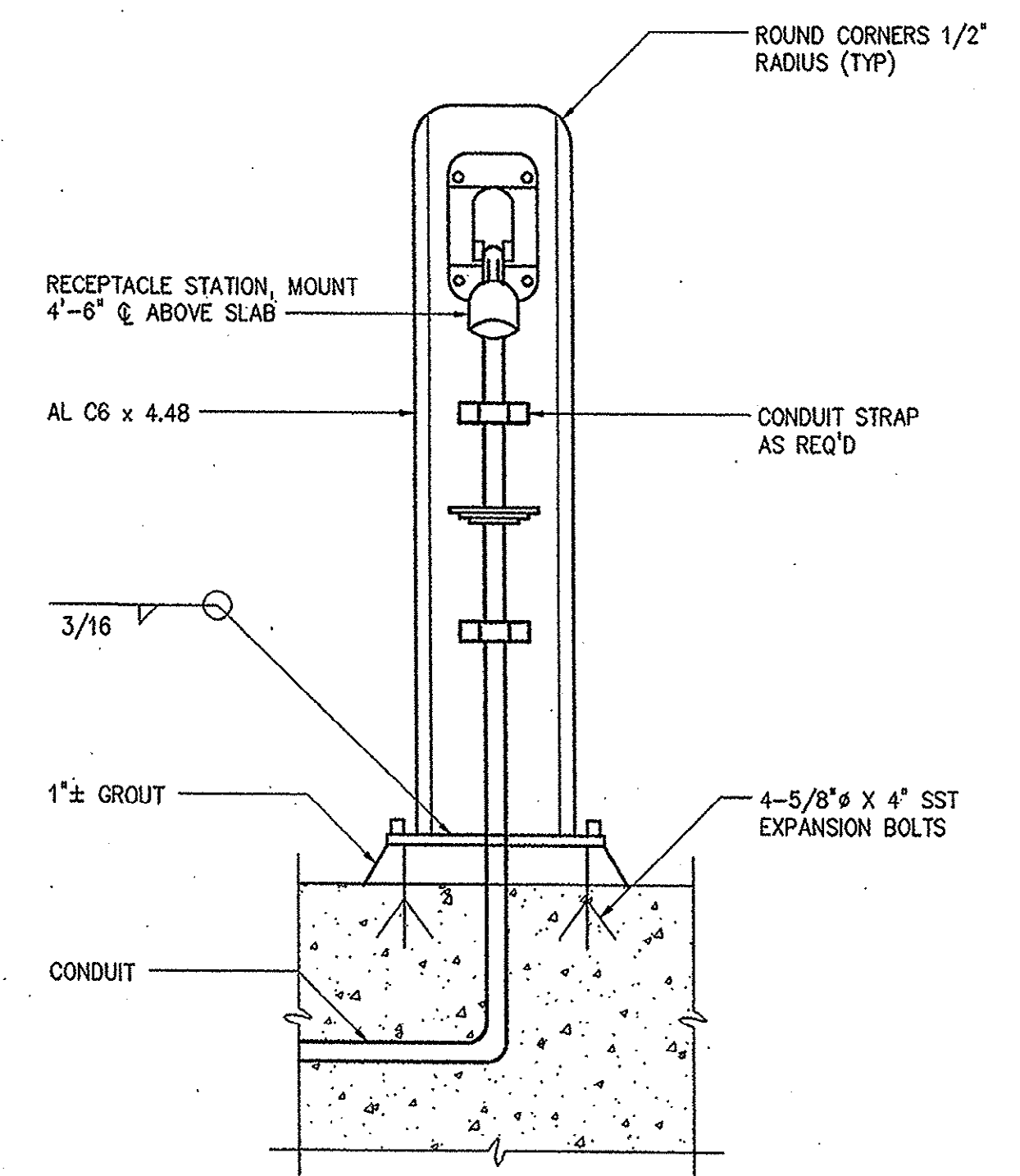
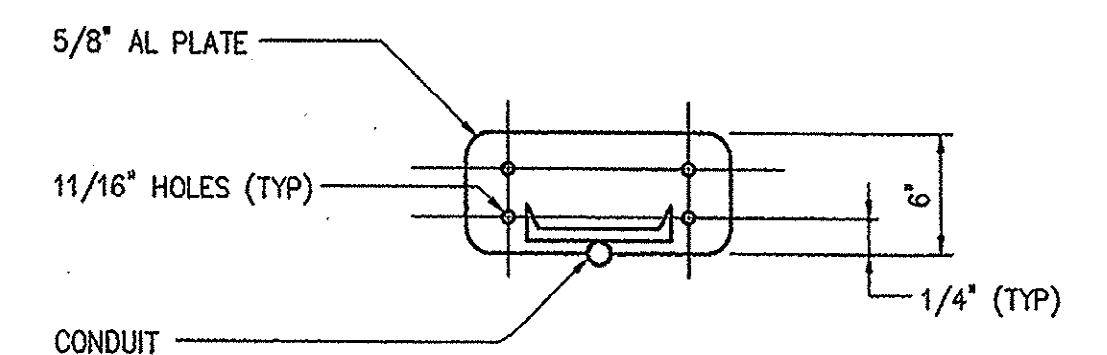
TYPICAL PUSHBUTTON STATION INSTALLATION DETAIL

1613001



ELECTRICAL INSTALLATION DETAIL
GROUND ROD ASSEMBLY

1617003



ELEVATION

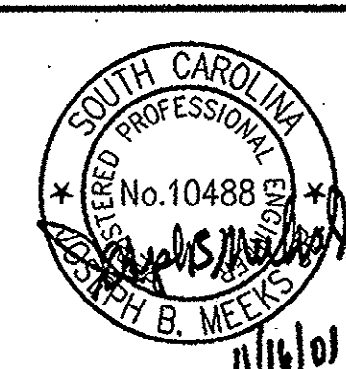
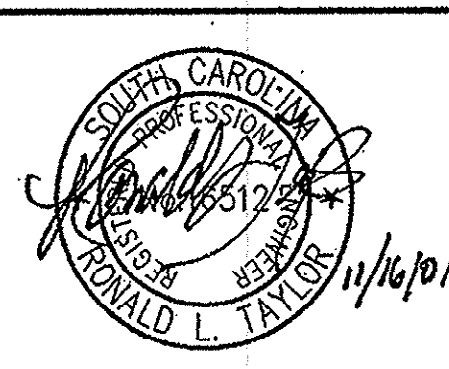
NOTES:

- 1 COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
- 2 CONSTRUCT 1'-6" DIA X 2'-6" DEEP CONCRETE FOUNDATION WHERE NO CONCRETE SLAB EXISTS.
- 3 USE SST WASHERS, NUTS AND BOLTS FOR MOUNTING DEVICES.

LARGE RECEPTACLE SUPPORT AND MOUNTING

1613002

				DESIGNED	H & S
				DRAWN	H & S
				CHECKED	JBM
				PROJ. ENGR.	JBM
2	CONSTRUCTION	11/10/01	JBM		
1	REGULATORY APPROVAL	8-31-01	JBM		
NO.	ISSUED FOR	DATE	BY	APPROVED	



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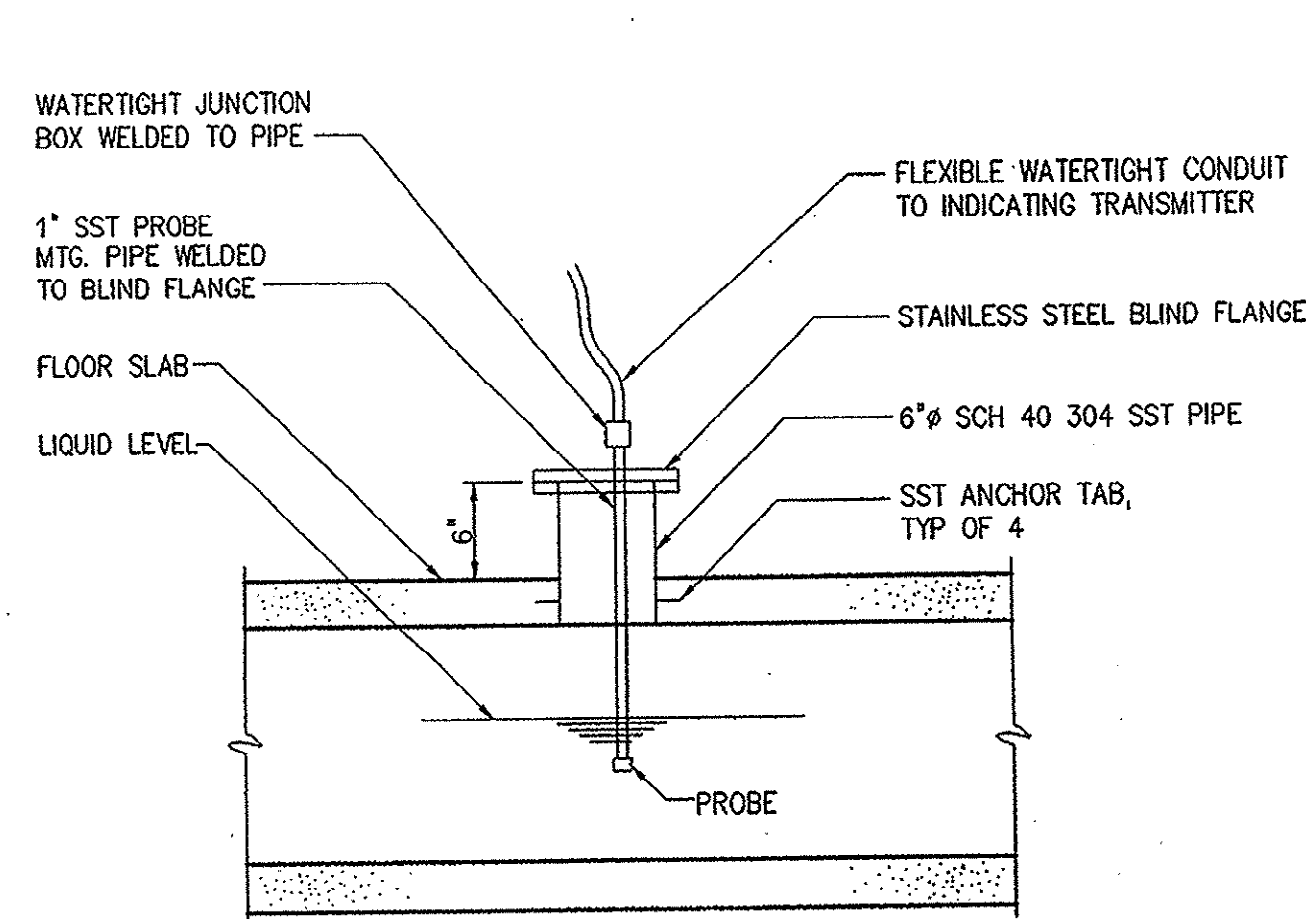
MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001	
	H & S JOB NUMBER 30631	
	CONTRACT NUMBER 1	DRAWING NUMBER D12
	H & S FLAT-FILE NO. 56	

08/10/01 11:15am FILE= H:\30631\DATA\S\012.DX FROM XREFS=1611101, 1611801, 1611802, 1613001, 1613002, 1613003, 1617001, 1617003, MISC\30631-T

35-004-055

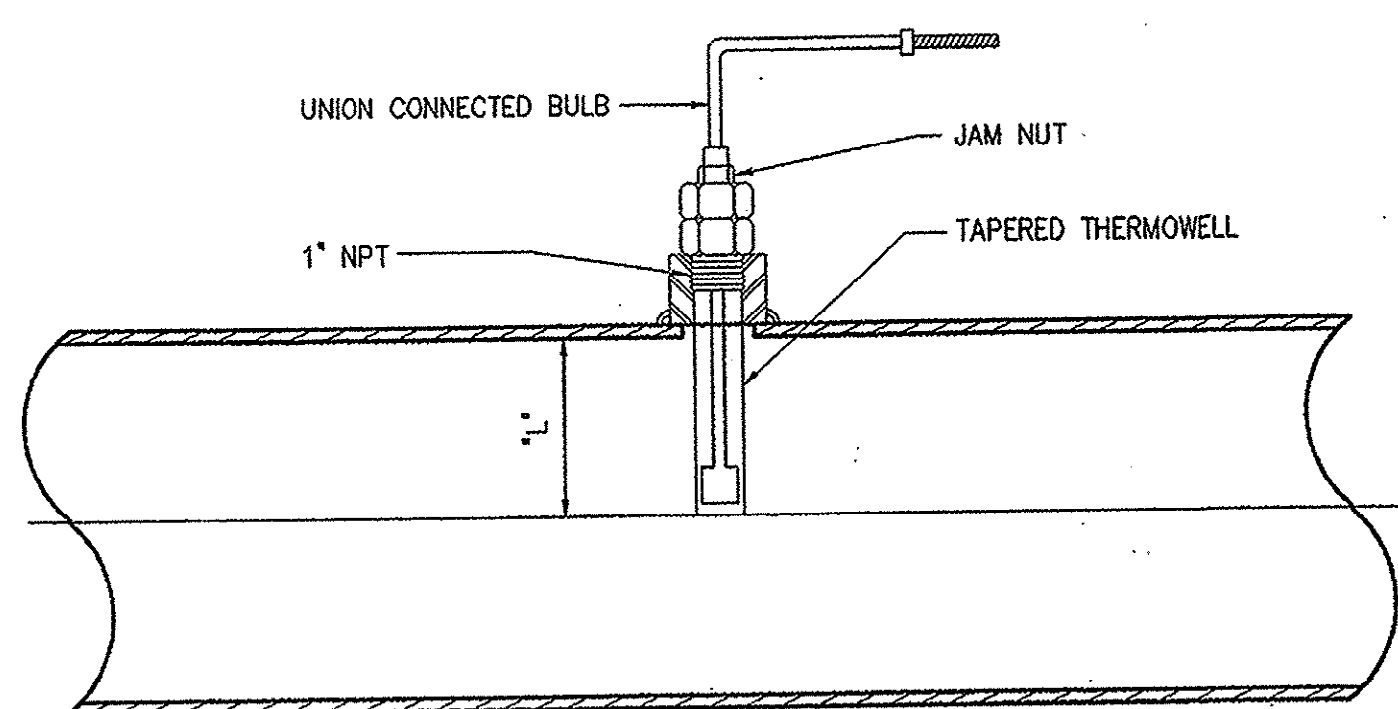




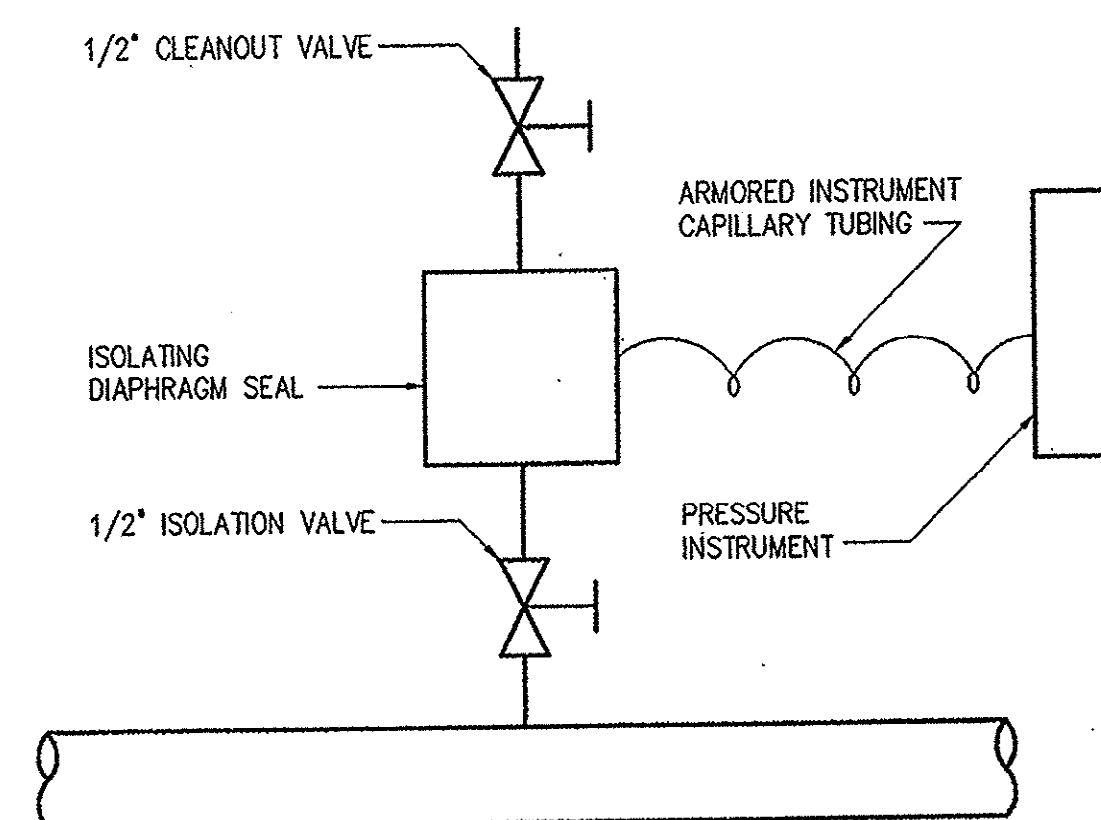
pH PROBE
ENCLOSED CHANNEL INSERTION
MOUNTING DETAIL
1691009

NOTES:

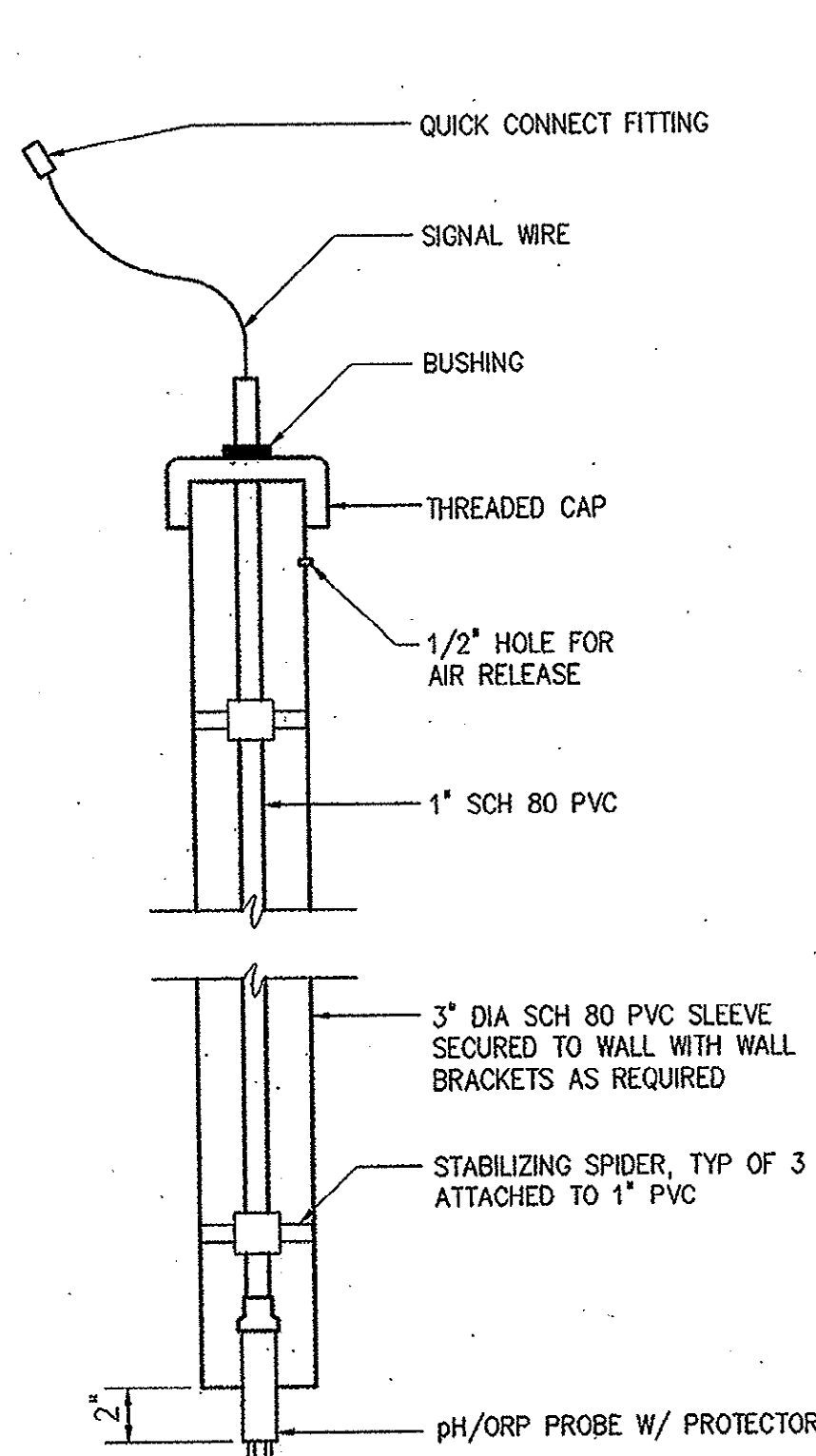
- TEMPERATURE INSTRUMENT NOT SHOWN
- INSERTION LENGTH "L" SHALL BE AS FOLLOWS:
FOR PIPES UP TO 12 INCHES "L" SHALL EQUAL 1/3 THE DIAMETER
OF THE PIPE. FOR LARGER PIPES AND VESSELS, "L" SHALL
BE SIZED SO THAT IT EXTENDS 4 INCHES INTO THE PROCESS.



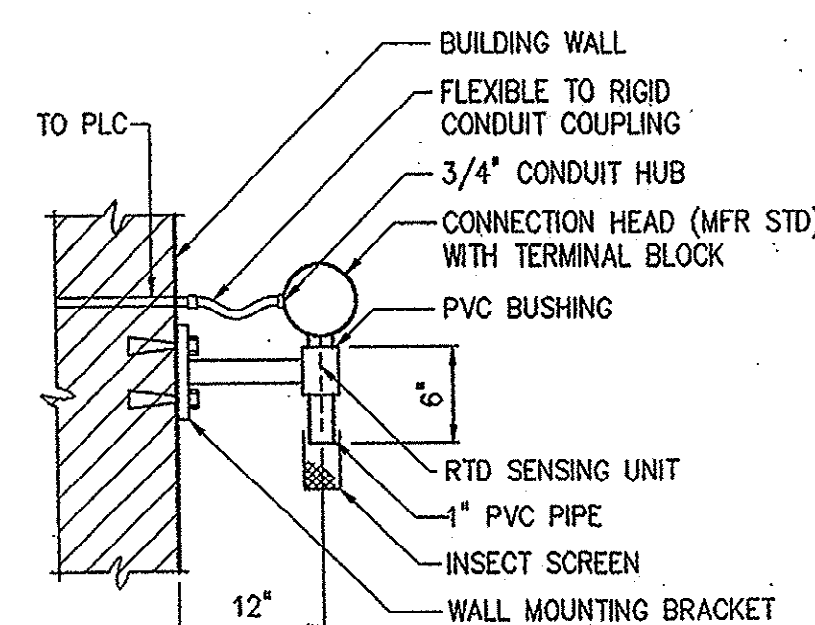
TYPICAL TEMPERATURE ELEMENT
1696100



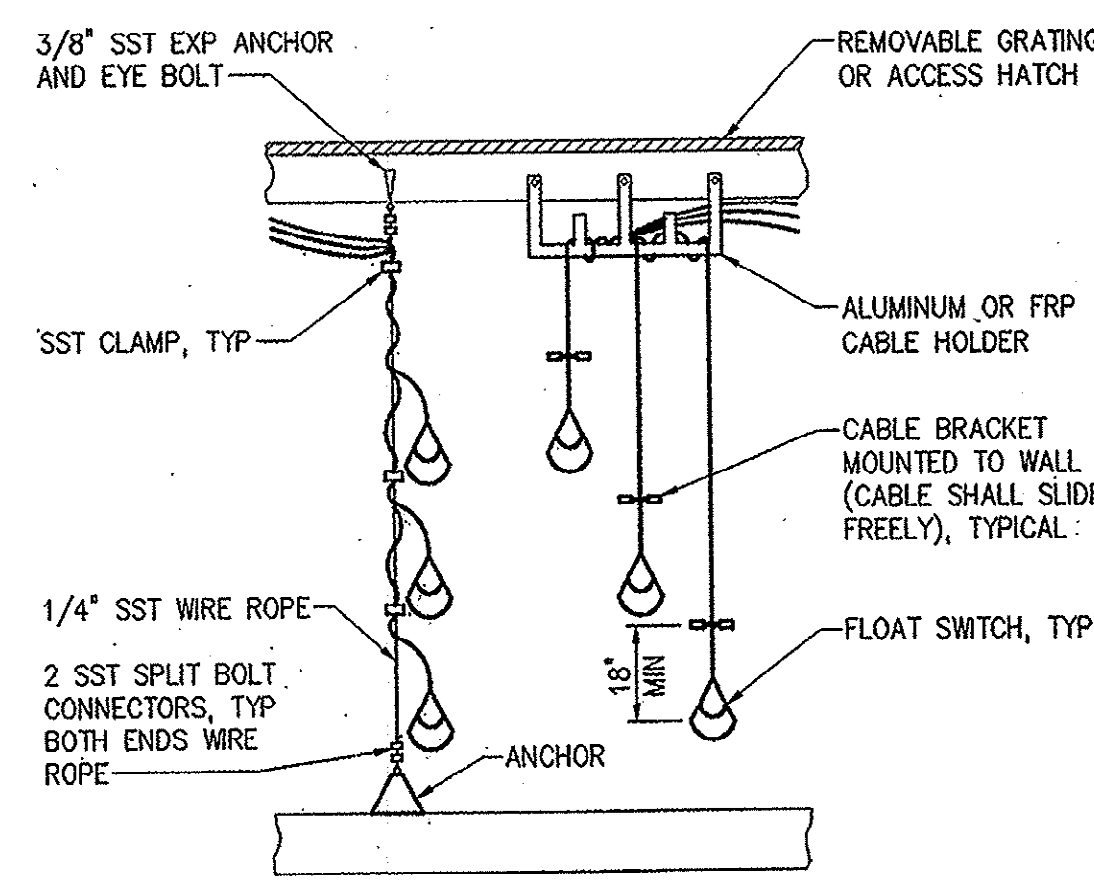
TAPPED DIAPHRAGM SEAL DETAIL
1696105



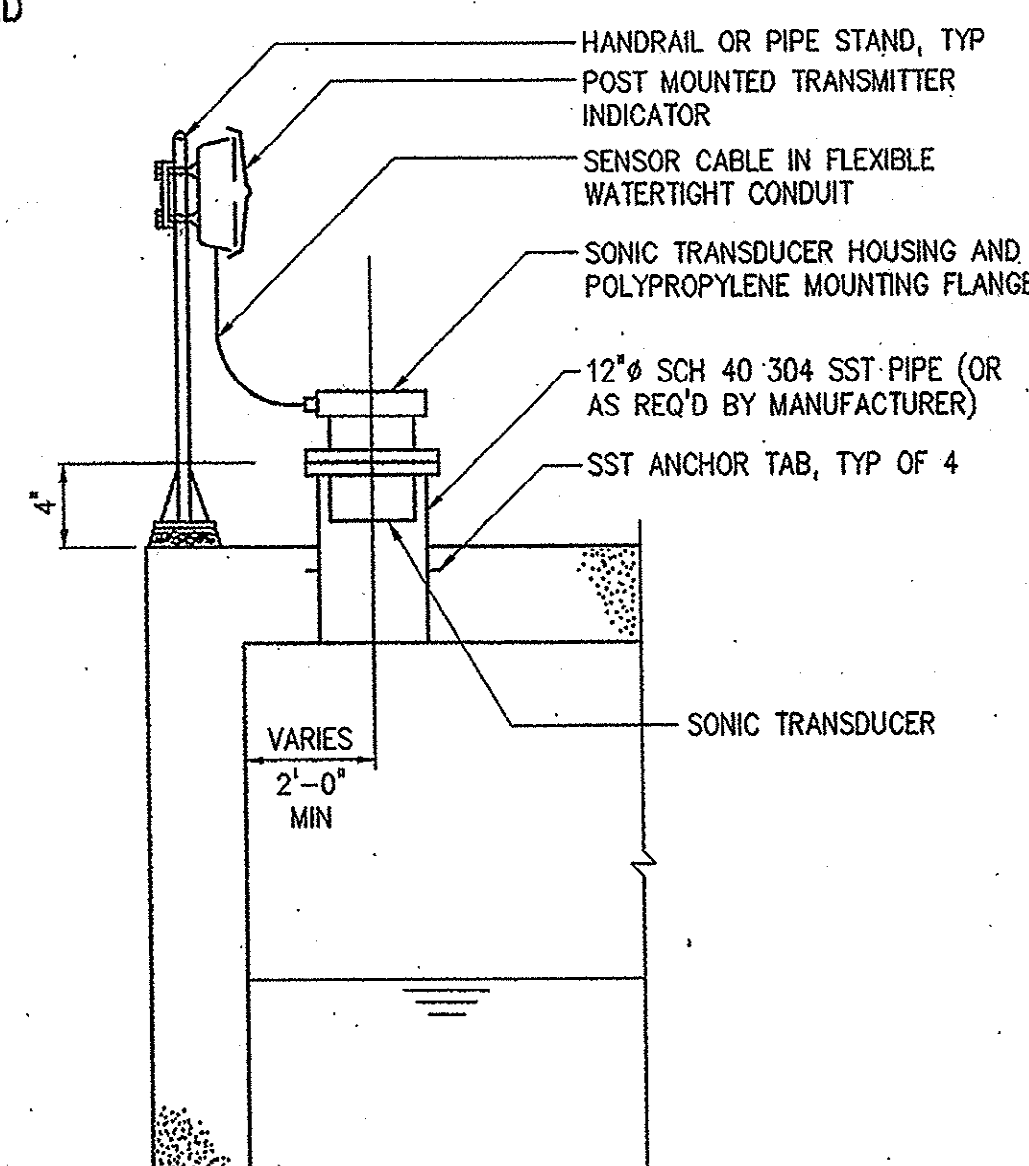
REMOVABLE pH/ORP PROBE
IN STATIONARY SLEEVE
1696104



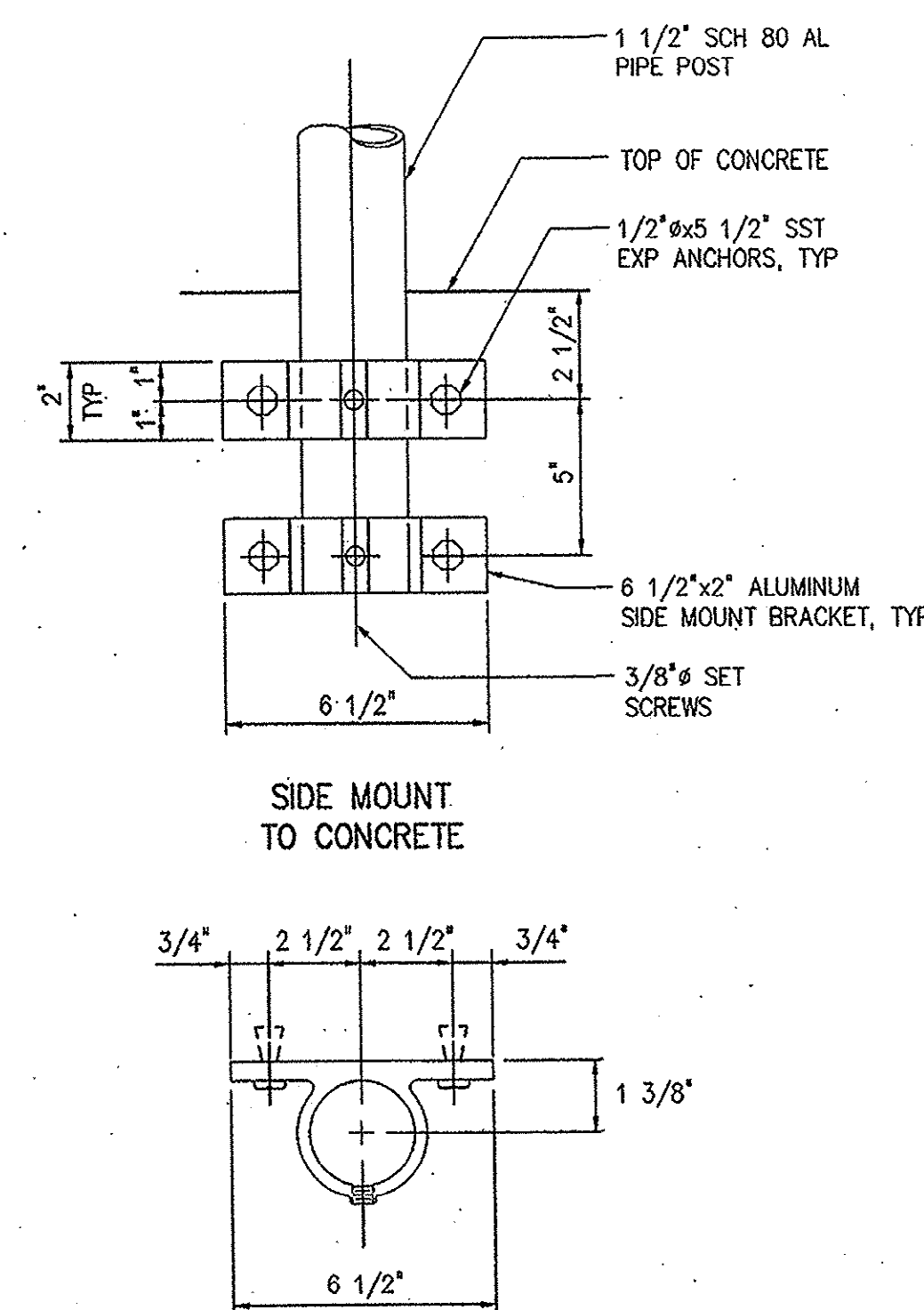
NOTE: TIP OF PROBE SHOULD NOT
PROTRUDE FROM THE PVC PIPE.
TYPICAL AMBIENT TEMPERATURE
SENSING ELEMENT MOUNTED
ON EXTERIOR WALL
1696103



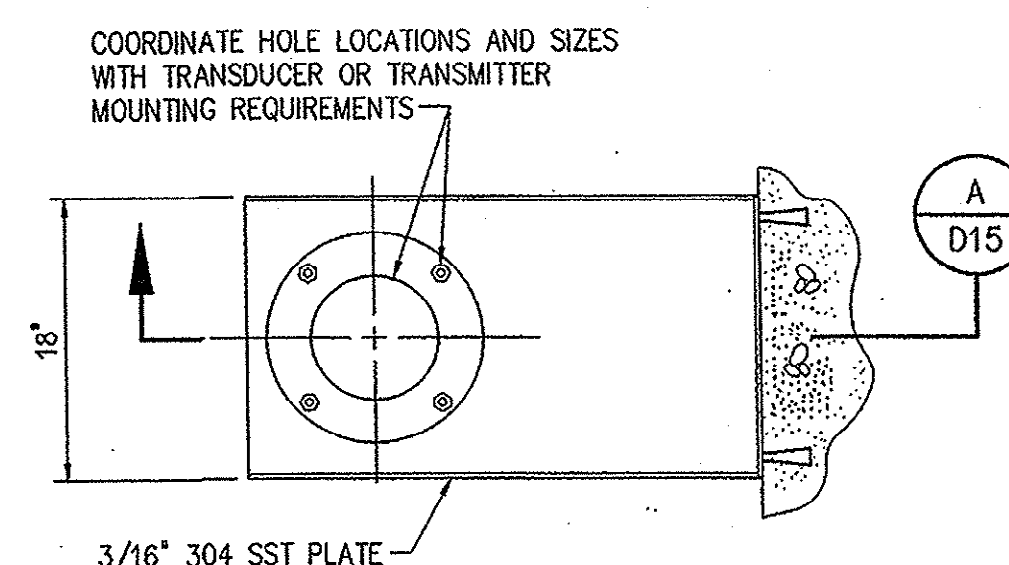
TYPICAL LEVEL SWITCH
MOUNTING DETAILS
1696200



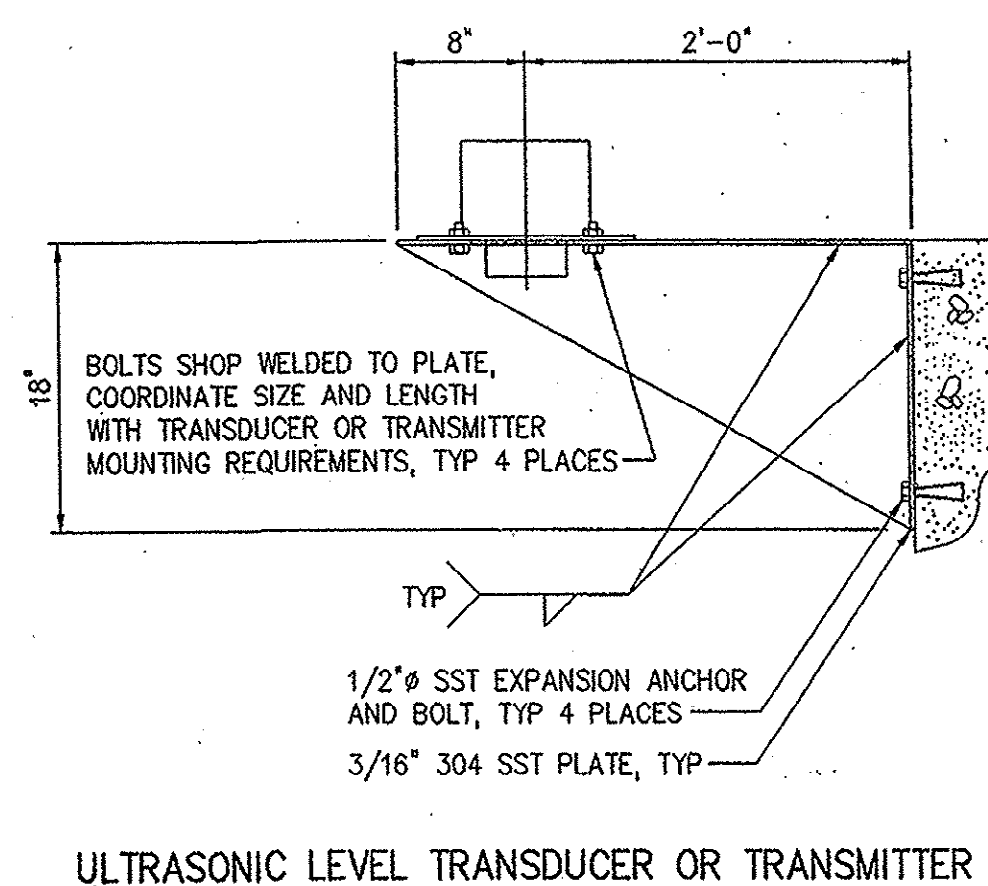
SONIC LEVEL
SENSOR DETAIL
1696202



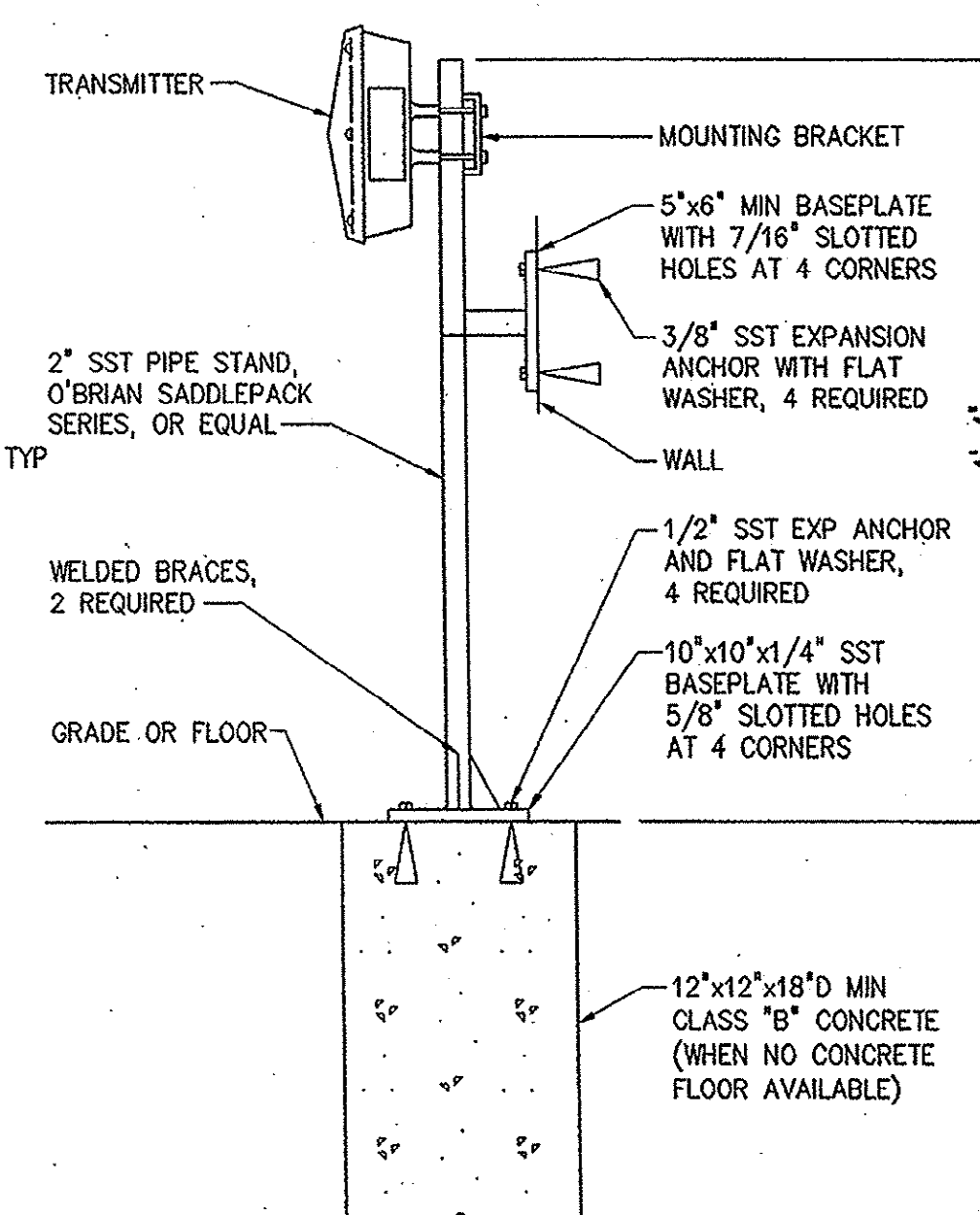
TYPICAL PIPE STAND TRANSMITTER
MOUNTED ON SIDE WALL
1696213



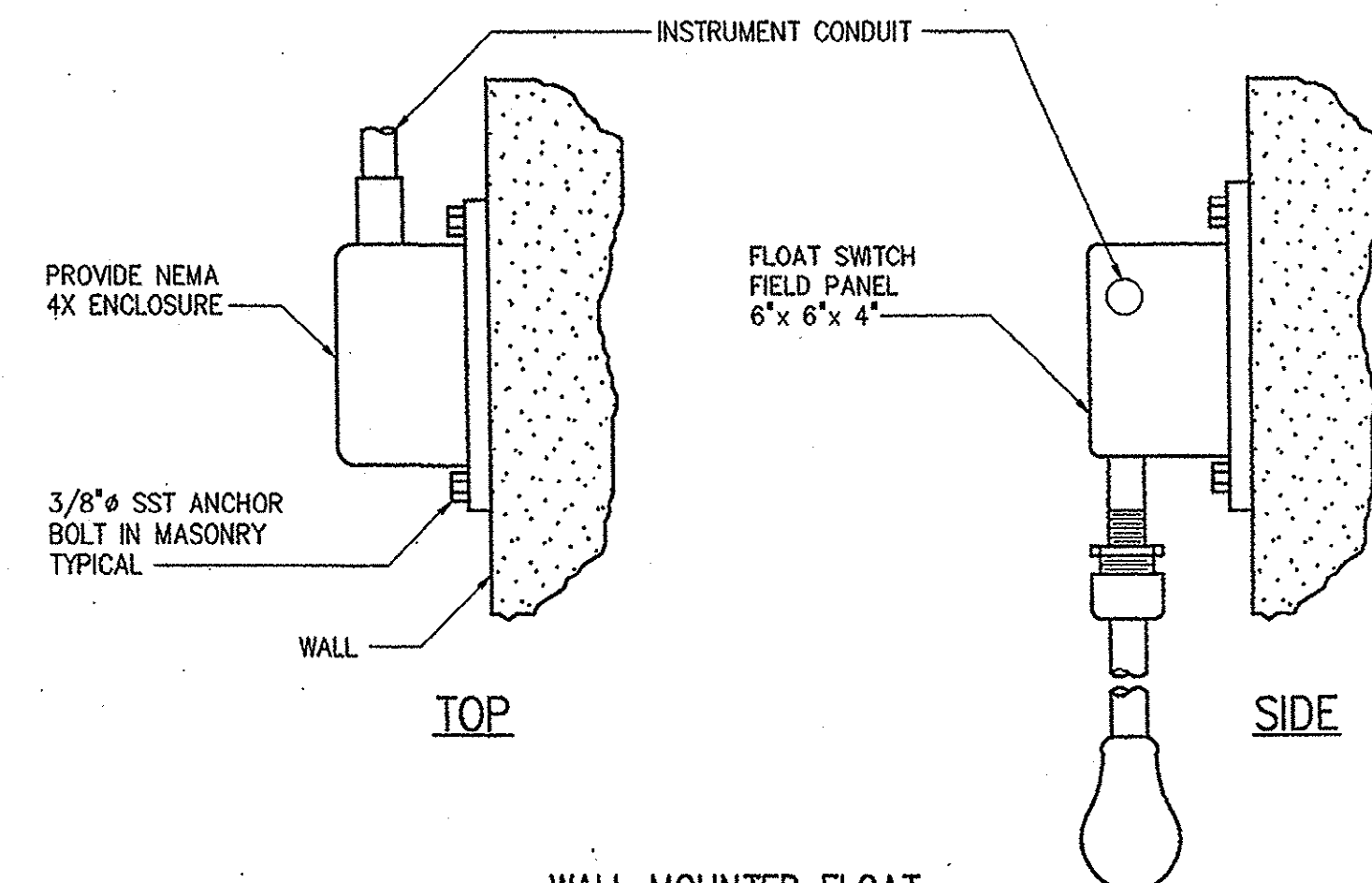
ULTRASONIC LEVEL TRANSDUCER OR TRANSMITTER
WALL MOUNTING DETAIL
1696210



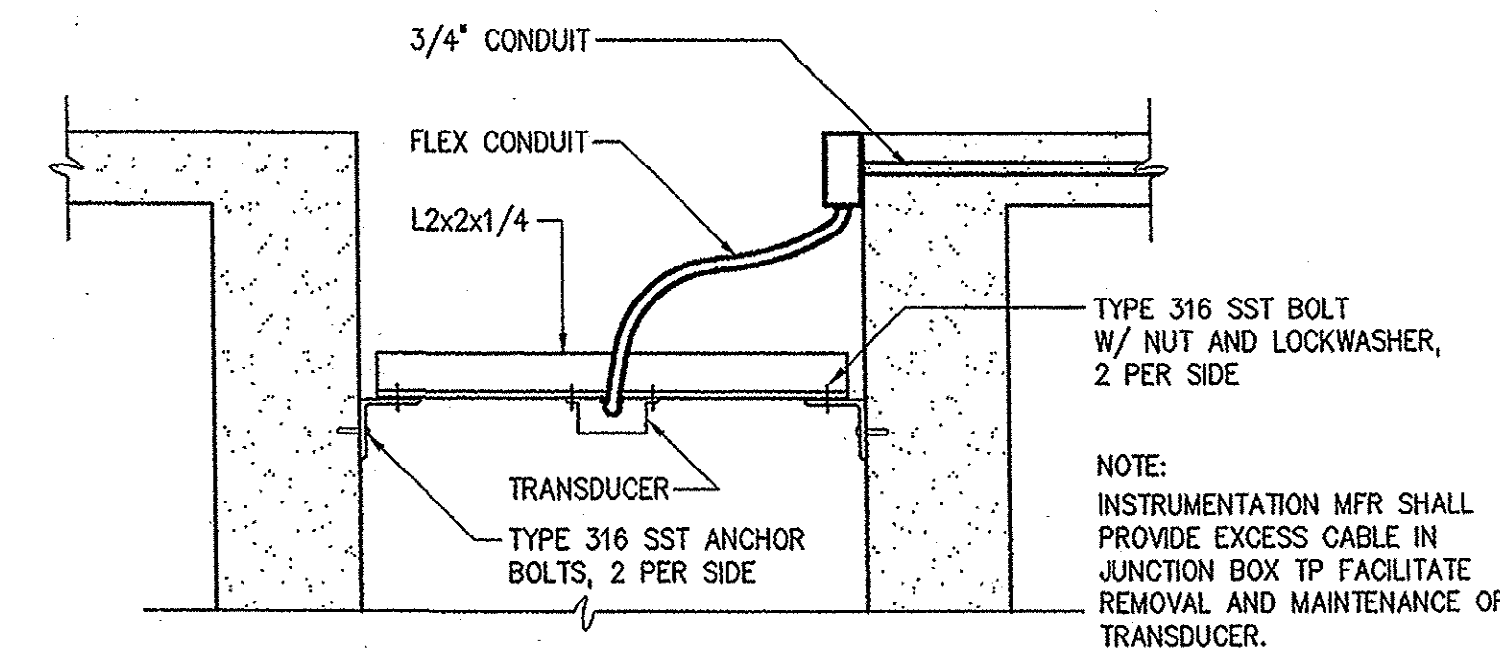
ULTRASONIC LEVEL TRANSDUCER OR TRANSMITTER
WALL MOUNTING DETAIL
SECTION A
D15
NTS



TYPICAL PIPE STAND TRANSMITTER MOUNT
FLOOR OR WALL
1696214

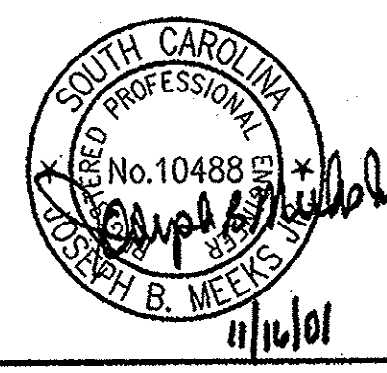
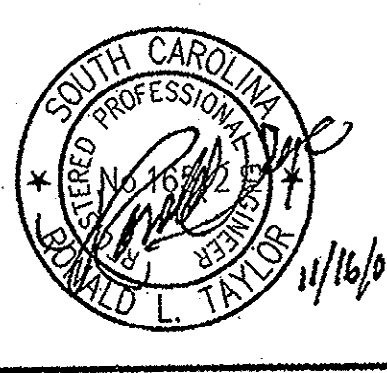


WALL MOUNTED FLOAT
SWITCH DETAIL
1696203



TRANSDUCER MOUNTING DETAIL
1696215

DESIGNED	H & S
DRAWN	H & S
CHECKED	JBM
PROJ. ENGR.	JBM
CONSTRUCTION	11/16/01 JBM
REGULATORY APPROVAL	8-31-01 JBM
ISSUED FOR	
NO.	



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Environmental Engineers & Scientists
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SOUTH CAROLINA
CONWAY WWTP
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MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001
H & S JOB NUMBER 30631	CONTRACT NUMBER 1
DRAWING NUMBER D14	H & S FILE NO. 56

35-004-057

LIGHTING

A1

2' X 4' FLUORESCENT FIXTURE
LETTER DENOTES TYPE
NUMBER DENOTES CIRCUIT

1' X 4' OR 1' X 8' FLUORESCENT FIXTURE

H.I.D. OR INCANDESCENT FIXTURE
CEILING MOUNTED # DENOTES CIRCUIT
Q DENOTES QUARTZ STANDBY S DENOTES STANCHION

WALL MOUNTED FIXTURE
DENOTES CIRCUIT Q DENOTES QUARTZ STANDBY

RECESSED FIXTURE

CEILING MOUNTED EXIT SIGN

WALL MOUNTED EXIT SIGN

EMERGENCY LIGHT FIXTURE
DENOTES CIRCUIT

POLE MOUNTED FIXTURE

RECEPTACLES

DUPLEX RECEPTACLE
SUBSCRIPT DENOTES TYPE:
GFCI DENOTES GROUND FAULT CIRCUIT INTERRUPT
UPS DENOTES UNINTERRUPTIBLE POWER SUPPLY
DENOTES CIRCUIT
WPCR DENOTES WEATHERPROOF AND CORROSION RESISTANT

SINGLE OUTLET RECEPTACLE

SPECIAL PURPOSE OUTLET

MULTI-OUTLET RECEPTACLE SINGLE

MULTI-OUTLET RECEPTACLE DUPLEX

240 VOLT RECEPTACLE

PANELS AND BOXES

JUNCTION BOX

PULL BOX

HVAC AND FIRE ALARM

FIRE ALARM PULL STATION

FIRE ALARM CONTROL PANEL

ANNUNCIATOR

DUCT DETECTOR

SMOKE DETECTOR
SUBSCRIPT DENOTES TYPE:
Z DENOTES IONIZATION
P DENOTES PHOTOELECTRIC
T DENOTES THERMAL

THERMOSTAT

AMBIENT TEMPERATURE TRANSMITTER

UNIT HEATER

SWITCHES

WALL SWITCH
SUBSCRIPT DENOTES TYPE:
NO SUBSCRIPT DENOTES SINGLE POLE
3 DENOTES 3 WAY M DENOTES MANUAL MOTOR STARTER
4 DENOTES 4 WAY D DENOTES DIMMER
DENOTES CIRCUIT
WPCR DENOTES WEATHERPROOF AND CORROSION RESISTANT

COMBINATION MOTOR STARTER

DISCONNECT SWITCH

DOOR LIMIT SWITCH

LOCAL CONTROL STATION

SPEED SWITCH

WIRING

OHE OVERHEAD ELECTRICAL LINE

CONDUIT HOME RUN

CONDUIT EXPOSED

CONDUIT CONCEALED

FLEXIBLE CONDUIT

SCHEMATICS

3-POSITION SELECTOR SWITCH
HAND - OFF - AUTO

PUSHBUTTON SWITCH N.O.
TEXT DENOTES LEGEND PLATE

PUSHBUTTON SWITCH N.C.
TEXT DENOTES LEGEND PLATE

MUSHROOM HEAD EMERGENCY STOP
PUSHBUTTON SWITCH N.C. MAINTAINED
TEXT DENOTES LEGEND PLATE

PUSHBUTTON SWITCH N.C. WITH LOCK-OUT
TEXT DENOTES LEGEND PLATE

DISCONNECT SWITCH N.O.

DISCONNECT SWITCH N.C.

TEMPERATURE SWITCH OR THERMOSTAT N.O.
TEXT DENOTES TAG NUMBER

TEMPERATURE SWITCH OR THERMOSTAT N.C.
TEXT DENOTES TAG NUMBER

PRESSURE SWITCH N.O.
TEXT DENOTES TAG NUMBER

PRESSURE SWITCH N.C.
TEXT DENOTES TAG NUMBER

LEVEL SWITCH N.O.
TEXT DENOTES TAG NUMBER

LEVEL SWITCH N.C.
TEXT DENOTES TAG NUMBER

ON DELAY TIMED SWITCH N.O.T.C.
TEXT DENOTES TAG NUMBER

ON DELAY TIMED SWITCH N.C.T.O.
TEXT DENOTES TAG NUMBER

OFF DELAY TIMED SWITCH N.O.T.O.
TEXT DENOTES TAG NUMBER

OFF DELAY TIMED SWITCH N.C.T.C.
TEXT DENOTES TAG NUMBER

TORQUE SWITCH
TEXT DENOTES TAG NUMBER

LIMIT SWITCH
TEXT DENOTES TAG NUMBER

CONTACT (NORMALLY OPEN)
DENOTES COIL NUMBER

CONTACT (NORMALLY CLOSED)
DENOTES COIL NUMBER

INDICATOR LIGHT - LETTER DENOTES COLOR

PUSH-TO-TEST INDICATOR LIGHT
LETTER DENOTES COLOR

ELAPSED TIME METER

SOLENOID VALVE

MECHANICAL INTERLOCK CONNECTION

COIL
M DENOTES MOTOR STARTER
CR DENOTES CONTROL RELAY
TR DENOTES TIME DELAY RELAY
LC DENOTES LIGHTING CONTACTOR
PR DENOTES INTERPOSING PILOT RELAY
XXX DENOTES REFERENCE LINE NUMBER

SINGLE LINE

TX-STRUCTURE DESIGNATION
2500 KVA
480-120/208V

TRANSFORMER

3P/4W
TYPE OF TRANSFORMER

PROTECTIVE RELAY, NUMBER
DENOTES IEEE DEVICE FUNCTION

1200A 52

MEDIUM VOLTAGE DRAWOUT
CIRCUIT BREAKER

100 A

FUSE

800 AF
800 AT

DRAWOUT POWER CIRCUIT BREAKER

800 AF
800 AT

MOLDED CASE CIRCUIT BREAKER

THERMAL OVERLOAD RELAY

GROUND

600:5A
(3)

CURRENT TRANSFORMER
NUMBER DENOTES QUANTITY

480-120V
(3)

POTENTIAL TRANSFORMER
NUMBER DENOTES QUANTITY

DRAW-OUT ELEMENT

800A
3P 3WATS

AUTOMATIC OR MANUAL
TRANSFER SWITCH

25

MOTOR
NUMBER DENOTES HORSEPOWER

500kW
480V, 3P, 4W

15A
MCP

REDUCED VOLTAGE
AUTO-TRANSFORMER
STARTER
NUMBER DENOTES NEMA SIZE
NUMBER DENOTES CONTINUOUS
CURRENT RATING OF MCP

200AF
MCP

REDUCED VOLTAGE
AUTO-TRANSFORMER
STARTER
NUMBER DENOTES NEMA SIZE
NUMBER DENOTES CONTINUOUS
CURRENT RATING OF MCP

30A
MCP

FULL VOLTAGE REVERSING
STARTER
NUMBER DENOTES NEMA SIZE
NUMBER DENOTES CONTINUOUS
CURRENT RATING OF MCP

SINGLE LINE, CONT'D.

5

LINE REACTOR
NUMBER DENOTES PERCENT IMPEDANCE

CAPACITOR

V-VS

VOLTMETER AND SWITCH

ST

SHUNT TRIP

TVSS

TRANSIENT VOLTAGE SURGE SUPPRESSOR

Lightning ARRESTOR

KIRK-KEY INTERLOCK

COMBINATION POWER UNIT

LP-#

100A
MCP

5%

VARIABLE FREQUENCY DRIVE
X% DENOTES LINE REACTOR PERCENT IMPEDANCE

VFD

100A
MCP

IC

REDUCED VOLTAGE SOLID STATE STARTER
IC - DENOTES INPUT ISOLATION CONTACTOR
OC - DENOTES OUTPUT ISOLATION CONTACTOR
BC - DENOTES BYPASS CONTACTOR
BC DP - DENOTES DEFINITE PURPOSE BYPASS CONTACTOR

100A
MCP

5%

VFD WITH BYPASS STARTER
NUMBER DENOTES NEMA SIZE

OC - DENOTES OUTPUT ISOLATION CONTACTOR

100A
MCP

5%

VFD WITH RVSS BYPASS
OC - DENOTES OUTPUT ISOLATION CONTACTOR
IC - DENOTES INPUT CONTACTOR

ABBREVIATIONS

TPS TWISTED PAIR SHIELDED

FSS FUSED SAFETY SWITCH

NFSS NON-FUSED SAFETY SWITCH

SST STAINLESS STEEL

RVAT REDUCED VOLTAGE AUTO TRANSFORMER

L_O_R LOCAL_OFF_REMOTE

H_O_A HAND_OFF_AUTO

W.T. WALK THRU

PLC PROGRAMMABLE LOGIC CONTROLLER

C. CONDUIT

SP. C. SPARE CONDUIT

WIC WALL MOUNTABLE INTERCONNECT CENTER

PC PHOTOCELL

S.E. SERVICE ENTRANCE RATED

EQUIPMENT/DEVICE LOCATION SYMBOLS

* LOCATED AT MCC OR COMBINATION STARTER

△ LOCATED IN FIELD

□ LOCATED AT VFD

MISC PLAN VIEW SYMBOLS

⊕ EQUIPMENT CONNECTION

⊗ GROUND ROD

⊕ CONCRETE ENCASED DUCT BANK IDENTIFIER. # DENOTES NUMBER. SEE DUCT BANK SCHEDULE.

⊕ CONDUIT AND WIRE (SEE LEGEND)

□ INSTRUMENT TRANSMITTER

COMMUNICATIONS

▽ TELEPHONE OR NETWORK DROP

▽ PAGER RECEPTACLE

▽ ALARM HORN

GENERAL NOTES:

- UNLESS SPECIFICALLY NOTED OTHERWISE, ALL UNDERGROUND CONCRETE ENCASED ELECTRICAL CONDUITS SHALL BE PER STANDARD DETAIL 1611801.
- THE INSTALLATION OF ALL CONCRETE ENCASED ELECTRICAL CONDUITS SHALL COMPLY WITH ACI 318, SECTION 6.3. CONTRACTOR SHALL SUPPLY EXPANSION JOINT FITTINGS AS REQUIRED FOR THERMAL EXPANSION AND DEFLECTION.
- BOND ALL NEW CONCRETE ENCASED GROUND CONDUCTORS TO EXISTING GROUND CONDUCTORS IN ALL MANHOLES, PULL BOXES, CABLE TRAYS, AND SIMILAR LOCATIONS WHERE APPLICABLE.
- UNLESS OTHERWISE SPECIFIED OR NOTED, ALL WALL MOUNTED ELECTRICAL PANELS, ENCLOSURES, AND SIMILAR EQUIPMENT SHALL BE MOUNTED 6'-6" (MAX) FROM THE TOP OF THE PANEL TO FINISHED FLOOR OR GRADE.
- UNLESS OTHERWISE NOTED, ALL LIGHTING SWITCHES, CONTROL SWITCHES, AND SIMILAR EQUIPMENT SHALL BE MOUNTED WITH THEIR CENTERLINE APPROXIMATELY 4'-0" ABOVE FINISHED FLOOR, SLAB, OR GRADE. THERMOSTATS SHALL BE MOUNTED 4'-4" ABOVE FINISHED FLOOR.
- A SEPARATE EQUIPMENT GROUNDING CONDUCTOR SHALL BE PROVIDED FOR EACH CIRCUIT (SEPARATE CONDUCTOR IN THE CONDUIT). THE CONDUCTOR SHALL BE TERMINATED AT THE PROPER DEVICE, TERMINAL OR LUG AT THE POWER SOURCE (MCC GROUND BUS, PANELBOARD GROUND BUS, ETC.). GROUND CONDUCTOR SIZE SHALL BE PER THE LATEST EDITION OF THE NEC.
- ELECTRICAL SYSTEMS INSTALLED IN HAZARDOUS LOCATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CHAPTER 5, ART. 500 OF THE LATEST EDITION OF THE NEC. CONTRACTOR SHALL SEAL ALL CONDUITS LEAVING HAZARDOUS AREA. WALL AND FLOOR OPENINGS SHALL BE SEALED WITH FIREPROOF COMPOUND.
- ALL EQUIPMENT LOCATED IN HAZARDOUS AREAS SHALL BE SUITABLE FOR THE CLASS, DIVISION, AND GROUP RATING OF THE LOCATION.
- UNLESS SPECIFICALLY NOTED OTHERWISE, EXISTING PAVEMENT SHALL BE SAW CUT AND REMOVED TO ALLOW FOR THE INSTALLATION OF NEW ELECTRICAL DUCTBANKS. AFTER INSTALLATION, REPLACE PAVEMENT WITH NEW TO MATCH ORIGINAL CONDITIONS.
- CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY COMPANY REGARDING ELECTRIC SERVICE REQUIREMENTS. CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUIT, WIRE, METER BASE, AND OTHER EQUIPMENT AS NECESSARY FOR THE SERVICE. CLOSE COORDINATION BETWEEN THE UTILITY, CONTRACTOR AND THE OWNER IS ESSENTIAL AND REQUIRED.

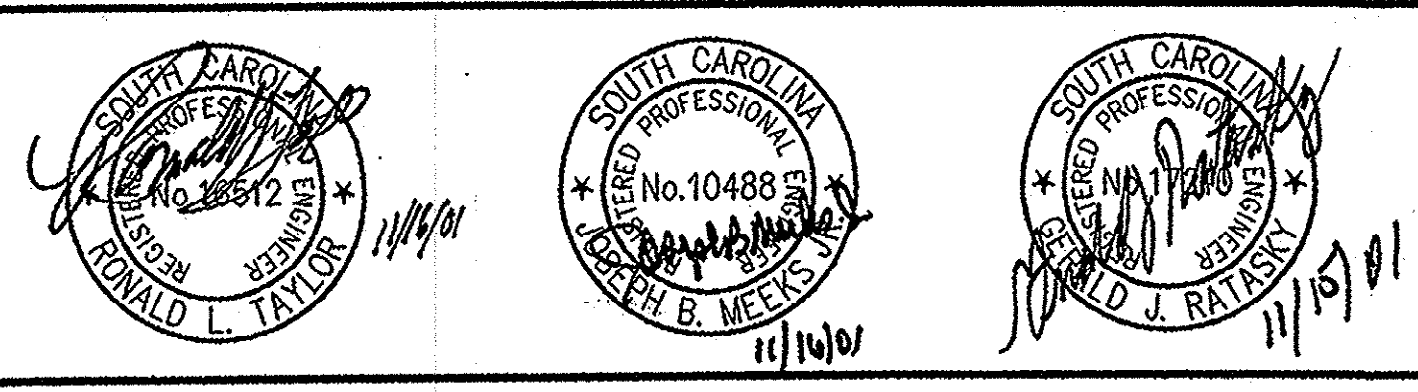
Under ground
conduit UG

Above ground
conduit AG

SPARE
Conduit SC

Not otherwise
indicated on
plans

DESIGNED	JLH
DRAWN	JLH
CHECKED	am
PROJ. ENGR.	JBM
APPROVED	RET
NO.	2
CONSTRUCTION	8-31-01
REGULATORY APPROVAL	8-31-01
ISSUED FOR	DATE



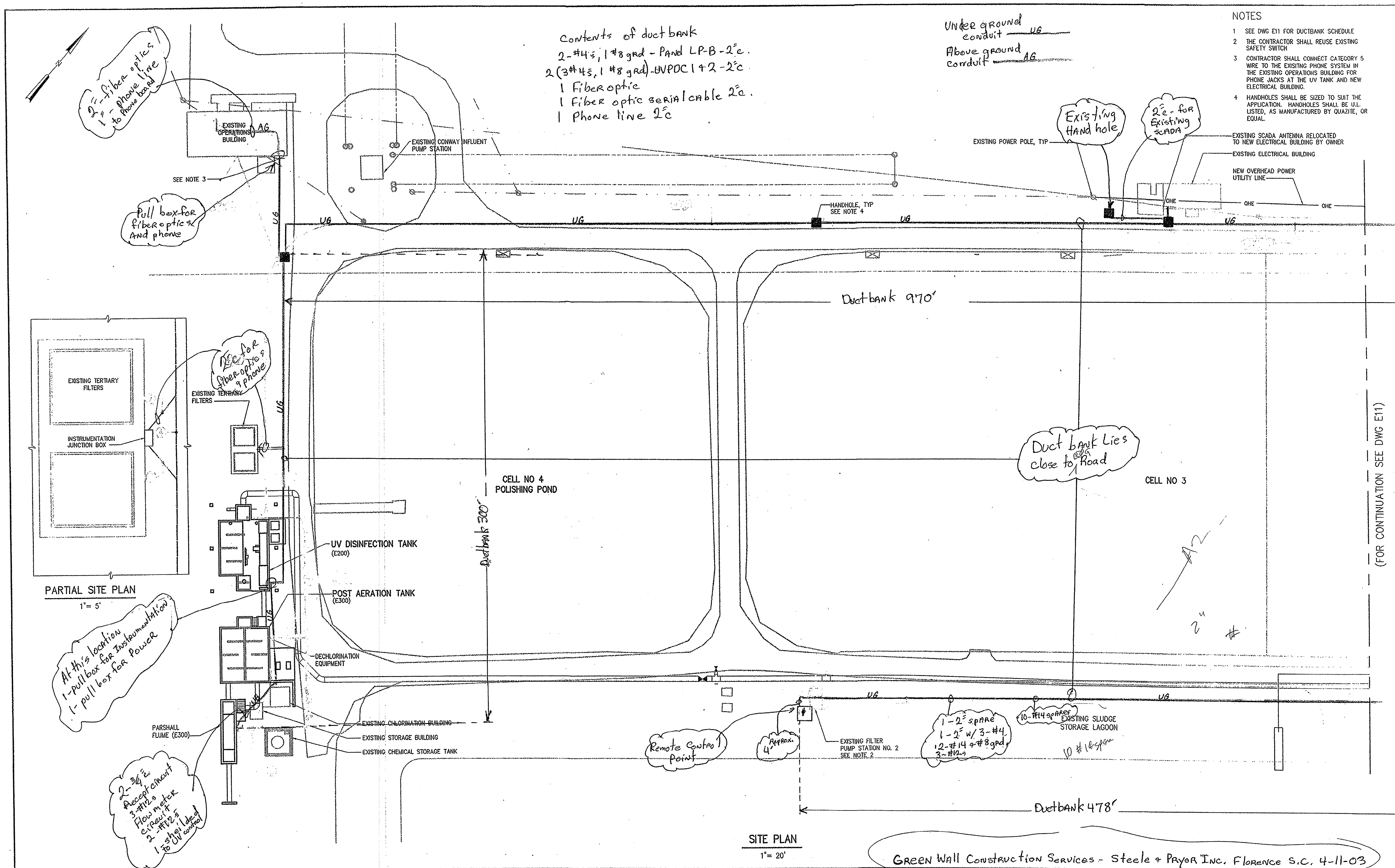
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Environmental Engineers & Scientists
4011 WestChase Blvd., Raleigh, North Carolina 27607

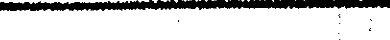
GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

**ELECTRICAL
LEGEND AND GENERAL NOTES**

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001
H & S JOB NUMBER 30631	CONTRACT NUMBER 1
DRAWING NUMBER E1	H & S FLAT FILE NO. 56

35-004-058

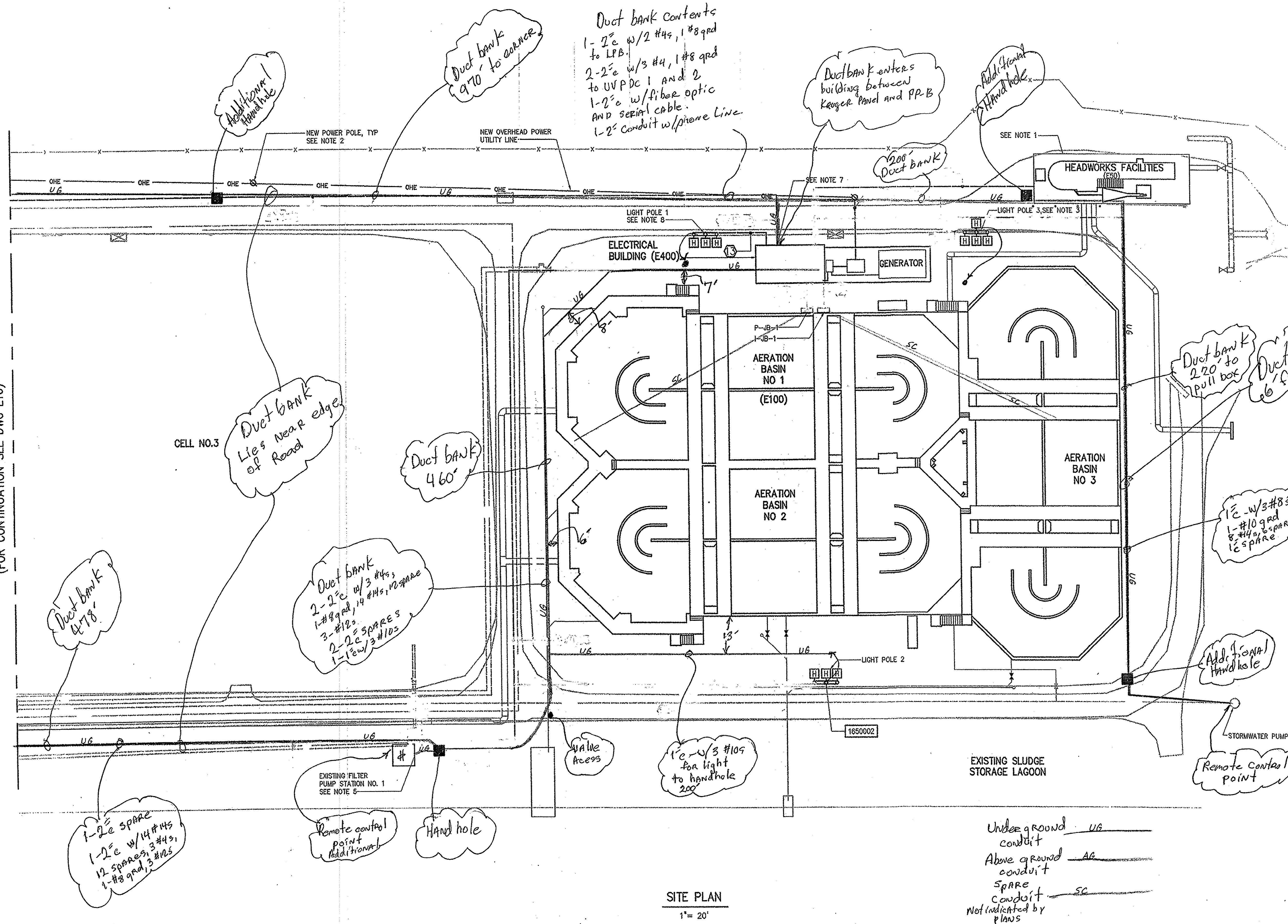


				DESIGNED JLH				HAZEN AND SAWYER Environmental Engineers & Scientists 4011 WestChase Blvd, Raleigh, North Carolina 27607	GRAND STRAND WATER AND SEWER AUTHORITY SOUTH CAROLINA CONWAY WWTP 4.0 MGD EXPANSION AND UPGRADE	SITE WORK ELECTRICAL AREA 1 SITE PLAN	THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001		
				DRAWN JLH								H & S JOB NUMBER	3063		
				CHECKED JM								CONTRACT NUMBER	1	DRAWING NUMBER	E10
				PROJ. ENGR. JBM								H&S FLAT FILE NO. 56			
2	CONSTRUCTION	11/16/01	368												
1	REGULATORY APPROVAL	8-31-01	161												
NO.	ISSUED FOR	DATE	BY	APPROVED											

NOTE

- CONTRACTOR TO COORDINATE EXACT LOCATION OF ELECTRICAL AND INSTRUMENTATION CONNECTIONS.
- CONTRACTOR SHALL COORDINATE WITH THE ELECTRIC UTILITY REGARDING THE NEW OVERHEAD LINE.
- POLE SHALL INCLUDE A 4TH LIGHT FIXTURE TO THE REAR OF THE POLE, AIMED AT THE NEW HEADWORKS FACILITY.
- THE CONTRACTOR SHALL AIM LIGHTS FOR EVEN DISTRIBUTION OVER THE AERATION BASINS.
- THE CONTRACTOR SHALL REUSE EXISTING SAFETY SWITCH.
- WIC IS A WALL MOUNTABLE INTERCONNECT CENTER LOCATED AT THE EXISTING OPERATIONS BUILDING, REFERENCE DRAWING 11.
- CONTRACTOR SHALL CONNECT CATEGORY 5 WIRE TO THE EXISTING PHONE SYSTEM IN THE EXISTING OPERATIONS BUILDING FOR PHONE JACKS AT THE UV TANK AND NEW ELECTRICAL BUILDING.
- CONTRACTOR SHALL REFERENCE SECTION 16500 REGARDING PHOTOCELL.
- I-JB-1 contains controls and instrumentation conduits to basin.
- P-JB-1 contains power conduits
- All conduits at the basin route through I-JB-1 and P-JB-1.

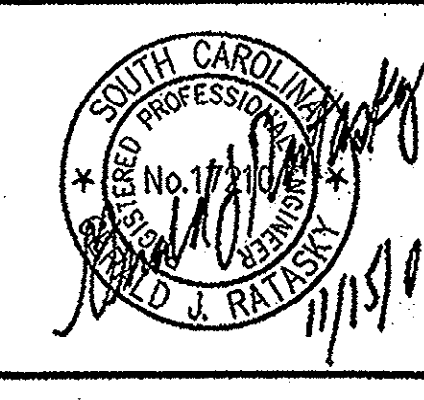
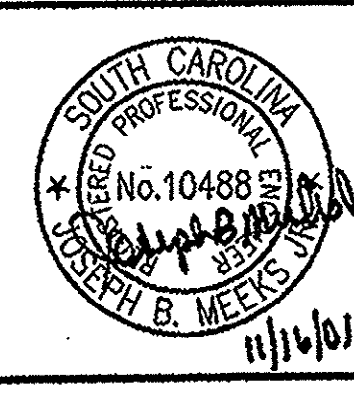
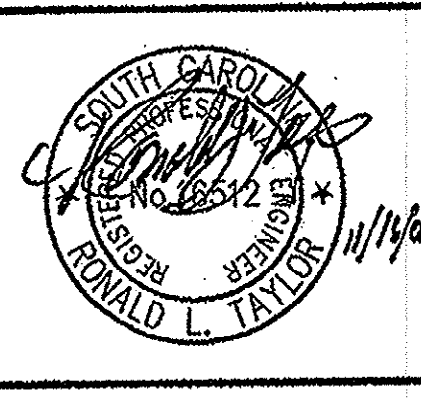
(FOR CONTINUATION SEE DWG E10)



SITE PLAN

1" = 20'

DESIGNED	JLH
DRAWN	JLH
CHECKED	BM
PROJ. ENGR.	JBM
APPROVED	BM
DATE	8-31-01
ISSUED FOR	CONSTRUCTION
NO.	1



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

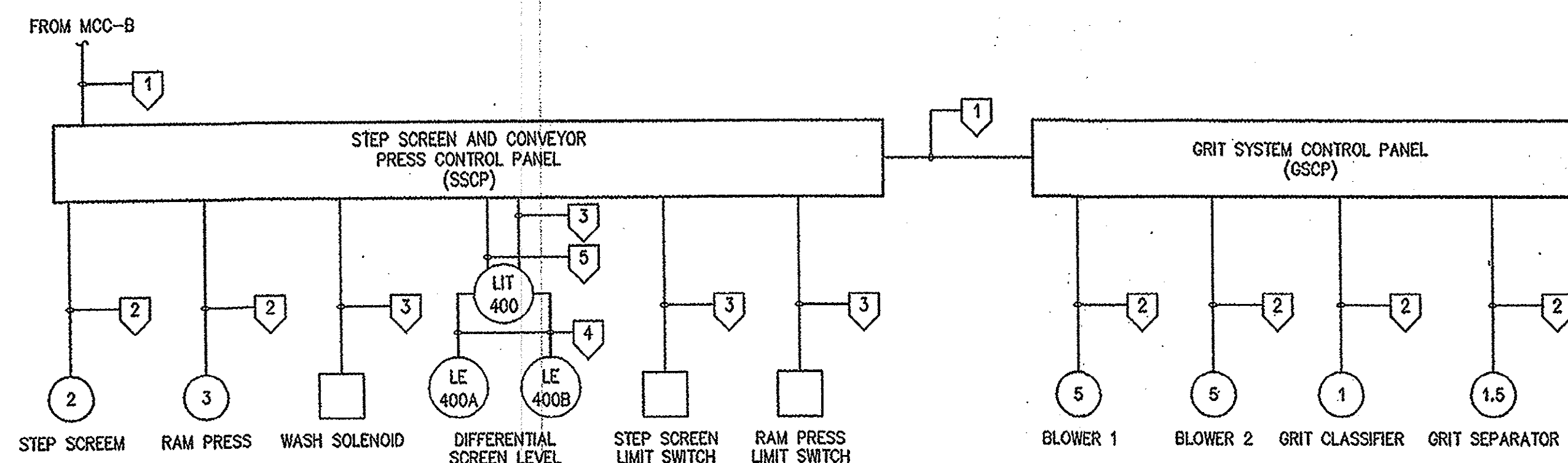
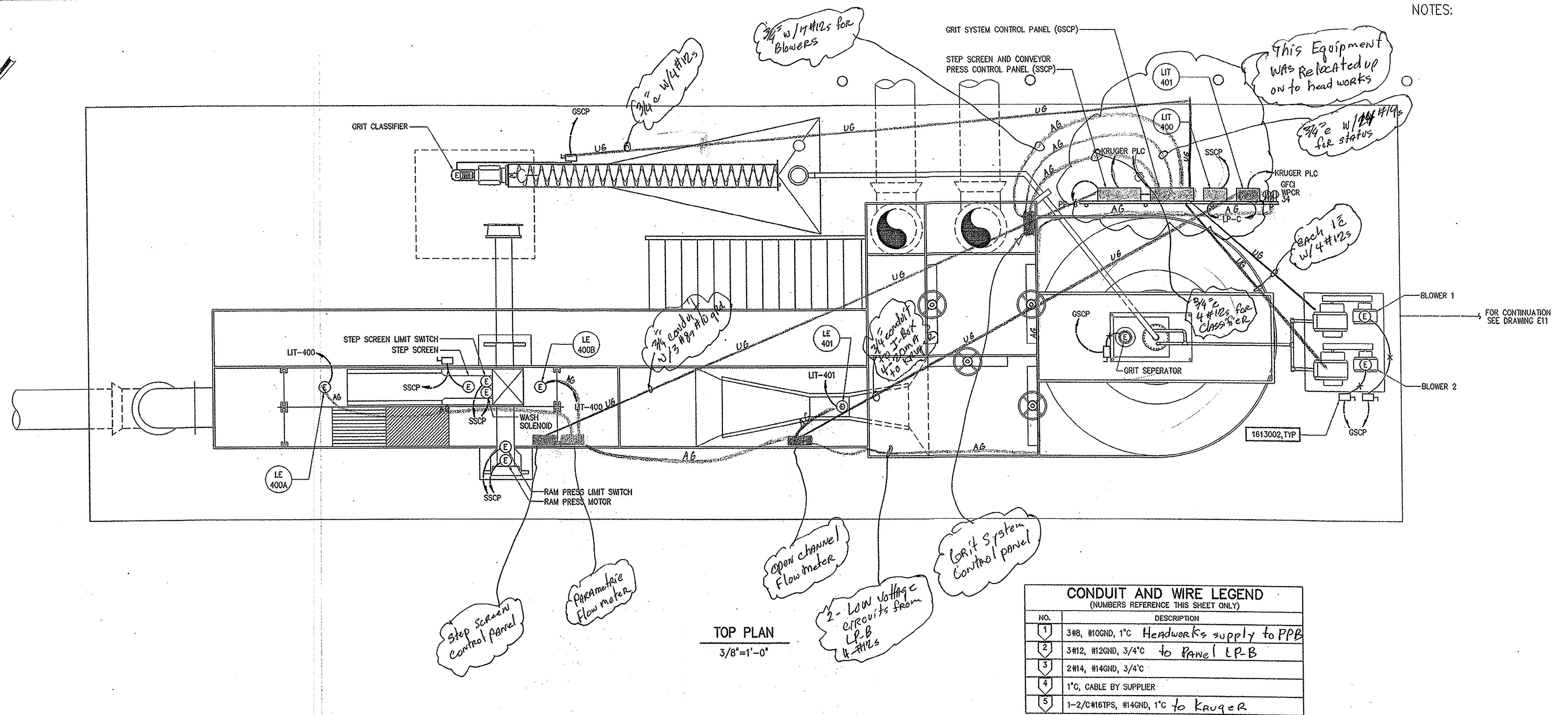
GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

SITE WORK ELECTRICAL AREA 2 SITE PLAN

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
H & S JOB NUMBER	30631	
CONTRACT NUMBER	1	
DRAWING NUMBER	E11	
H&S FLAT FILE NO.	56	

35-004-010

NOTES:



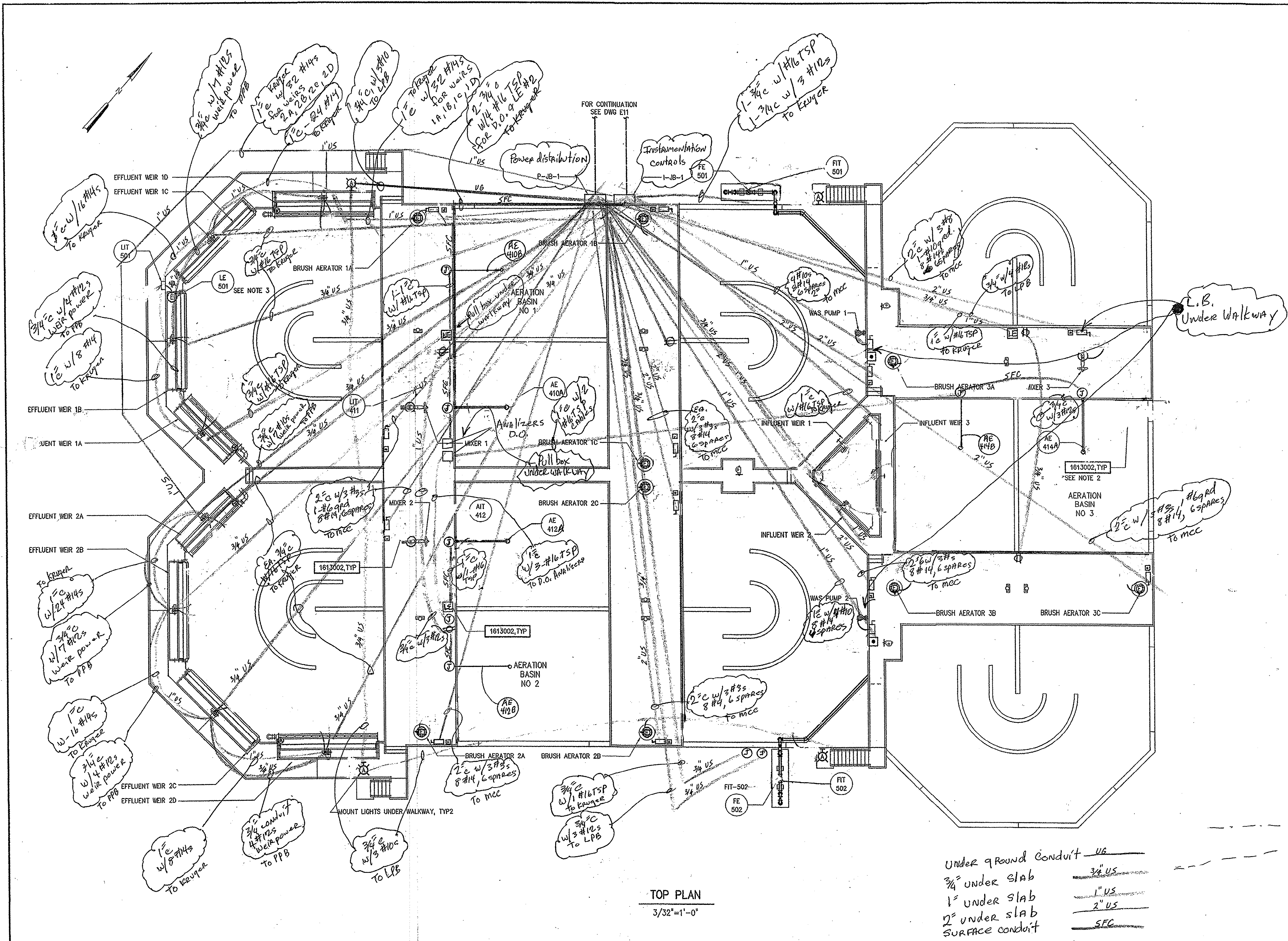
- Notes
1. Relays were added to the original installation for status indication of SSCP and GSCP.
 2. Conduit Above ground — AG
 3. Conduit below ground — UG

DESIGNED: JLH DRAWN: JLH CHECKED: JBM PROJ. ENGR: JBM APPROVED: [Signature] DATE: 11/16/01 BY: JBM		SOUTH CAROLINA PROFESSIONAL ENGINEER No. 10488 RONALD L. TAYLOR 11/16/01		SOUTH CAROLINA PROFESSIONAL ENGINEER No. 17211 ROBERT B. MEERS 11/16/01		HAZEN AND SAWYER Environmental Engineers & Scientists 4011 WestChase Blvd, Raleigh, North Carolina 27607		GRAND STRAND WATER AND SEWER AUTHORITY SOUTH CAROLINA CONWAY WWTP 4.0 MGD EXPANSION AND UPGRADE		HEADWORKS FACILITIES ELECTRICAL POWER TOP PLAN		THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING. DATE: AUGUST 2001 H & S JOB NUMBER: 30631 CONTRACT NUMBER: 1 DRAWING NUMBER: E50 H&S FLAT FILE NO. 56	
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35-004-061

NOTES:

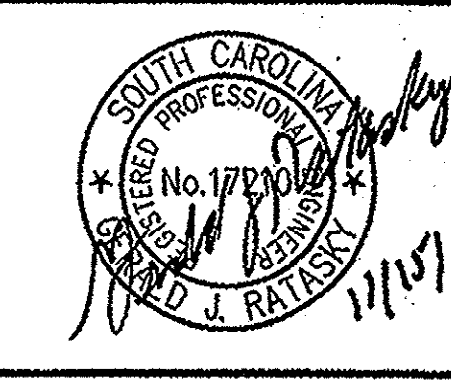
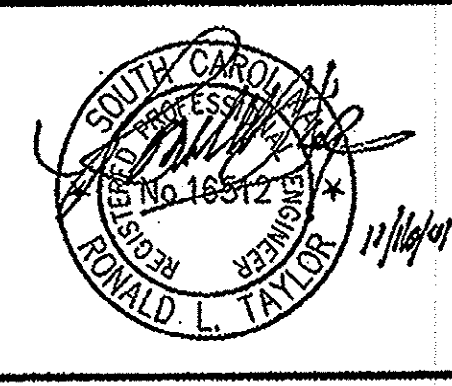
- 1 ALL WIRING THAT TERMINATES IN A LIGHTING PANEL, POWER PANEL OR MCC SHALL BE ROUTED THROUGH P-JB-1. ALL WIRING THAT TERMINATES IN THE KRUGER CONTROL PANEL SHALL BE ROUTED THROUGH 1-JB-1.
- 2 THE CONTRACTOR SHALL PROVIDE SUNSHADES AS SPECIFIED IN 17700 FOR ALL INSTRUMENT TRANSMITTERS LOCATED OUTSIDE.
- 3 LEVEL ELEMENT IS MOUNTED IN THE EFFLUENT BOX UNDER WEIR 1B.



TOP PLAN
3/32" = 1'-0"

Under ground conduit UG
3/4" under slab 3/4" US
1" under slab 1" US
2" under slab 2" US
SURFACE conduit SFC

DESIGNED	JLH
DRAWN	JLH
CHECKED	JBM
PROJ. ENGR.	JBM
APPROVED	JBM
CONSTRUCTION	JBM
REGULATORY APPROVAL	JBM
ISSUED FOR	JBM
DATE	11/10/01
BY	JBM



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

4 MGD TRIPLE DITCH AERATION BASIN
ELECTRICAL
POWER TOP PLAN

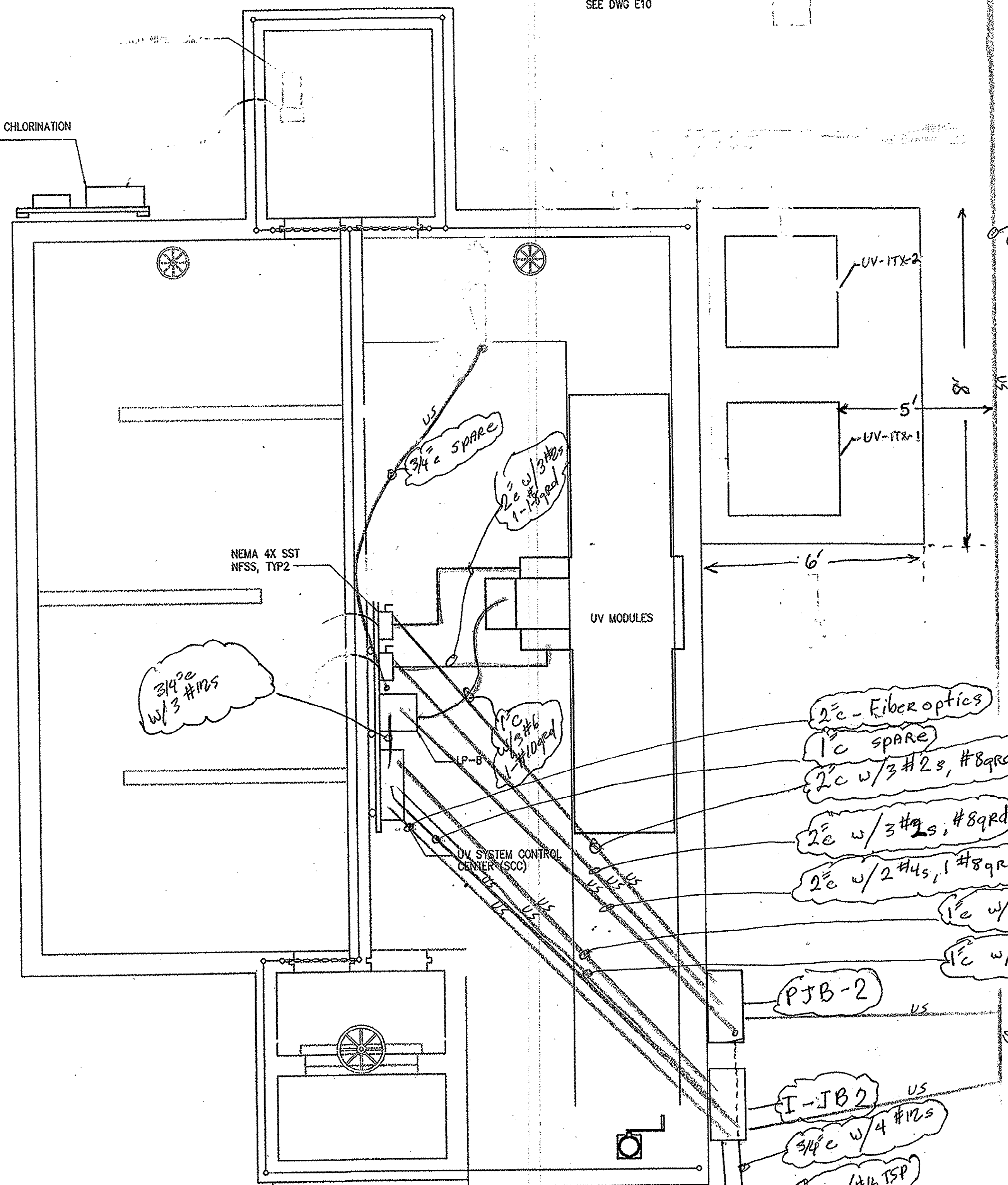
THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001
CONTRACT NUMBER 1	H & S JOB NUMBER 30631
DRAWING NUMBER E100	
H & S PLAT FILE NO. 56	

35-004-062

NOTES:
1. REFERENCE DRAWING M200 FOR DEMOLITION WORK AND LOCATION OF EXISTING EQUIPMENT TO BE RELOCATED

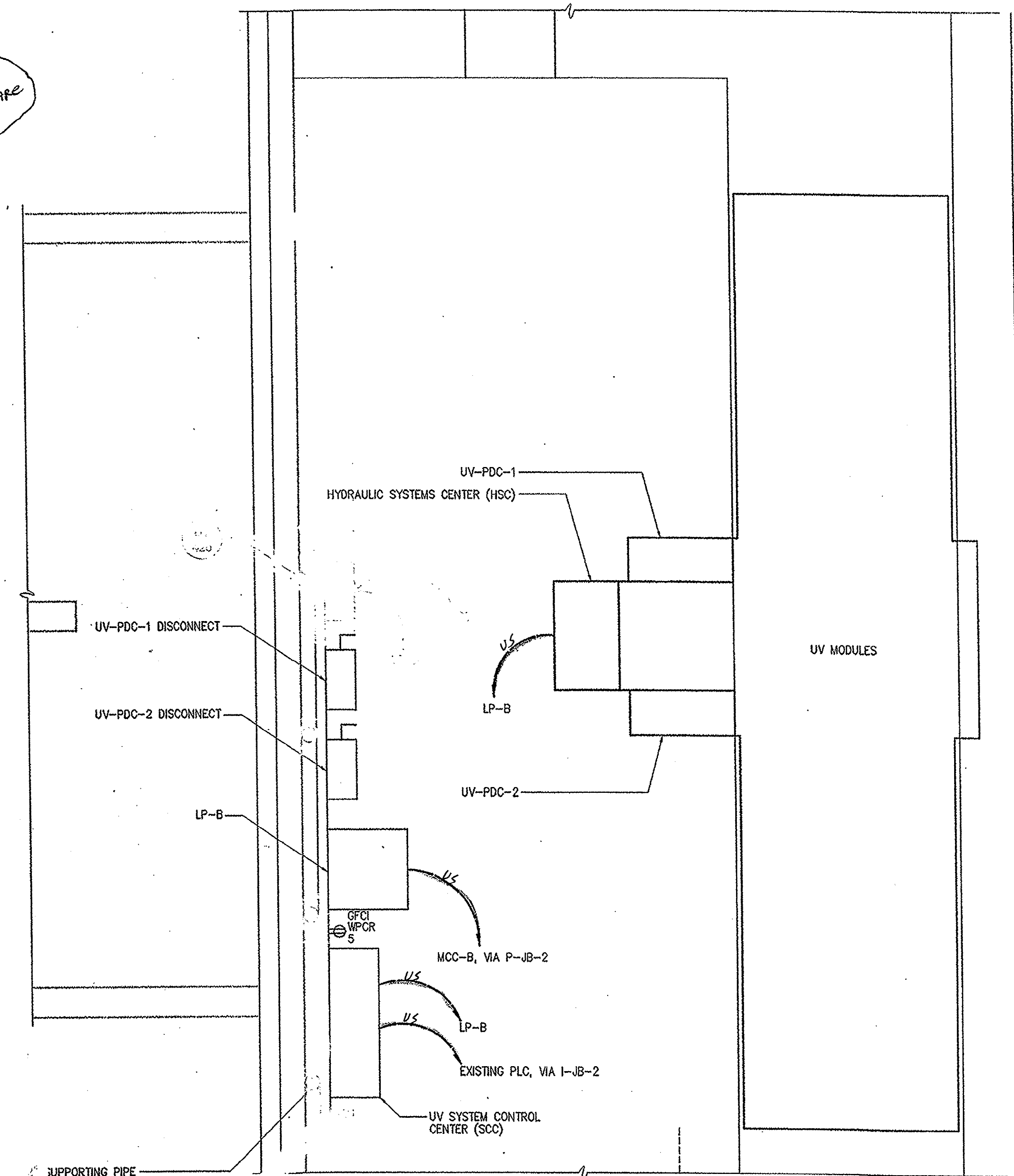
RELOCATED CHLORINATION EQUIPMENT

FOR CONTINUATION
SEE DWG E10



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

Duct bank
w/ 2-2c spare

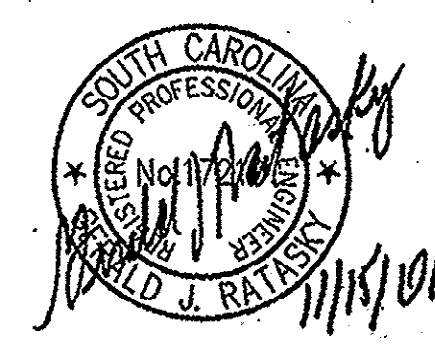
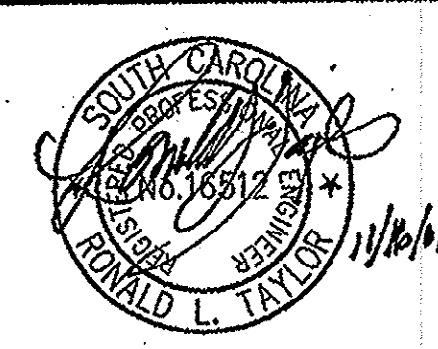


PARTIAL TOP PLAN
3/4" = 1'-0"

under slab US

To Flume

DESIGNED	JLH
DRAWN	JLH
CHECKED	GON
PROJ. ENGR	JBM
APPROVED	
NO.	
CONSTRUCTION	
REGULATORY APPROVAL	
ISSUED FOR	
DATE	8-31-01
BY	JBM



HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

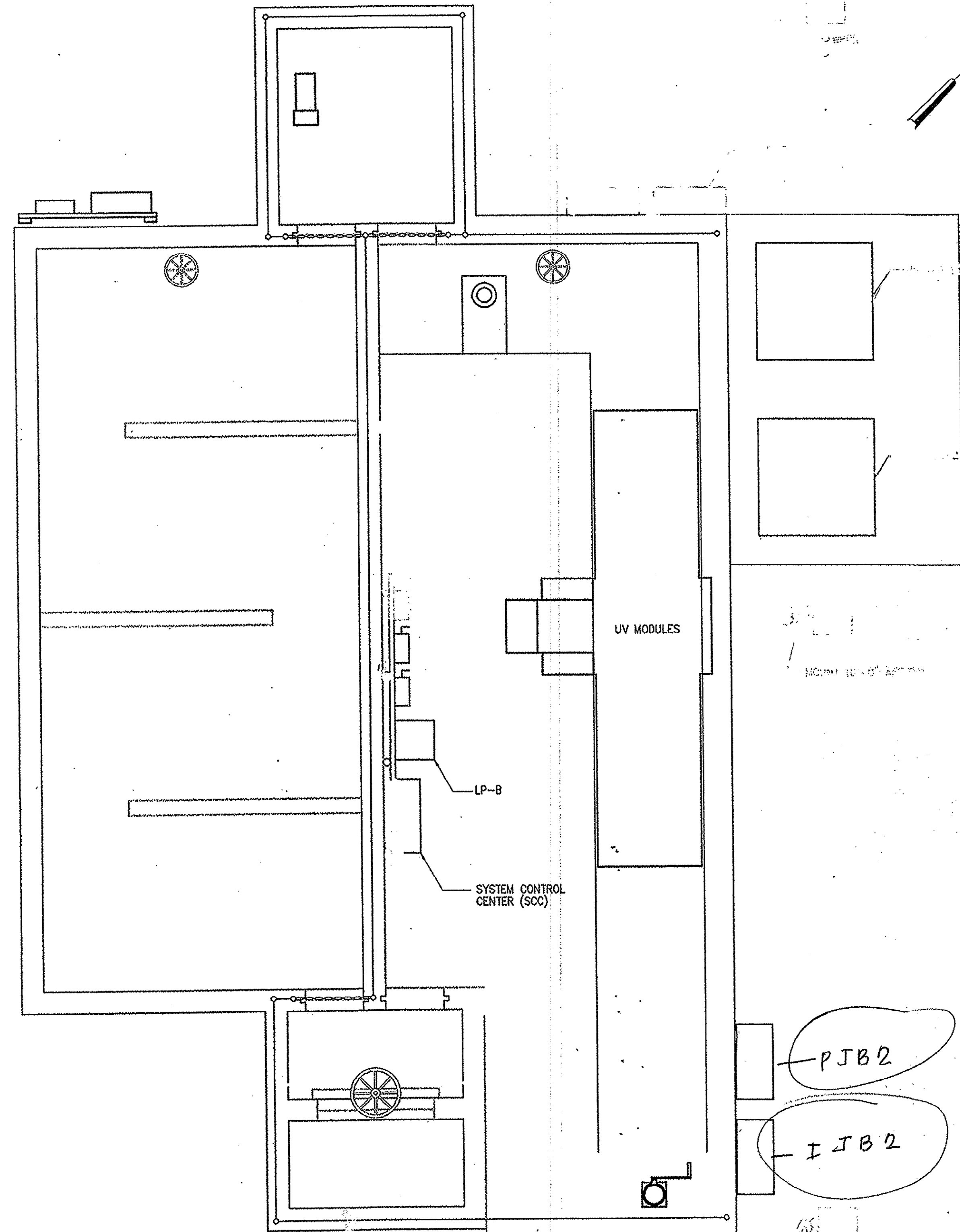
GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

UV DISINFECTION TANK
ELECTRICAL
TOP PLANS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	E200
	H & S FILE NO.	56

35-004-063

NOTES:



120/240 VOLTS
1Ø, 3 WIRE

LP-B

TYPE: MPZ
MOUNT: SURFACE

100AT25KVA125AT

DESCRIPTION	WIRE	CKT BKR		VOLT AMPERE		VOLT AMPERE		CKT BKR		WIRE	DESCRIPTION
		TRIP	POLE NO	ØA	ØB	ØA	ØB	NO	POLE TRIP		
UV ACCEPT Flow Meter Flume Recpt	20	1	1	150		6000		2	1	60	HYDRAULICS SYSTEM CENTER
	20	1	3		1200	2016		4	1	20	UV SYSTEM CONTROL CENTER
	20	1	5	350		170		6	1	20	FLUME RECPT
	20	1	7		1000	1000		8	1	20	FLUME RECPT
	20	1	9	150		1000		10	1	20	FLUME RECPT
SPARE	20	1	11					12	1	20	SPARE
SPARE	20	1	13					14	1	20	SPARE
SPARE	20	1	15					16	1	20	SPARE
SPACE				17				18			SPACE
SPACE				19				20			SPACE
SPACE				21				22			SPACE
SPACE				23				24			SPACE
TOTAL				650	2200	7170 3016		TOTAL			
PHASE TOTAL				7820	5216	TOTAL LOAD					
						13036					

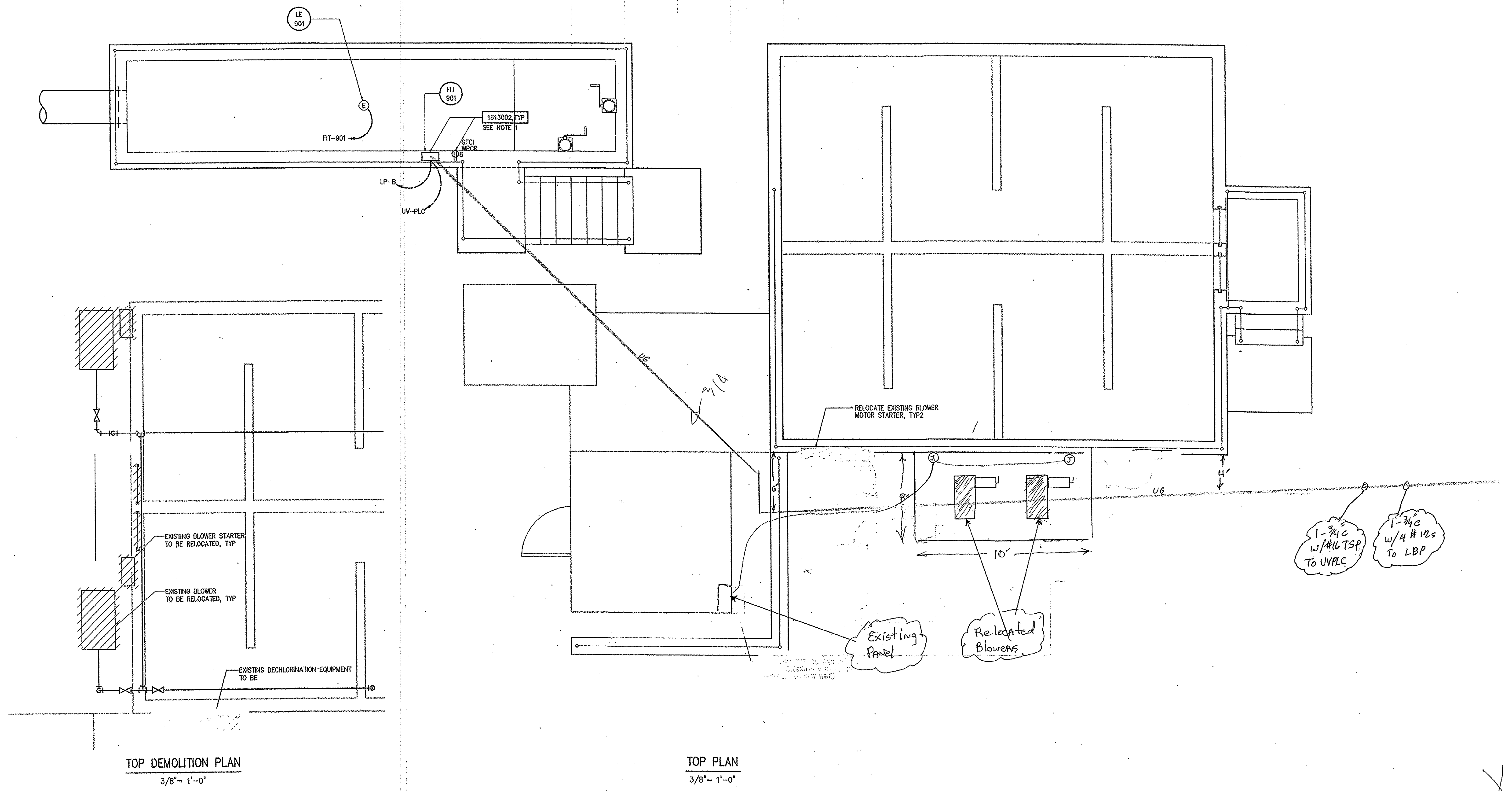
9

CONDUIT AND WIRE LEGEND	
(NUMBERS REFERENCE THIS SHEET ONLY)	
NO.	DESCRIPTION
1	2#12, #12GND, 3/4"C
2	2#4, #8, 1"C

DESIGNED: JLH DRAWN: JLH CHECKED: <i>602</i> PROJ. ENGR: JBM APPROVED: <i>[Signature]</i>				HAZEN AND SAWYER Environmental Engineers & Scientists 4011 WestChase Blvd, Raleigh, North Carolina 27607		GRAND STRAND WATER AND SEWER AUTHORITY SOUTH CAROLINA CONWAY WWTP 4.0 MGD EXPANSION AND UPGRADE		UV DISINFECTION TANK ELECTRICAL TOP LIGHTING PLAN		THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING. DATE: AUGUST 2001 H & S JOB NUMBER: 30631 CONTRACT NUMBER: 1 DRAWING NUMBER: E201 H&S PLAT FILE NO. 56	
NO. 2 CONSTRUCTION REGULATORY APPROVAL ISSUED FOR		DATE: 8-31-01 BY: <i>JBM</i> APPROVED: <i>[Signature]</i>									

35-004-064

NOTES:
 1 THE CONTRACTOR SHALL PROVIDE SUNSHADES AS SPECIFIED IN 17700 FOR ALL INSTRUMENT TRANSMITTERS LOCATED OUTSIDE.



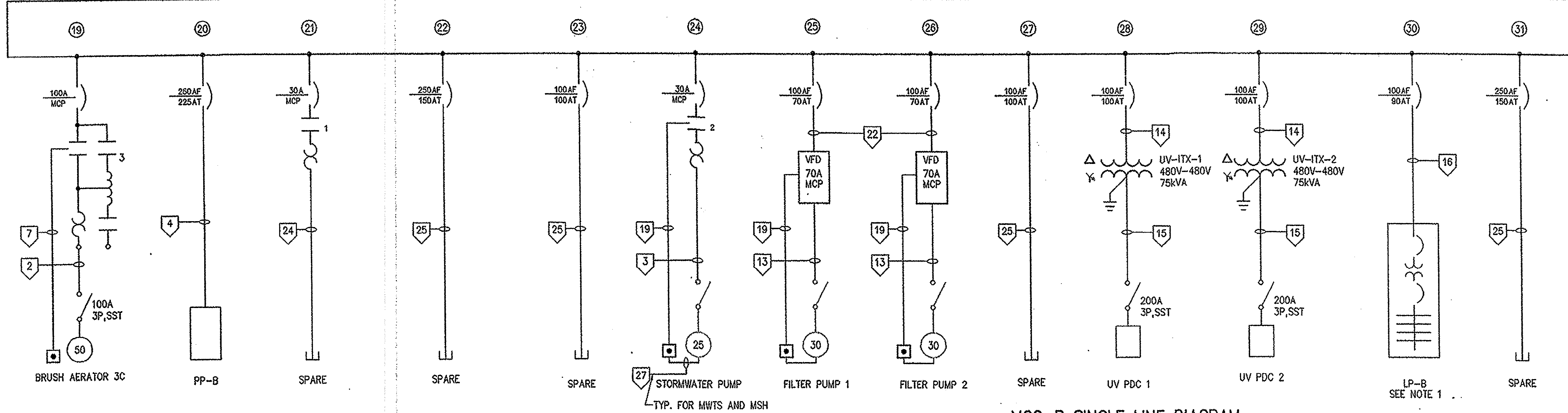
TOP DEMOLITION PLAN
 3/8" = 1'-0"

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

DESIGNED: JLH DRAWN: JLH CHECKED: JLM PROJ. ENGR: JBM DATE: 8-31-01 BY: JBM APPROVED: [Signature]					HAZEN AND SAWYER Environmental Engineers & Scientists 4011 WestChase Blvd, Raleigh, North Carolina 27607	GRAND STRAND WATER AND SEWER AUTHORITY SOUTH CAROLINA CONWAY WWTP 4.0 MGD EXPANSION AND UPGRADE	POST AERATION TANK MODIFICATIONS ELECTRICAL TOP PLAN	THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING. DATE: AUGUST 2001 H & S JOB NUMBER: 30631 CONTRACT NUMBER: 1 DRAWING NUMBER: E300 H & S FILE NO. 56
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35-004-065

1. LP-B IS LOCATED AT THE UV DISINFECTION TANK.
SEE DRAWING E200.
2. STUB OUT AND CAP SPARE CONDUIT OUTSIDE OF
BUILDING.

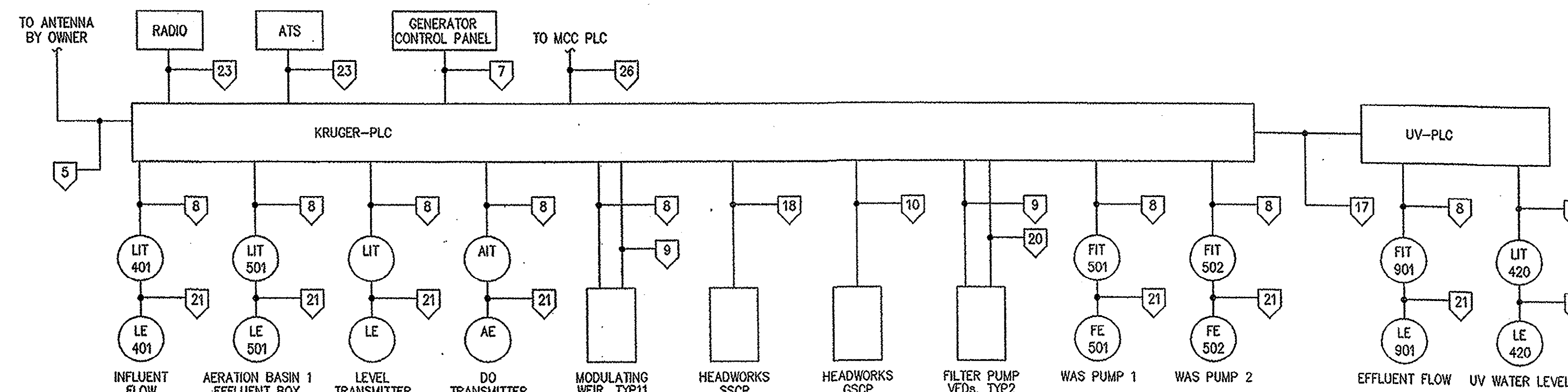


MCC-B SINGLE LINE DIAGRAM

SECTION 1	SECTION 2	SECTION 3	SECTION 4	SECTION 5	SECTION 6	SECTION 7	SECTION 8	SECTION 9	SECTION 10	SECTION 11	SECTION 12	SECTION 13	SECTION 14
POWER MONITOR 1	2	4	6	8	10	12	14	16	18	20	24	28	PLC
	3	5	7	9	11	13	15	17	19	21	25	29	
										22	26	30	
										23	27	31	

MCC-B ELEVATION

NTS



CONTROL SYSTEM ONE-LINE DIAGRAM

CONDUIT AND WIRE LEGEND	
(NUMBERS REFERENCE THIS SHEET ONLY)	
NO.	DESCRIPTION
1	4(+#500kcmil, #3/0GND, 4°C)
2	3#3, #8GND, 2°C
3	3#8, #10GND, 1°C
4	3#250, #4GND, 3°C
5	1°C, CABLE BY OWNER
6	3#10, #10GND, 1°C
7	8#14, #14GND, 1°C
8	1-2/C#16TPS, #14GND, 1°C
9	14#14, #14GND, 1°C
10	20#14, #14GND, 1°C
11	3(3#500, #3/0GND, 4°C)
12	2-4°C BY CONTRACTOR FOR UTILITY USE
13	3#4, #8GND, 2°C
14	3#1, #8GND, 2°C
15	3#2, #2N, #6GND, 2°C
16	2#4, #8GND, 2°C
17	FIBER OPTIC CABLE, 2°C
18	10#14, #14GND, 1°C
19	8#14, 2#12, #12, 1°C
20	2-2/C#16TPS, 1°C
21	1°C, CABLE BY SUPPLIER
22	3#4, #8GND, 2°C
23	1°C, SERIAL CABLE BY OWNER
24	1-1"SP.C SEE NOTE 2
25	1-2"SP.C SEE NOTE 2
26	NETWORK CABLE, 1°C
27	2#12, 2#14, #12GND, 3/4°C

						DESIGNED	JLH
						DRAWN	JLH
						CHECKED	<i>6 M</i>
						PROJ. ENGR.	JBM
2	CONSTRUCTION	11/16/01	JBM				
1	REGULATORY APPROVAL	8-31-01	JBM				
NO.	ISSUED FOR	DATE	BY			APPROVED	<i>ELT</i>

A circular professional engineer seal for the State of South Carolina. The outer ring contains the text "SOUTH CAROLINA" at the top and "REGISTERED PROFESSIONAL ENGINEER" at the bottom, separated by two stars. The center of the seal contains the text "No. 172" and the name "W. J. RATASKY". The seal is signed with a cursive signature "W. J. Ratasky" and dated "11/15/01" in the bottom right corner.

HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd, Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA

CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

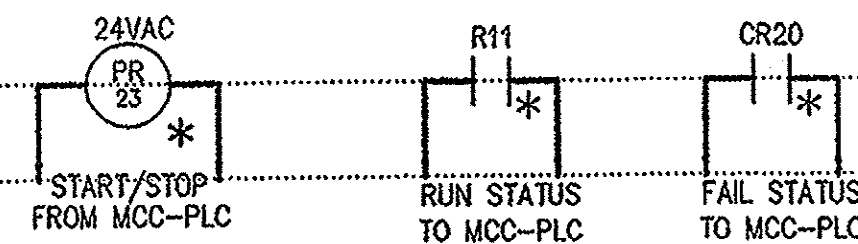
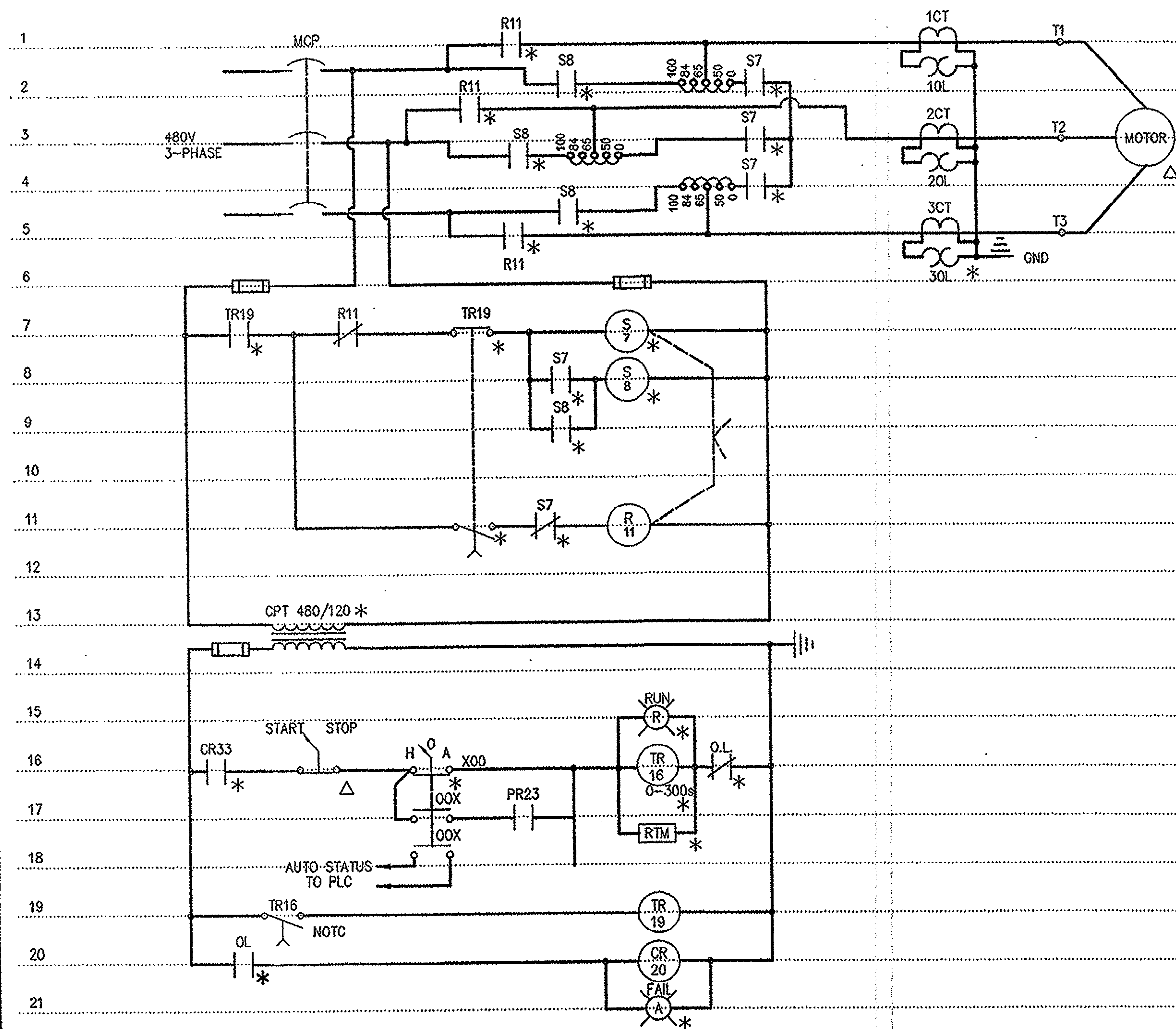
NEW ELECTRICAL BUILDING
ELECTRICAL
MCC-B SINGLE LINE DIAGRAM

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE AUGUST 2001	
	H & S JOB NUMBER 30631	
	CONTRACT NUMBER 1	DRAWING NUMBER E401
H&S FLAT FILE NO. 56		

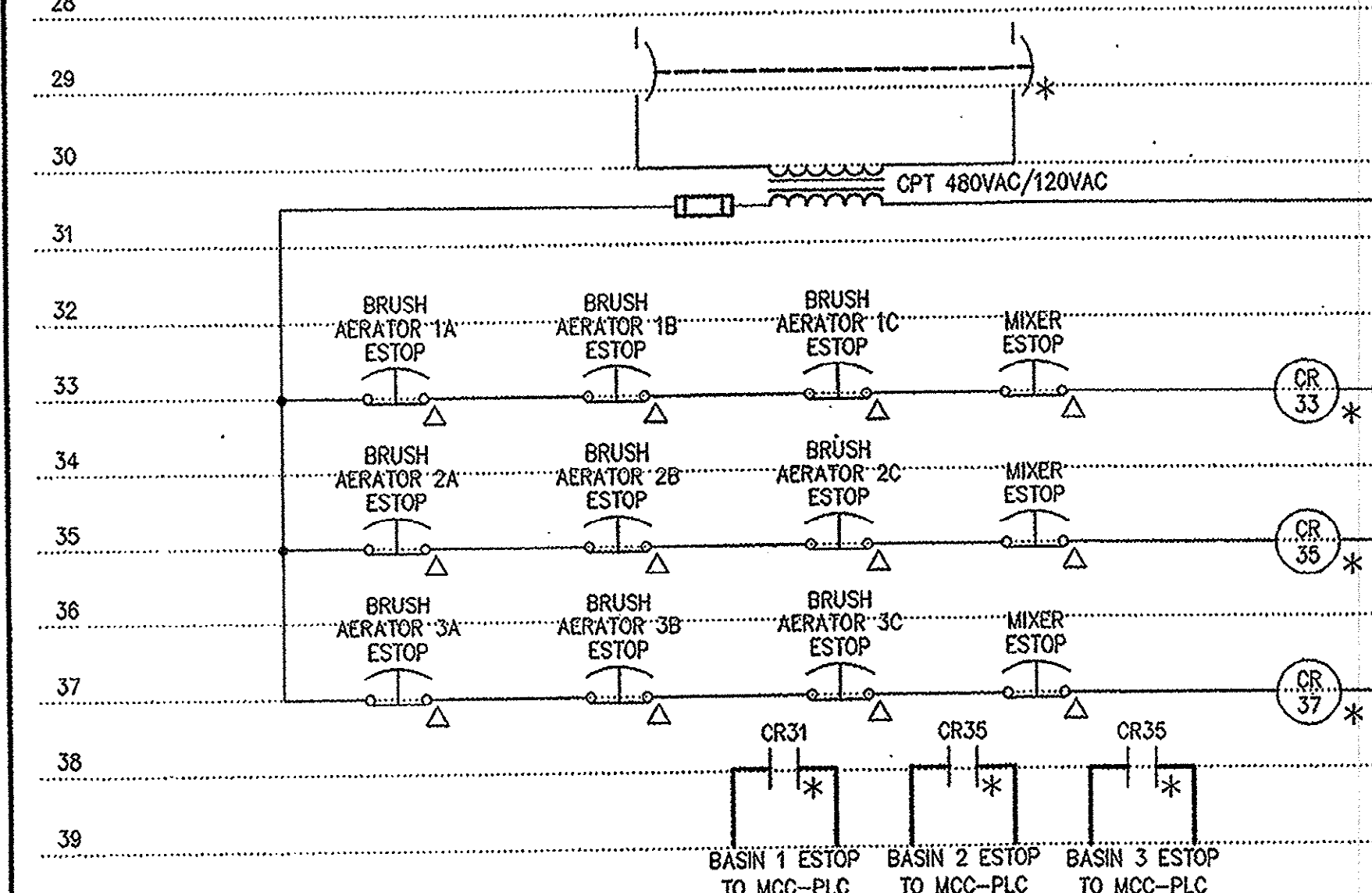
11/15/01 9:54am FILE# H:\30631\ELEC\E401 by ADMINISTRATOR XREF# MISC\30631-TB

35-004-067

NOTES:

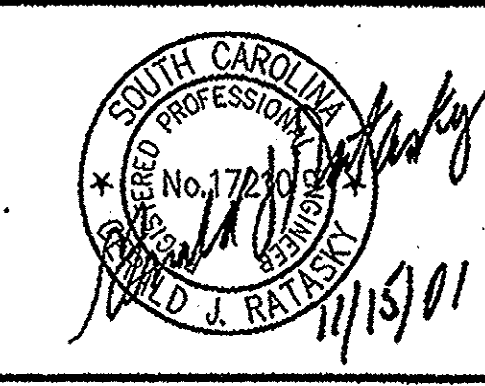
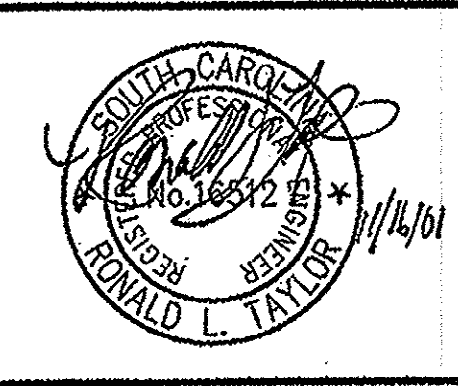


ELEMENTARY CONTROL SCHEMATIC FOR BRUSH AERATOR 1A
(TYPICAL FOR 1B, 1C, 2A, 2B, 2C, 3A, 3B, 3C)



EMERGENCY STOP CONTROL SCHEMATIC

DESIGNED	JLH
DRAWN	JLH
CHECKED	JM
PROJ. ENGR.	JBM
APPROVED	JLH
CONSTRUCTION	JLH
REGULATORY APPROVAL	JLH
ISSUED FOR	JLH
DATE	8-31-01
BY	JLH



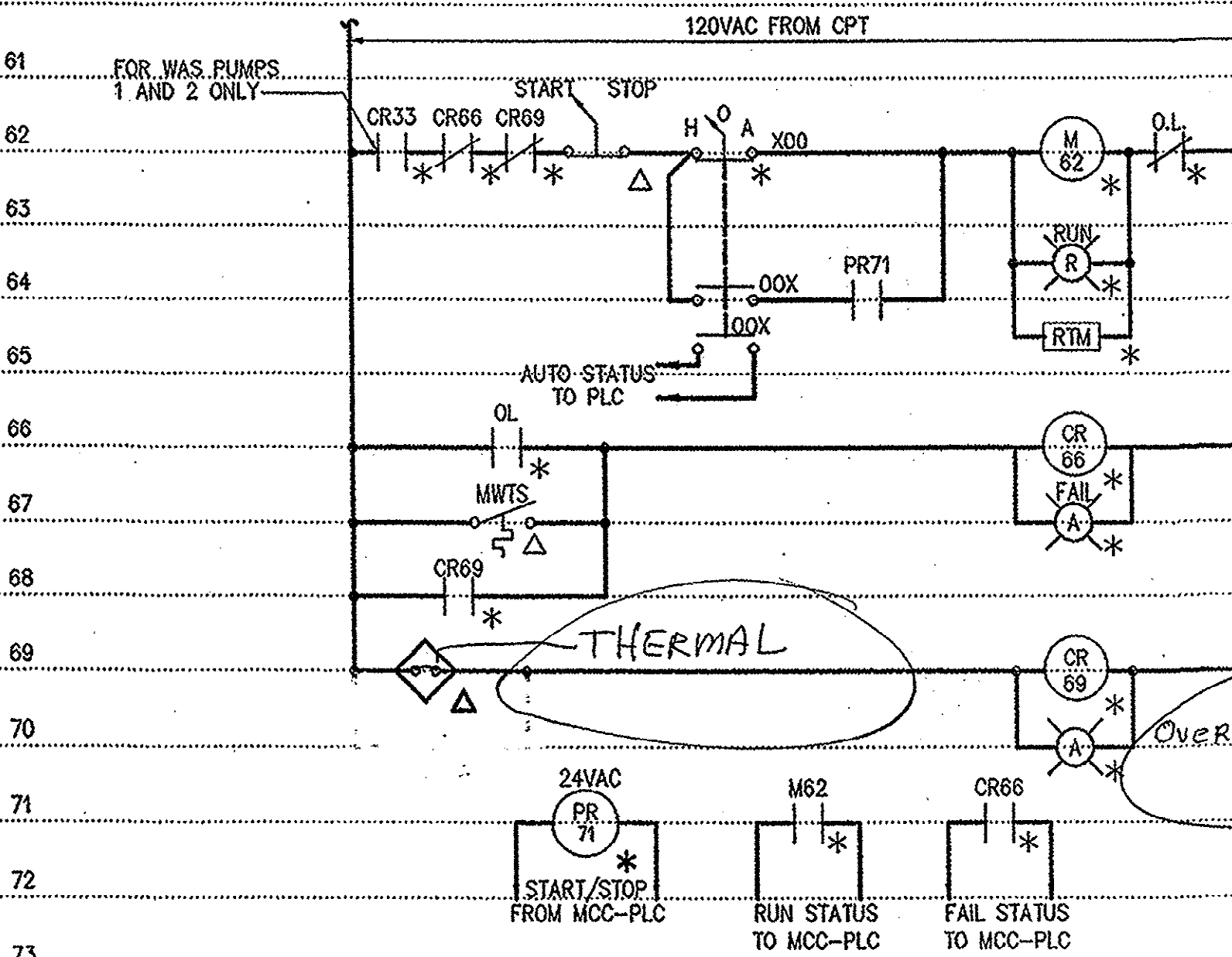
HAZEN AND SAWYER
Environmental Engineers & Scientists
4011 WestChase Blvd., Raleigh, North Carolina 27607

GRAND STRAND WATER AND SEWER AUTHORITY
SOUTH CAROLINA
CONWAY WWTP
4.0 MGD EXPANSION AND UPGRADE

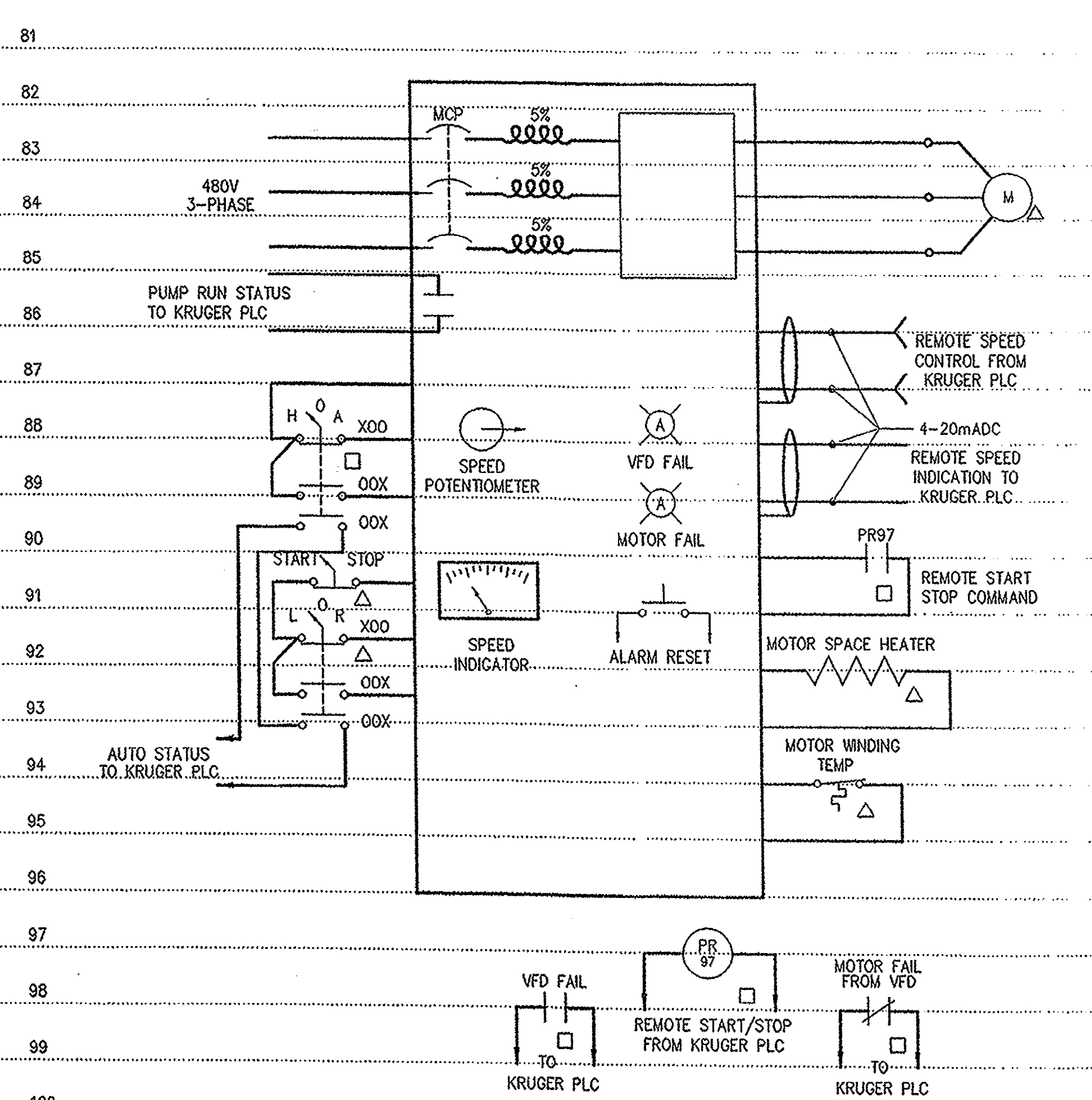
NEW ELECTRICAL BUILDING
ELECTRICAL
SCHEMATICS AND CONTROL DIAGRAM

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	AUGUST 2001
	H & S JOB NUMBER	30631
	CONTRACT NUMBER	1
	DRAWING NUMBER	E402
	H & S FILE NO.	56

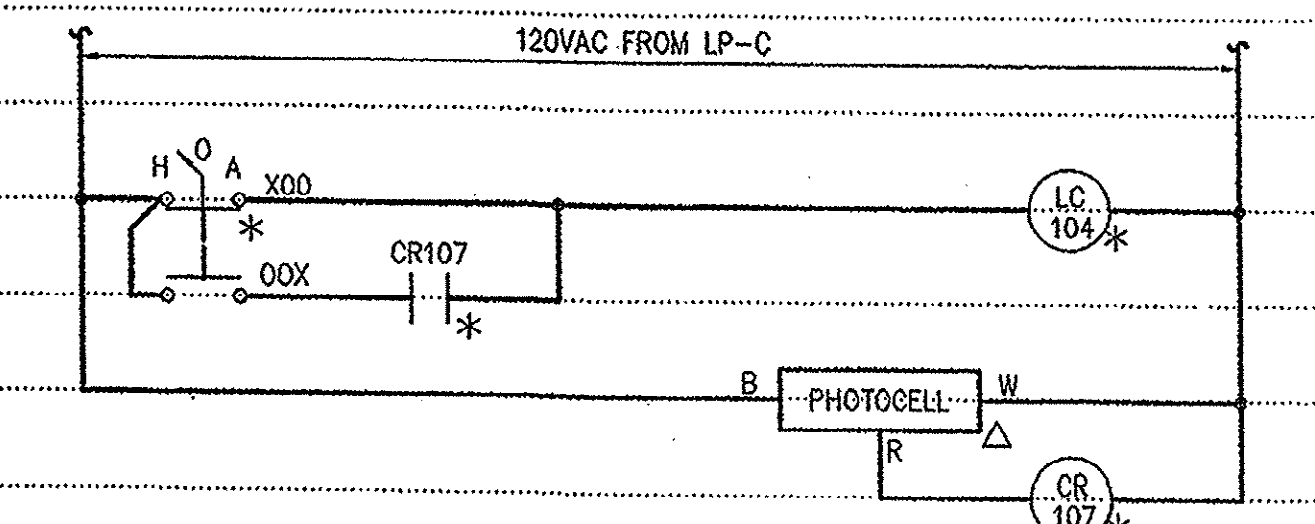
ELEMENTARY CONTROL SCHEMATIC FOR SUBMERSIBLE MIXERS 1-3



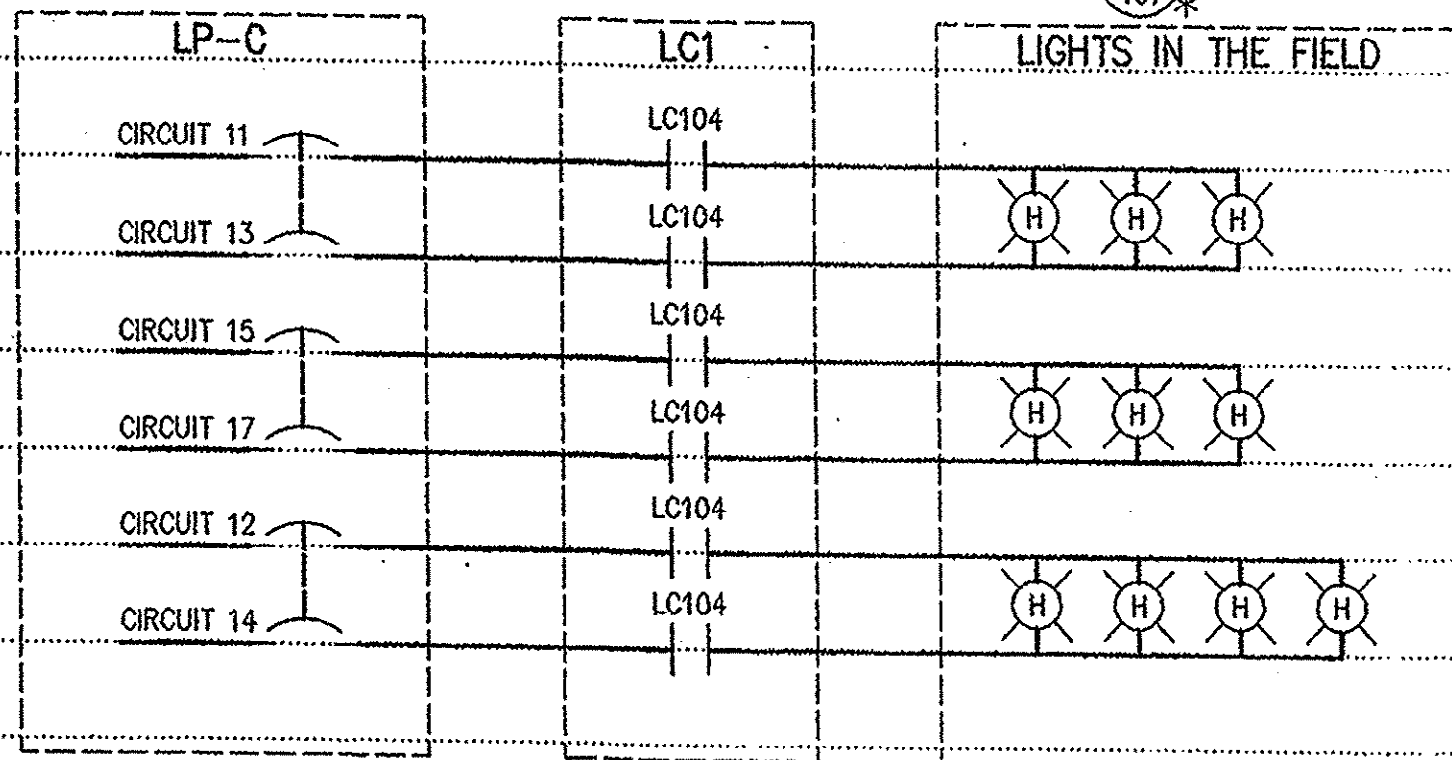
ELEMENTARY CONTROL SCHEMATIC FOR WAS PUMPS 1 & 2 AND STORMWATER PUMP



ELEMENTARY CONTROL SCHEMATIC FOR FILTER PUMPS 1 AND 2



LIGHTING CONTACTOR LC1 CONTROL SCHEMATIC



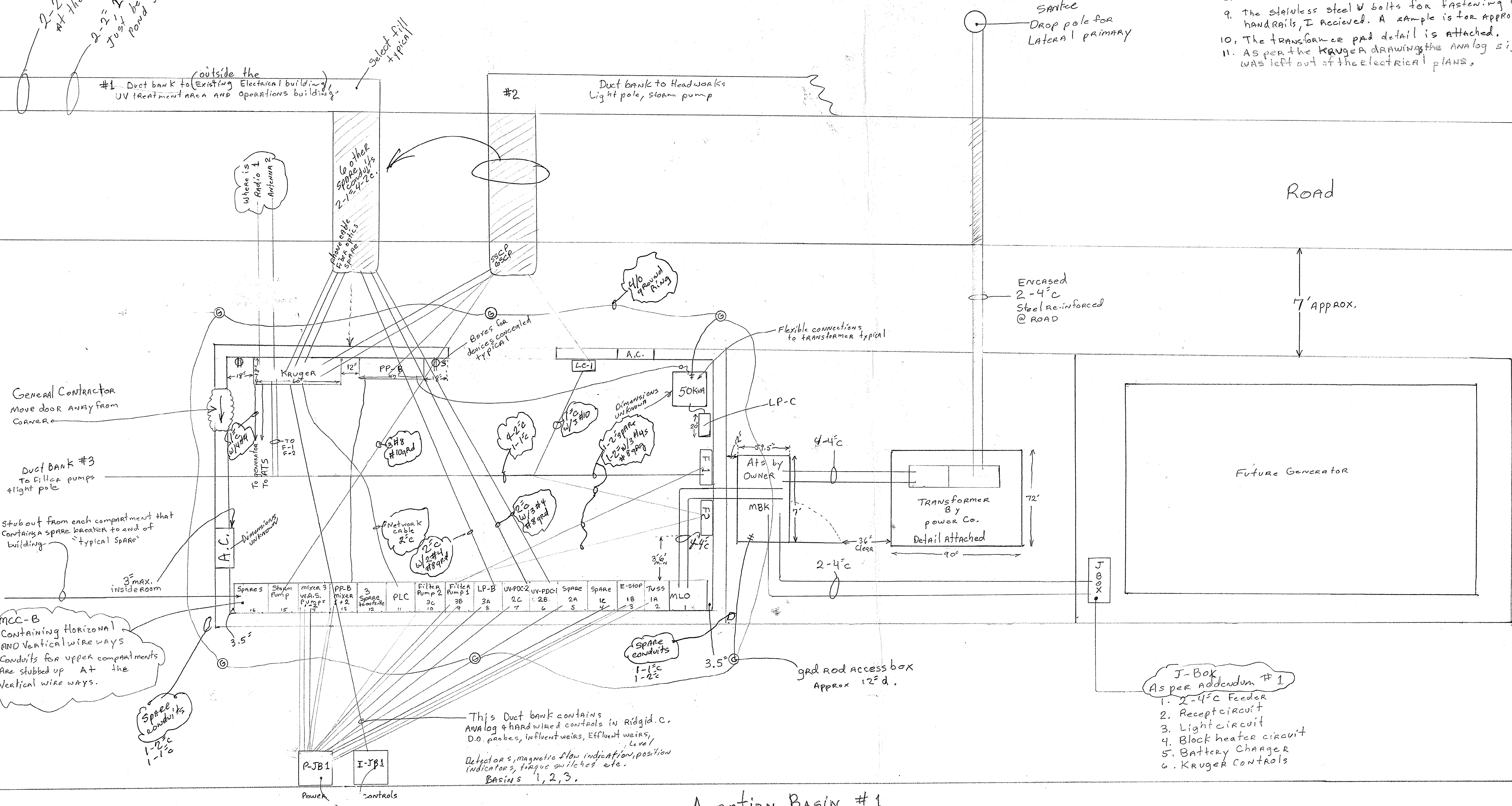
35-004-06A

STEELE-PRYOR INC.

GRANDSTRAND AT CONWAY

- We need dimensions for the following items
 - 50 kVA transformer.
 - 2-75kVA transformers.
 - 30amp disconnects.
 - 100amp disconnects.
 - 2-200amp disconnects.
- Is Panel LP-B the mini power zone?
- Where is the Existing antenna to be Located? conduit to see 11
- Where is the Radio Located? conduit to. see E-401
- Please select A location for the spare conduits entering the new electrical building.
- The door near Kruger panel needs to clear the Panel depth.
- The A.C. can not enter our clear working space.
- Has the electrical building been moved exactly where is it?
- The stainless steel W bolts for fastening channel to handrails, I received. A sample is for approval.
- The transformer pad detail is attached.
- AS per the KRUGER drawing the analog signal for the blowers 1 was left out of the electrical plans.

2-2" spare conduits stop at the UV-Treatment Area
2-2" 2-1" spare conduits stop just before the road between pond 3 & 4.



Aeration Basin #1

- J-Box
As per Addendum # 1
- 2-4" Feeder
 - Recept circuit
 - Light circuit
 - Block heater circuit
 - Battery Charger
 - Kruger Controls