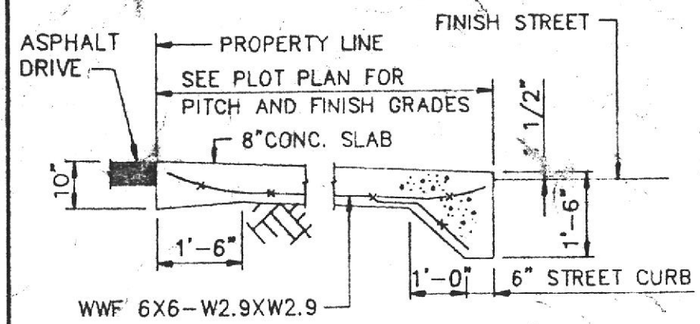
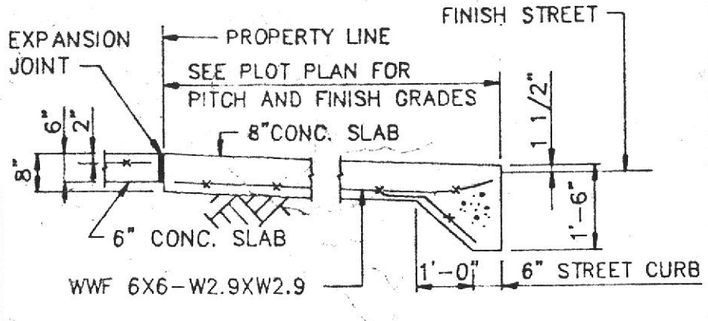
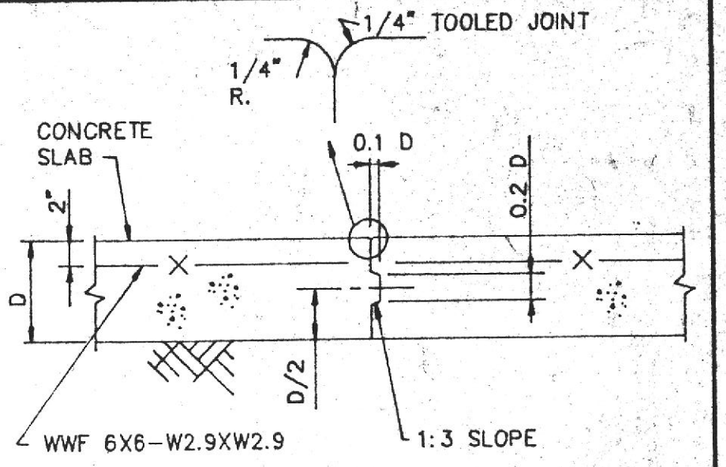


SECTION
CONCRETE APPROACH &
ASPHALT DRIVE (1)



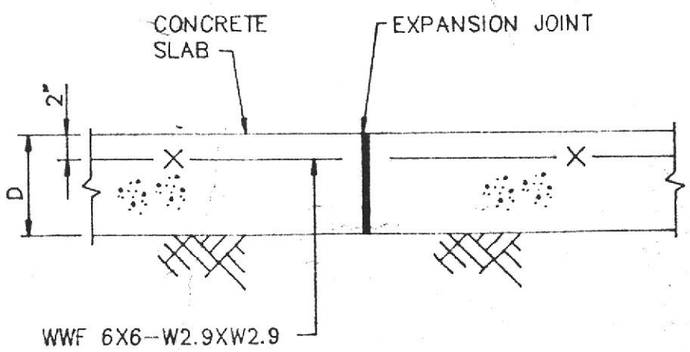
SECTION
CONCRETE APPROACH &
CONCRETE DRIVE (2)



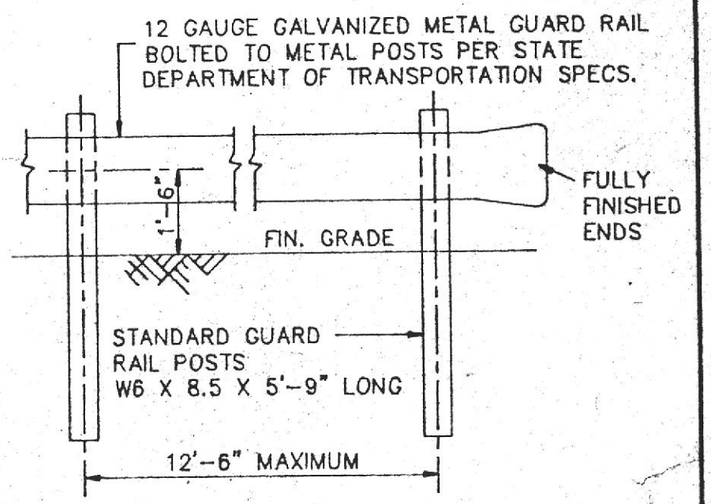
SECTION
KEYED CONSTRUCTION JOINT IN
CONCRETE SLAB (3)

SEE (3)

(7)

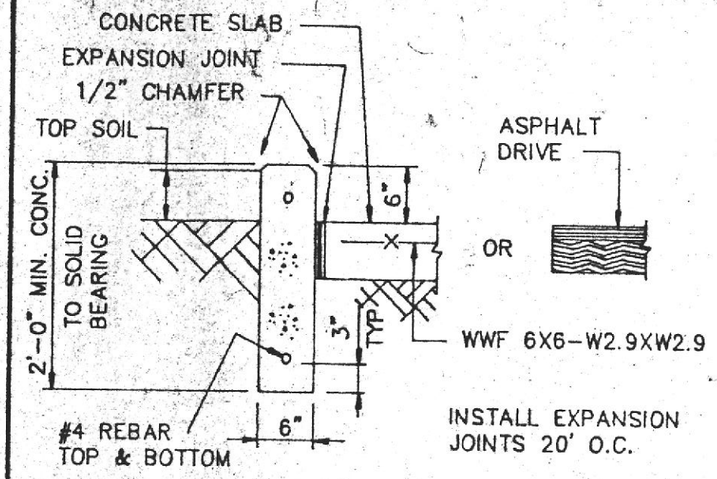


SECTION
EXPANSION JOINT IN
CONCRETE SLAB (8)

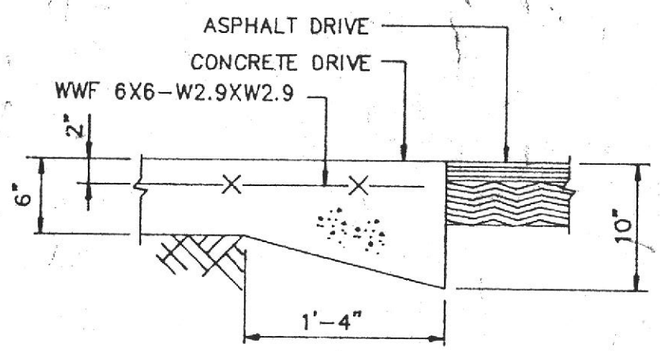


SECTION
HIGHWAY GUARD RAIL (9)

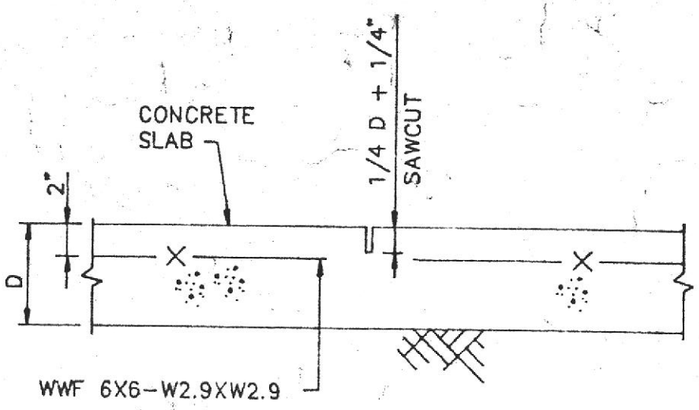
TABLE 1



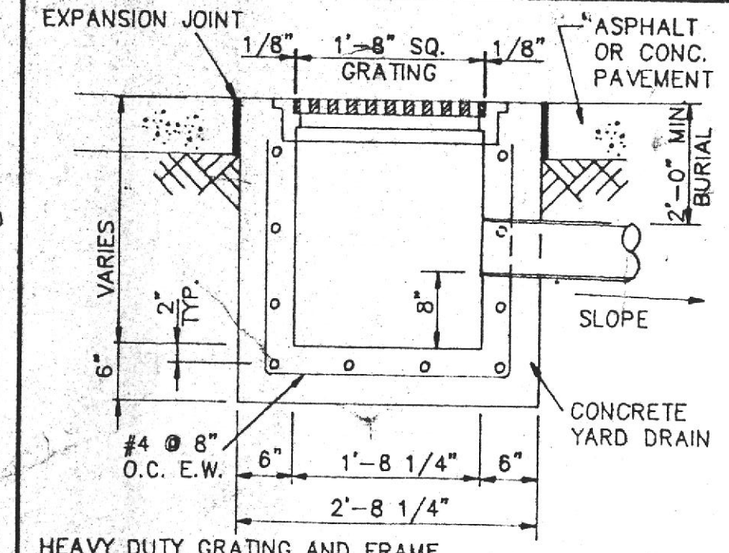
SECTION
STANDARD CONCRETE CURB (4)



SECTION
CONCRETE & ASPHALT DRIVE (5)

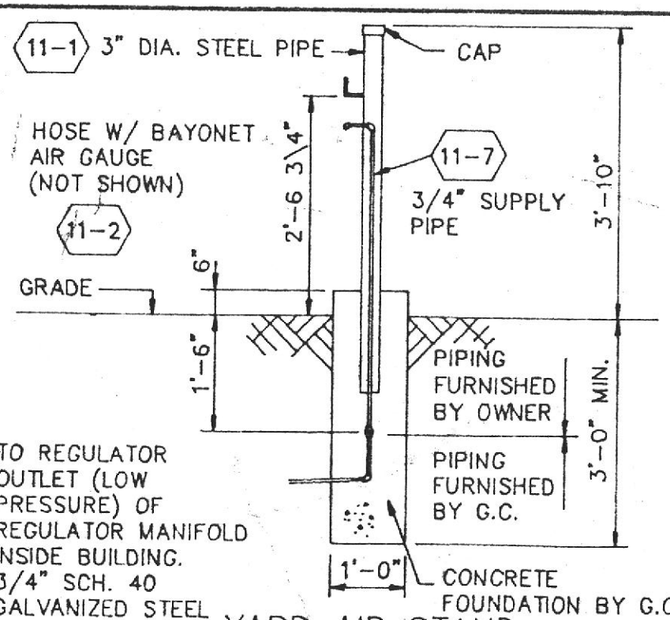


SECTION
SAWED CONTROL JOINT IN CONCRETE SLAB (6)

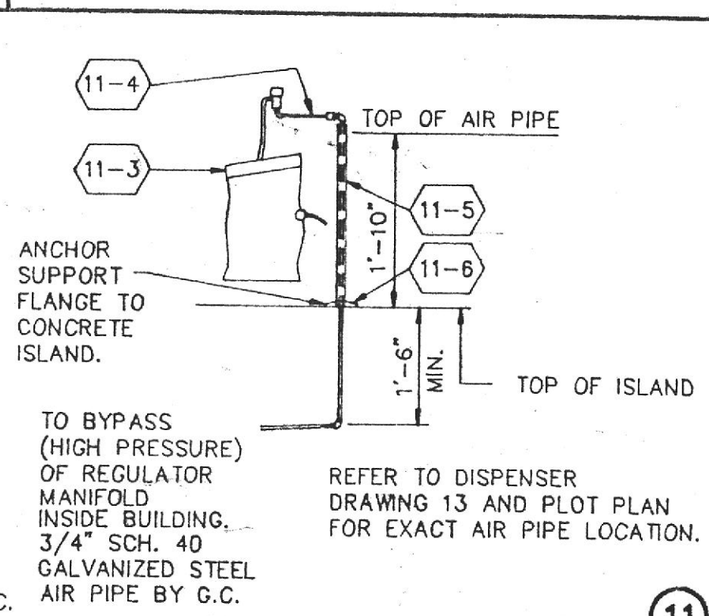


HEAVY DUTY GRATING AND FRAME SHALL BE EQUAL TO MCKINLEY IRON WORKS TYPE PGM 20"X20" WITH TOP FLANGE FRAME.

SECTION
YARD DRAIN (10)



YARD AIR STAND



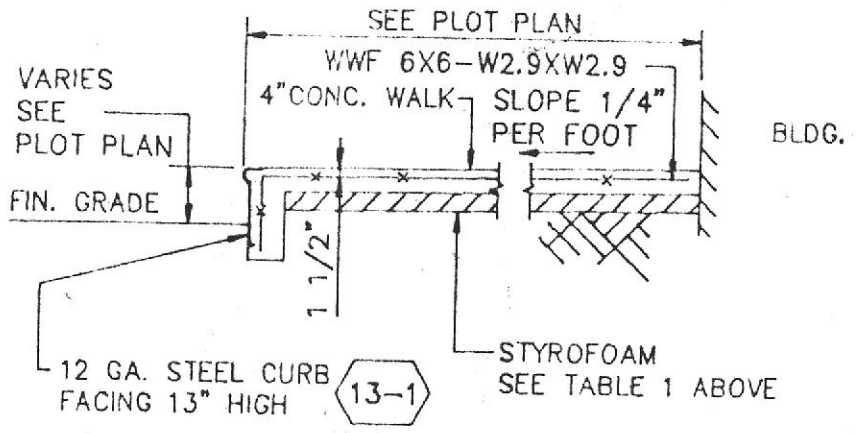
REFER TO DISPENSER DRAWING 13 AND PLOT PLAN FOR EXACT AIR PIPE LOCATION.

ISLAND AIR STAND (11)

NOT USED

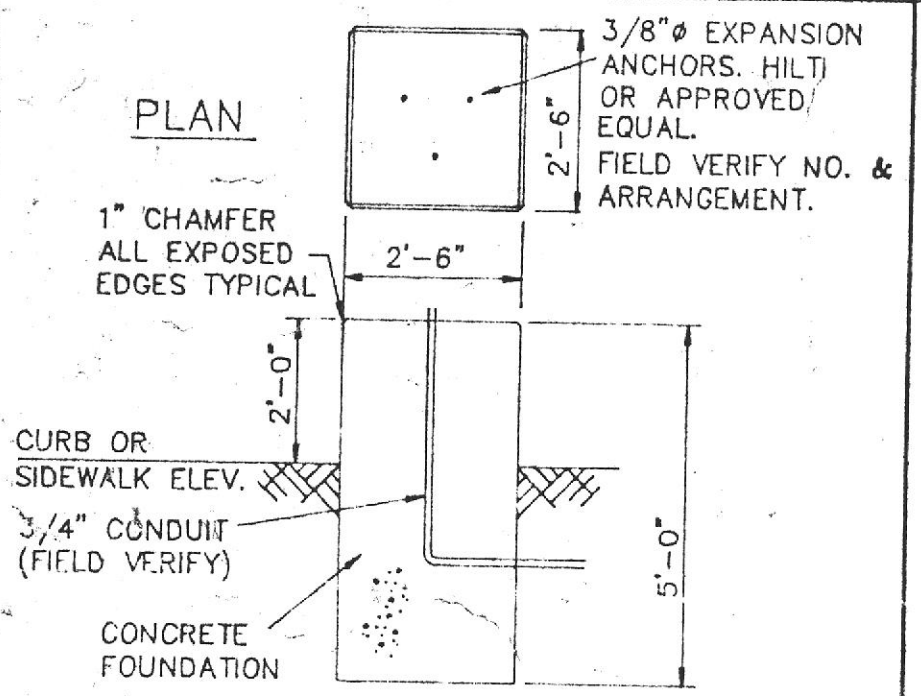
12

STATES	3"RIGID BOARD STYROFOAM UNDER WALK
AL, FL, GA, MS	NO
NC, SC, TN	NO
ALL OTHERS	YES



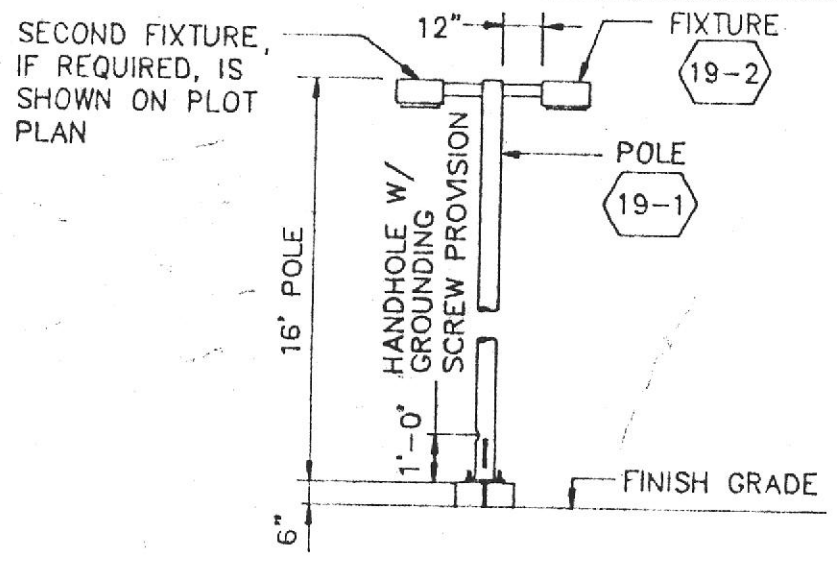
SECTION
BUILDING SIDEWALK

13



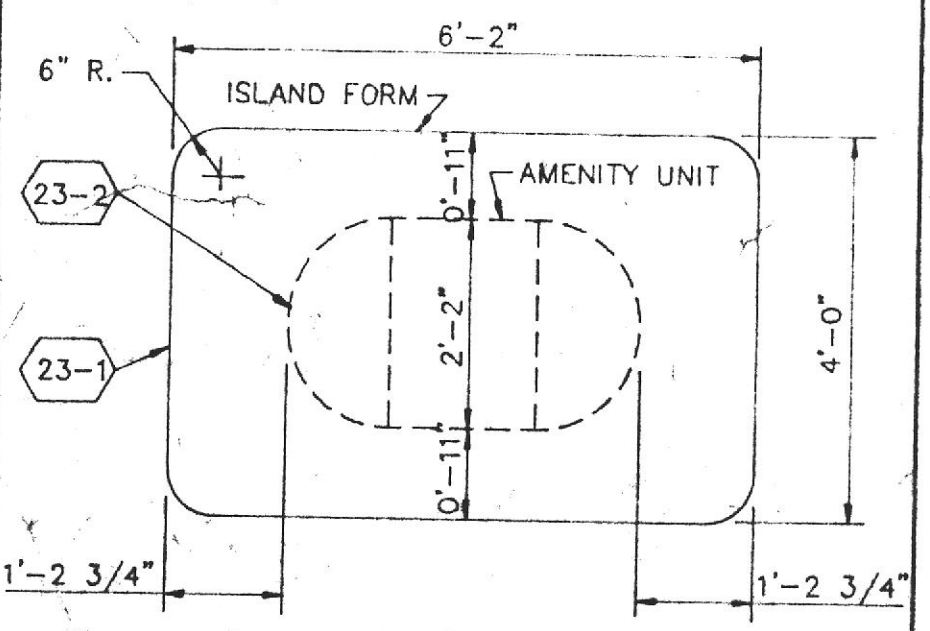
VACUUM BASE

18



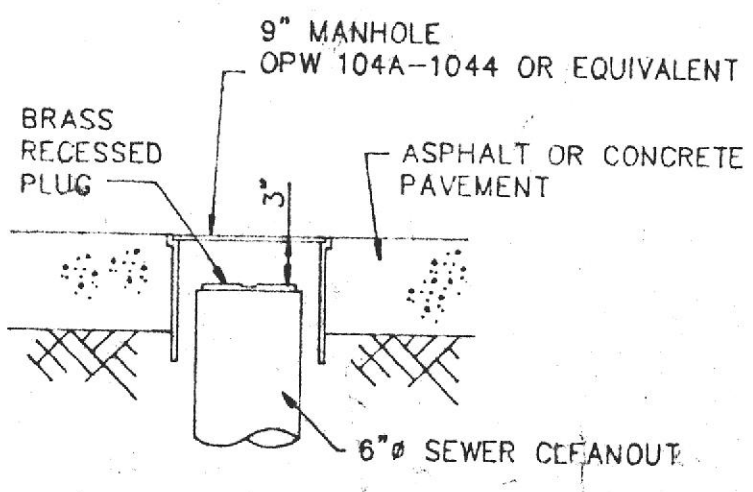
NOTE: YARD LIGHT SHALL BE LOCATED 3'-0" MIN. FROM CURB.

ELEVATION
YARD/ISLAND LIGHT



AMENITY UNIT
ISLAND FORM

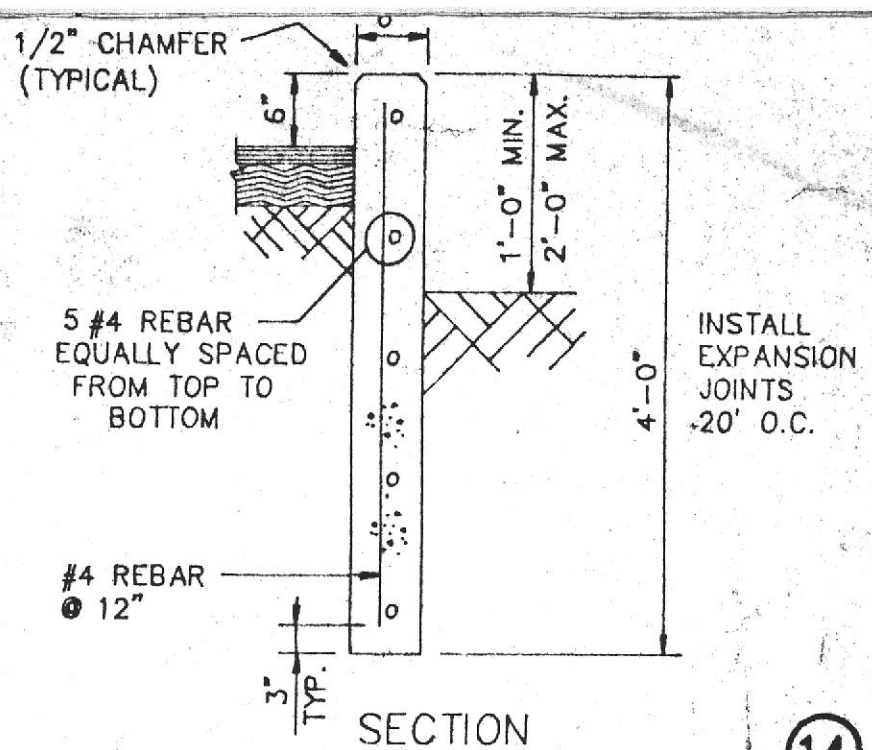
23



SECTION
SEWER CLEANOUT

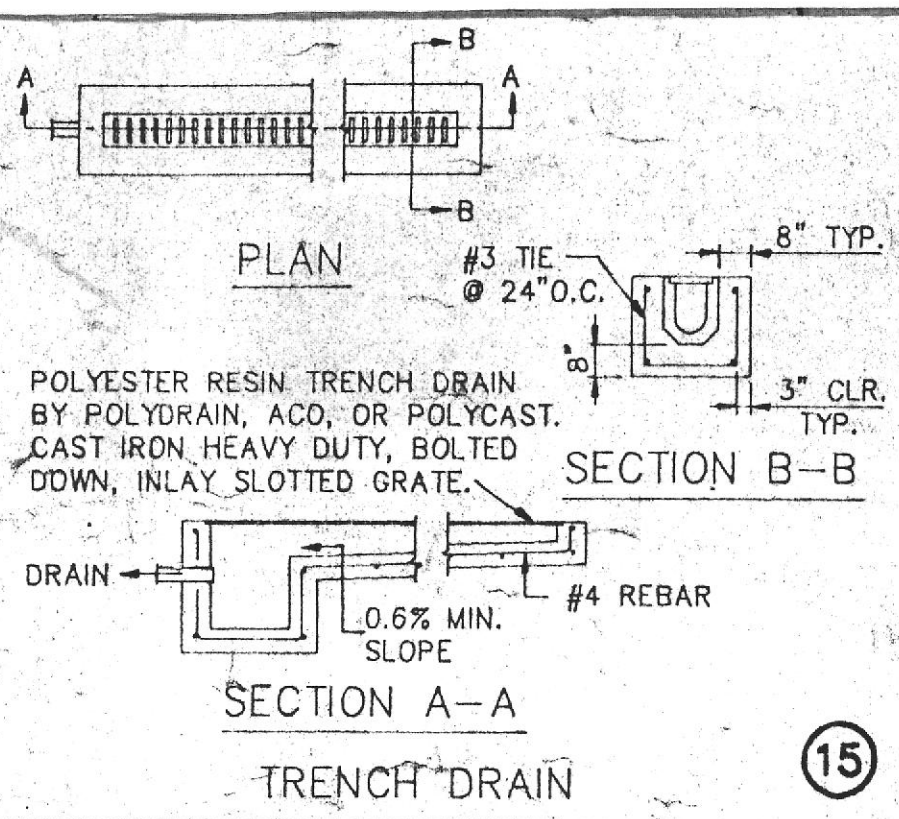
24

14



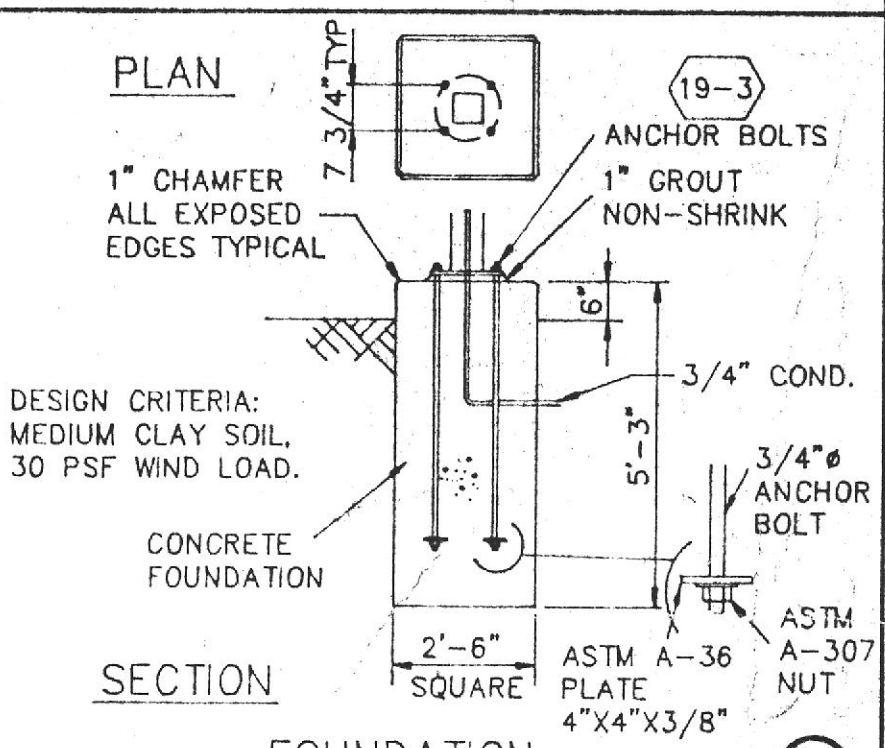
SECTION
HIGH CONCRETE CURB

14



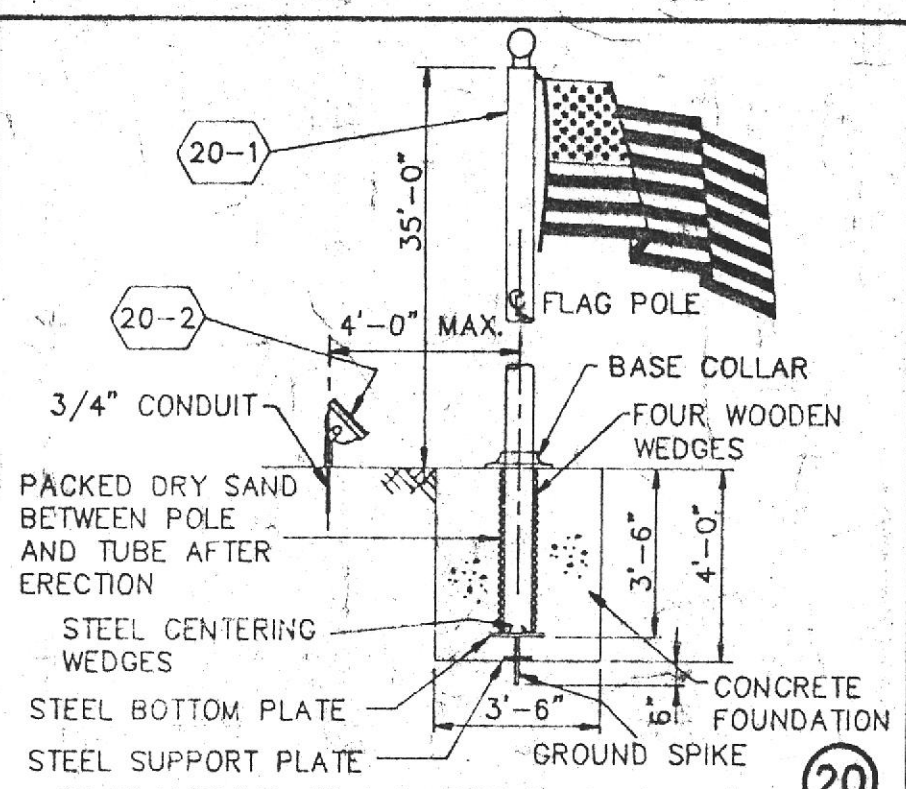
TRENCH DRAIN

15



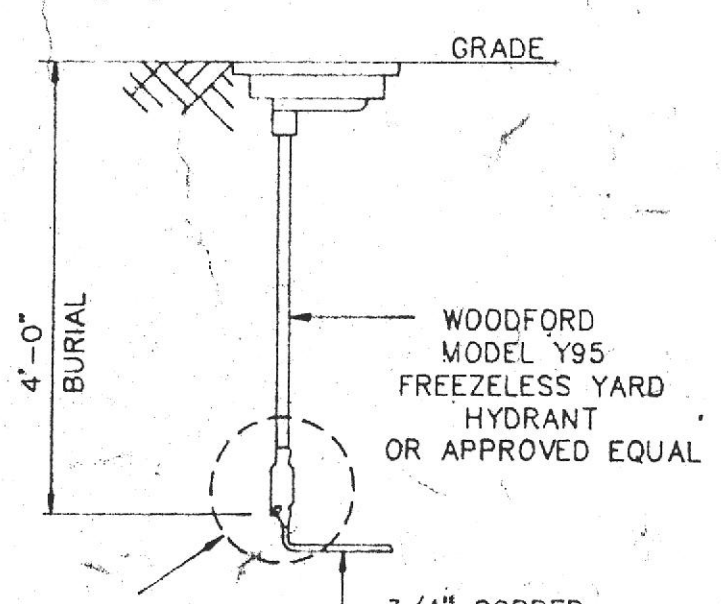
FOUNDATION
YARD/ISLAND LIGHT

19



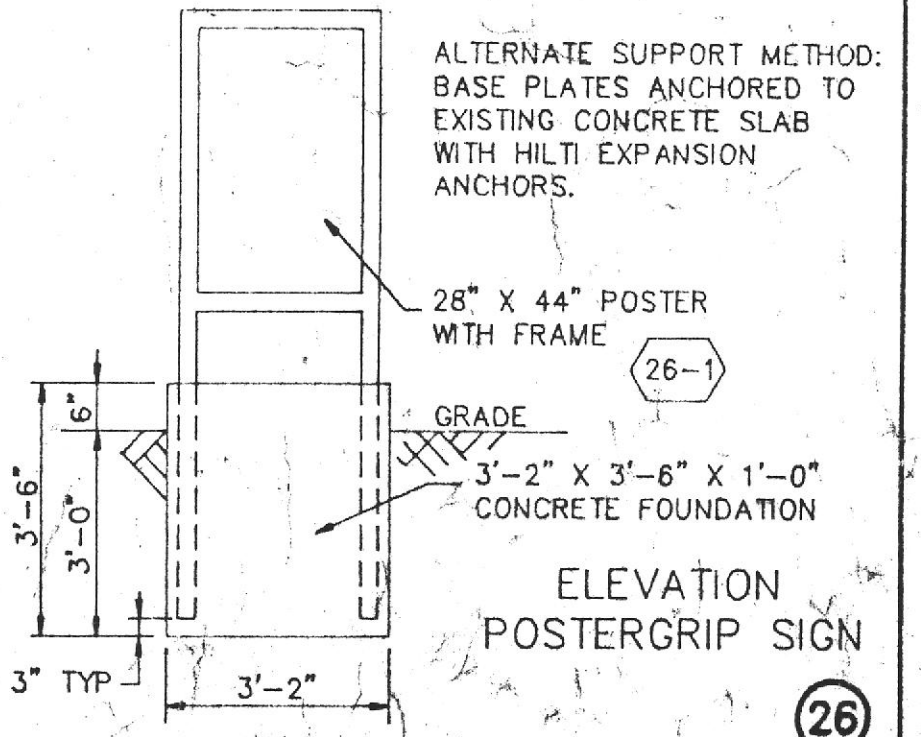
ELEVATION FLAG POLE & BASE

20



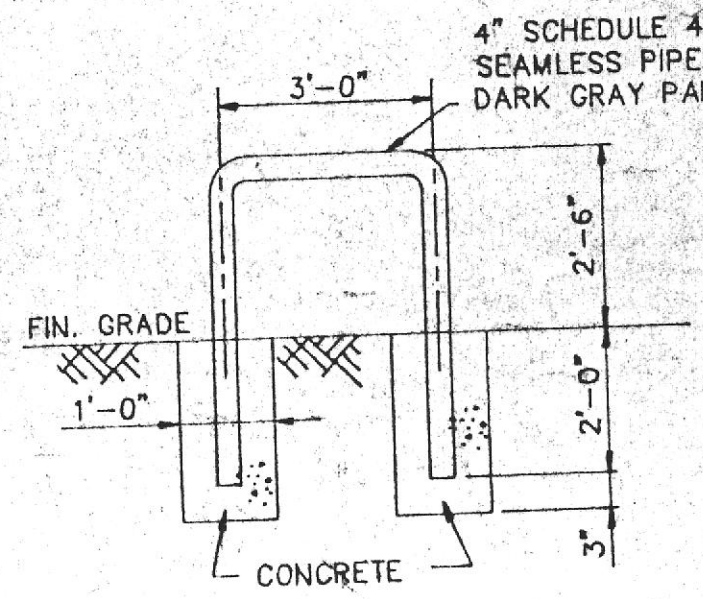
LANDSCAPE HYDRANT

25



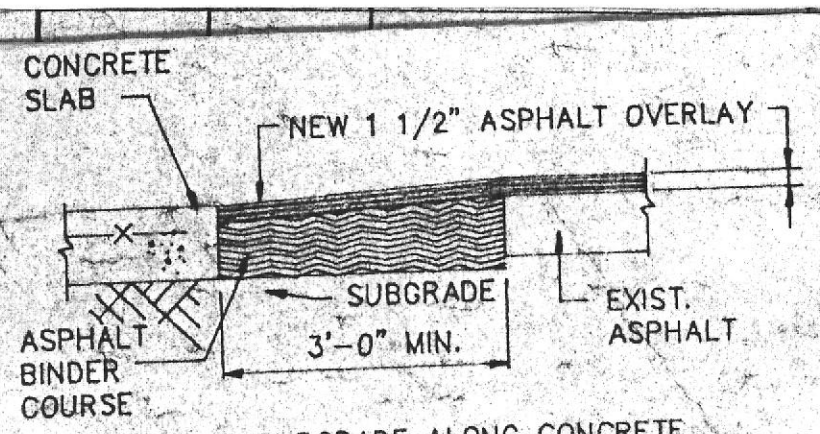
ELEVATION
POSTERGRIP SIGN

26



SECTION
GUARD POST

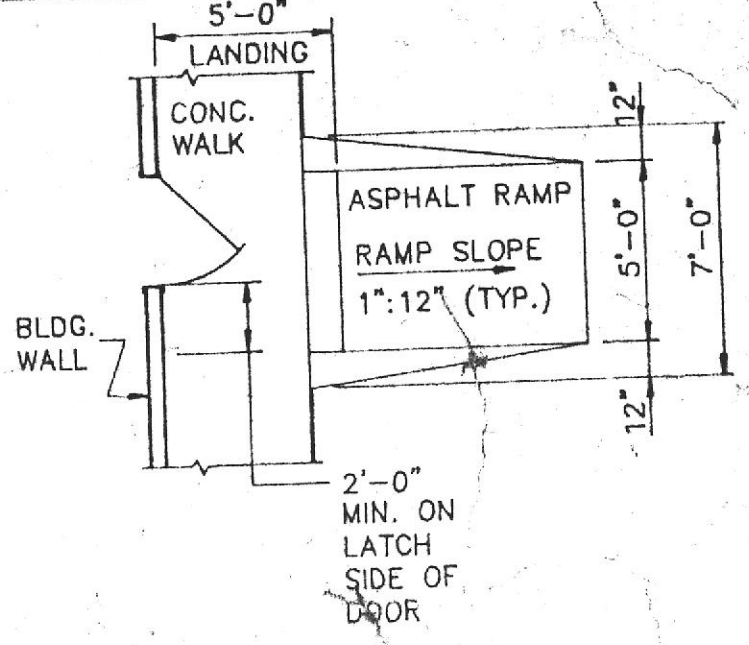
16



EXCAVATE TO SUBGRADE ALONG CONCRETE SLAB AND PLACE ASPHALT BINDER COURSE TO 1 1/2" BELOW CONCRETE SLAB. OVERLAY WITH 1 1/2" ASPHALT SURFACE COURSE.

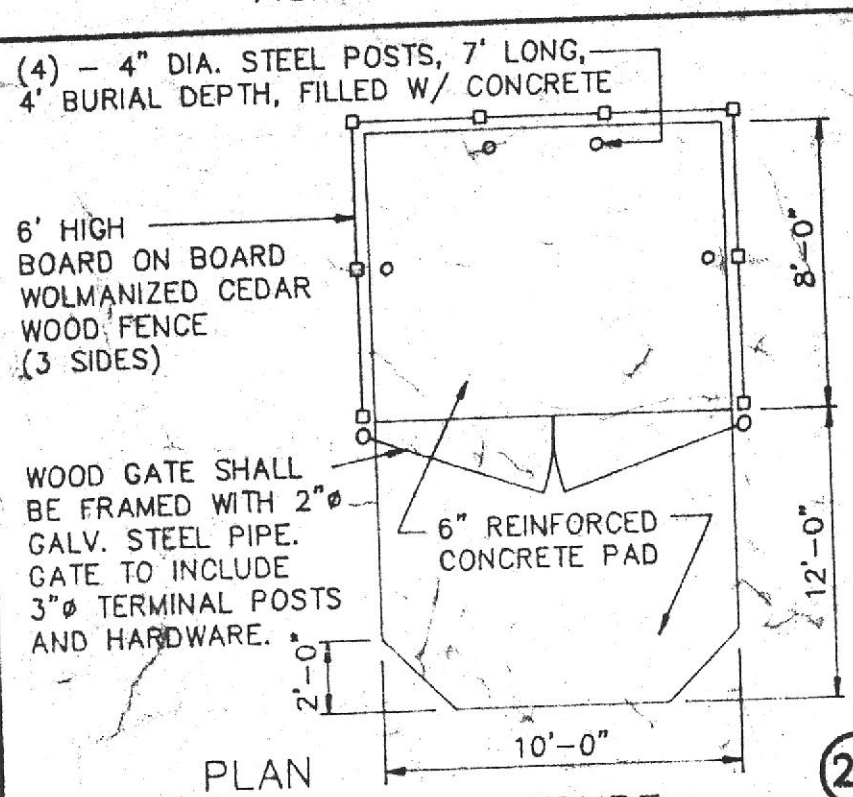
SECTION
OVERLAY FOR EXISTING
ASPHALT DRIVE

17



PLAN
HANDICAP RAMP

21



PLAN
RUBBISH ENCLOSURE

22

20–2	WHITEWAY MODEL LAI–400–MH–15 W/ MULTITAP BALLAST AND SP2–2 PIPE SLIP FITTER	OWNER	G.C.
23–1	ISLAND FORM	OWNER	G.C.
23–2	AMENITY UNIT	OWNER	G.C.
26–1	POSTERGRIP SIGN & FRAME	OWNER	G.C.

ALL OTHER MATERIALS ARE SUPPLIED AND INSTALLED BY GENERAL CONTRACTOR.

BP OIL CO.

RETAIL MARKETING
DESIGN AND ENGINEERING
200 PUBLIC SQUARE
CLEVELAND, OHIO 44114

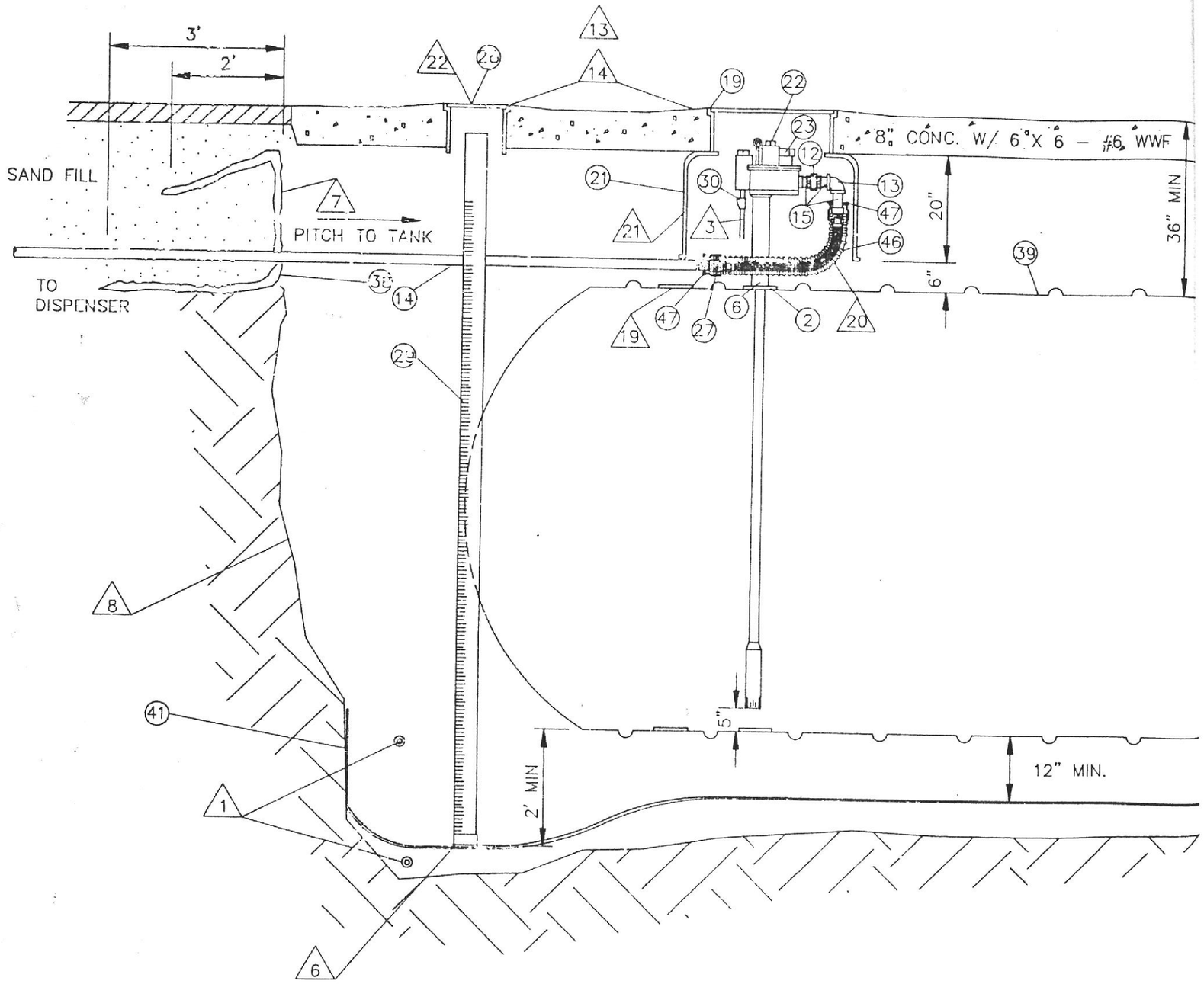
YARD & DRIVEWAY DETAILS

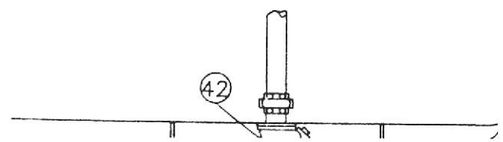
DWG. NO.: 16 | REV.: 2

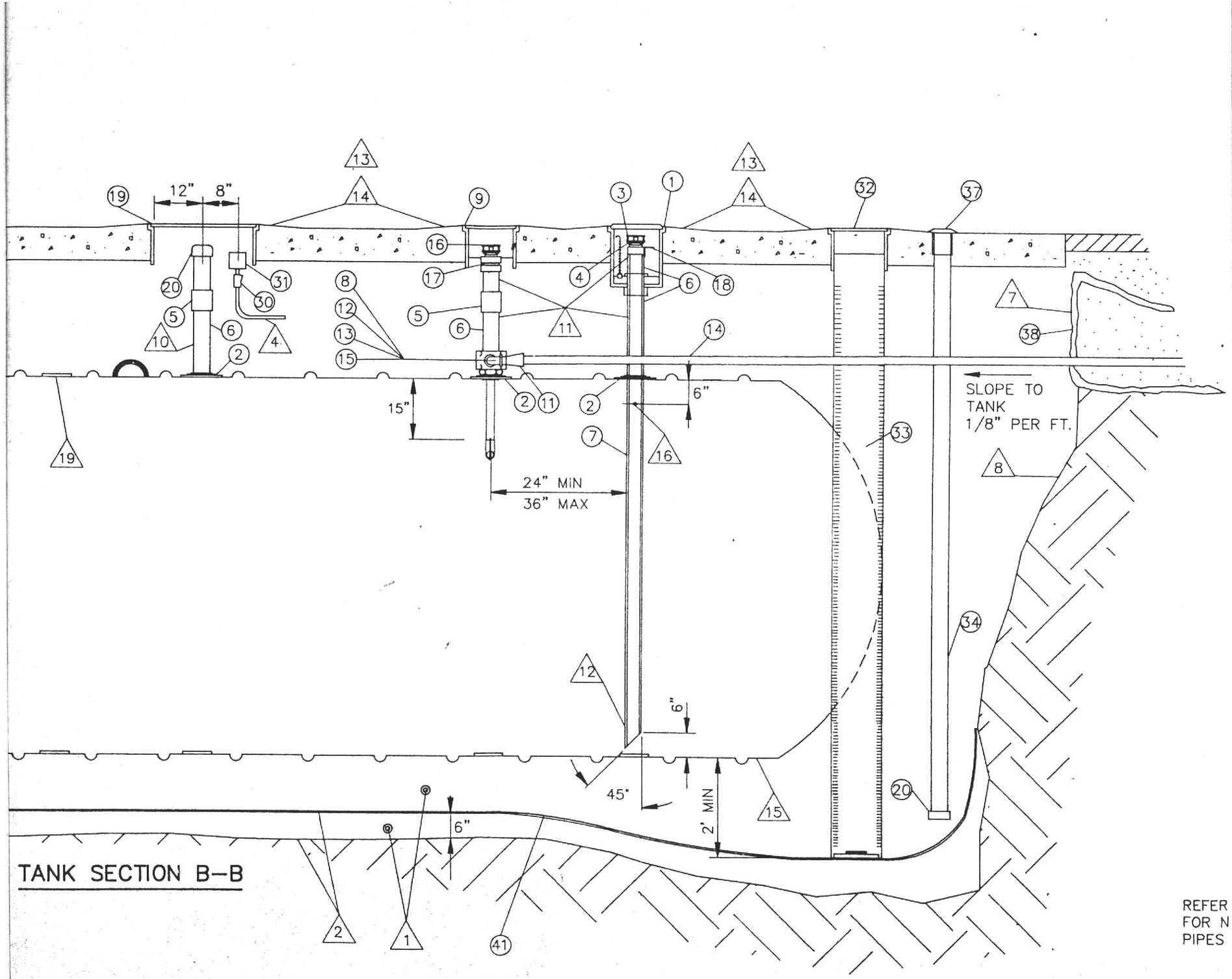
SCALE: NTS | MADE BY: CDECO

DATE: MAY 25, 1988 | CHECKED BY:

REVISIONS	DATE	DWN	CKD
1. REV. DET. 11,17,18,22 ADD DET. 26	9/22/88	CDE	
2. DET. 11,15,18	6/19/89	CDE	


3'
2'
SAND FILL
PITCH TO TANK
TO
DISPENSER
8" CONC. W/ 6"X 6 – #6 WWF
36" MIN
20"
6"
5"
2' MIN
12" MIN.

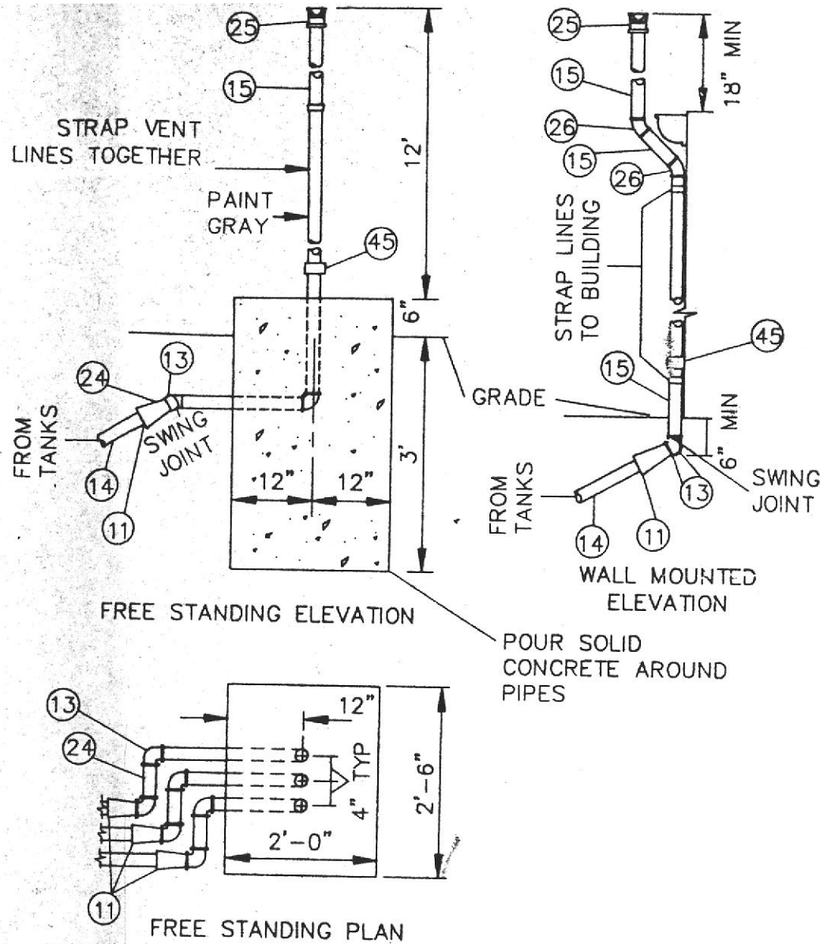




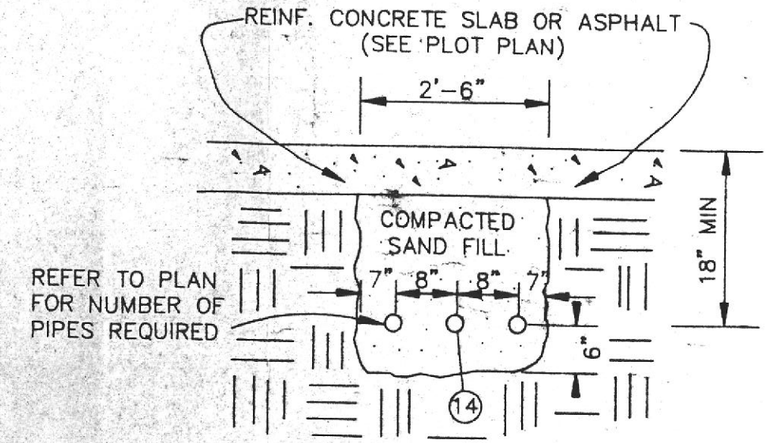
TANK SECTION B–B

PUMP ISLAND

REFER
FOR N
PIPES



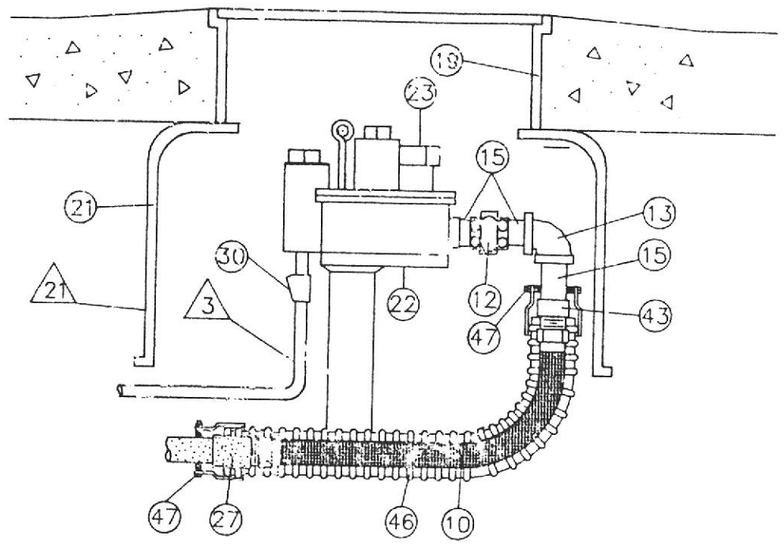
VENT RISER DETAILS



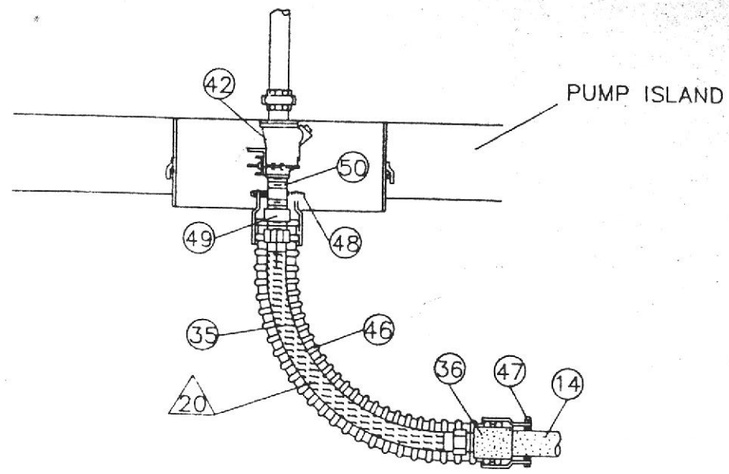
PIPING DETAIL 17

○- MATERIAL SCHEDULE

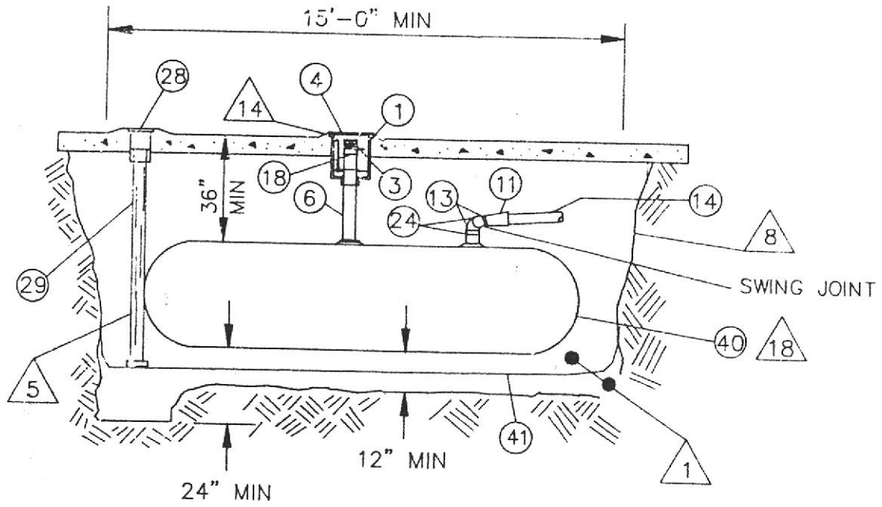
NO.	EQUIPMENT SCHEDULE	SUPPLIER
1	SPILL PROTECTION WITH DRAIN VALVE OPW #1	OWNER
2	4" NPT FLANGE ON TANK	TANK MFG
3	FILL CAP OPW-634TT-4" OR EQUIVALENT	OWNER
4	ADAPTOR OPW-633TI-4" (BRONZE) OR EQUIVALENT	OWNER
5	4" STEEL COUPLING SCH. 40 GALVANIZED	G. C.
6	4" STAND PIPE LENGTH AS REQUIRED SCH. 40 GALVANIZED	G. C.
7	ALUMINUM FILL TUBE OPW 61T-4" OR EQUIVALENT	OWNER
8	UNIVERSAL V421 EXTRACTOR VENT VALVE OR EQUIVALENT (4" X 2" X 2") WITH UNIVERSAL #37 STAINLESS STEEL FLOAT AND 1/8" RELIEF ORIFICE	OWNER
9	12" CURB BOX OPW-104-A	OWNER
10	2"x 30" FLEXIBLE CONNECTOR RESISTOFLEX OR EQUIVALENT	OWNER
11	2" FIBERGLASS COUPLING 1 END PLAIN. 1 END 2" NPT MALE	G. C.
12	2" GROUND JOINT UNION	G. C.
13	2" PIPE 90° ELBOW (STEEL) SCH. 40 GALVANIZED	G. C.
14	2" FIBERGLASS PIPE A.O. SMITH RED THREAD II OR AMERON DUALOY 3000	G. C.
15	2" PIPE SCH. 40 GALVANIZED	G. C.
16	CAP OPW-1711-T-3 OR EQUIVALENT	OWNER
17	ADAPTOR OPW-1611 AVB 3"X4" OR EQUIV.	OWNER
18	TANK DELIVERY MARKER UNIVERSAL NO. 56	OWNER
19	CURB BOX 24"X24" RED JACKET OR EQUIV.	OWNER
20	4" PIPE CAP SCH. 40 GALVANIZED	G. C.
21	36" DIA. 20" FIBERGLASS RISER, OWENS-CORNING OR XERXES	OWNER
22	RED JACKET SUBMERSIBLE PUMP	OWNER
23	RED JACKET LEAK DETECTOR	OWNER
24	2" PIPE NIPPLE, 4" LONG (STEEL) SCH. 40 GALVANIZED	G. C.
25	2" VENT CAP OPW 23 OR EQUIVALENT	OWNER
26	2" PIPE 45° ELBOW SCH. 40 GALVANIZED	G. C.
27	FIBERGLASS ADAPTOR 2"F X 2"F NPT	G. C.
28	OBSERVATION WELL MANHOLE 12" MORRISON 519A OR EQUIV.	OWNER
29	4" FACTORY SLOTTED PVC-1 PIPE .02" SLOTS CAPPED BOTTOM, ATLANTIC SCREEN CO. OR EQ. 13 FT. LONG	OWNER
30	SEAL OFF-CROUSE HINDS MODEL EYD2	G. C.
31	JUNCTION BOX-CROUSE HINDS GUP215	G. C.
32	OBSERVATION WELL MANHOLE 12" MORRISON 519A OR EQUIV.	OWNER
33	12" FACTORY SLOTTED PVC-1 PIPE .02" SLOTS OR AS PER LOCAL REGULATIONS. ATLANTIC SCREEN NO. TI21 OR EQUIV. 13 FT. LONG	OWNER
34	4" PVC-1 PIPE 12 FT. LONG SCH. 40 FOR GAUGE STICK	G. C.
35	1-1/2" X 24" FLEXIBLE CONNECTOR - RESISTOFLEX OR EQUIVALENT	OWNER



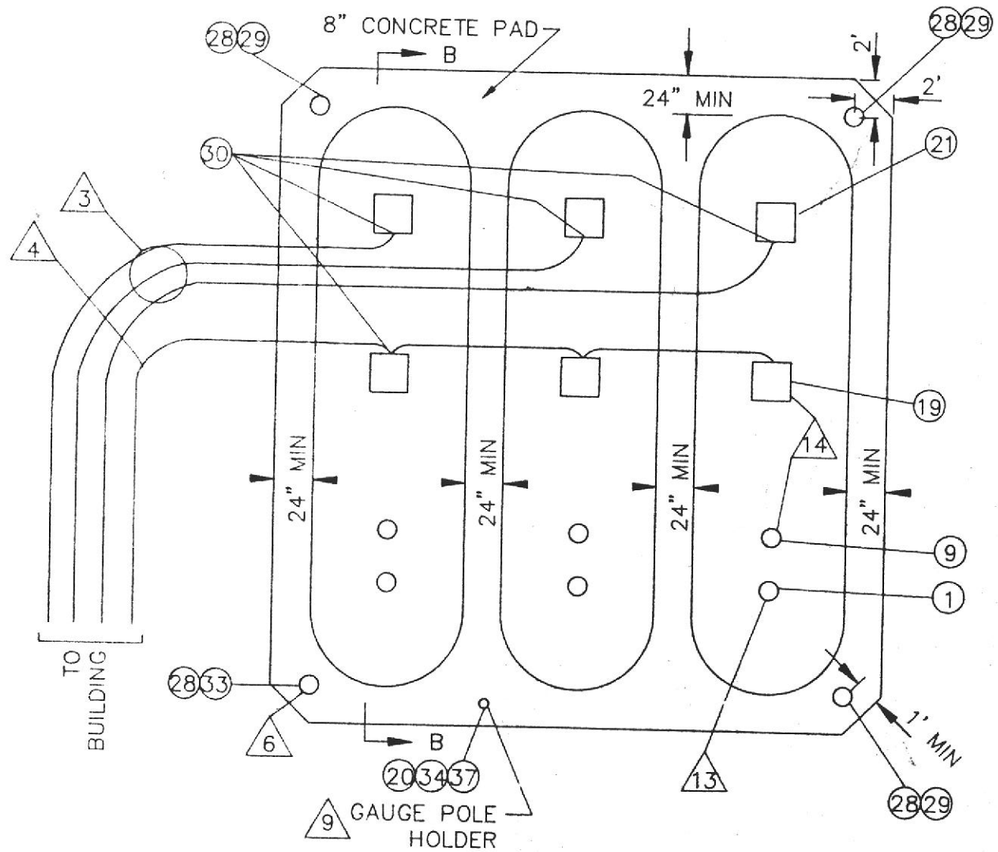
SUBMERGED PUMP FLEX ASSEMBLY



DISPENSER FLEX ASSEMBLY
& IMPACT VALVE



FUEL OIL OR
USED OIL TANK 18



TANK AND ELECTRICAL CONDUIT PLAN

△ – NOTES

1. PEA GRAVEL BACKFILL – ALL OTHER MATERIALS MUST BE APPROVED BY TANK MANUFACTURER AND OWNER'S FIELD REPRESENTATIVE.
2. CROWN EXCAVATION FOR DRAINAGE TO OBSERVATION WELLS. INSTALL SHALLOW PAN IMPERMEABLE LINER IN DRY HOLES ONLY. PROVIDE 6" PEA GRAVEL BED BELOW LINER.
3. 3/4" CONDUIT FROM EACH SUBMERSIBLE PUMP TO BUILDING. TERMINATE WITH SEAL–OFF PER NFPA SPECIFICATIONS.
4. 3/4" CONDUIT FOR FUTURE ELECTRONIC TANK GAUGE. LOOP CONDUITS BETWEEN TANKS, THROUGH JUNCTION BOX. SEAL OFF HOME RUN AT BOTH TANK AND BUILDING. DO NOT PIPE INTO WIRING TROUGH.
5. FOR USED OIL TANK CAVITY – ONE 4" MONITORING WELL, SUPPLIED BY OWNER, WILL BE INSTALLED.
6. THREE 4" OBSERVATION WELLS AND ONE 12" OBSERVATION WELL. DEPTH AS SHOWN OR AS REQUIRED BY LOCAL REGULATIONS. DO NOT USE PVC CEMENT.
7. FILTER FABRIC – CUT TO FIT TIGHTLY AROUND PIPING PENETRATION.
8. SLOPE SIDES OF TANK HOLE AS REQUIRED BY SOIL CONDITIONS. 24" MINIMUM DISTANCE BETWEEN TANK WALL AND WALLS OF EXCAVATION.
9. GAUGE POLE HOLDER: G.C. TO FURNISH 4" X 12" SOLID SCHD 40 PVC PIPE WITH SEALED BOTTOM CAP. TOP: OWNER SUPPLIED MANHOLE.
10. 4" STEEL PIPE RISER FOR FUTURE GAUGE. CUT TO PROVIDE 8" CLEARANCE BENEATH MANHOLE LID. USE 12" PIPE NIPPLE ABOVE COUPLING.
11. PIPE TO BE REAMED ON BOTH ENDS TO ACHIEVE A TRUE OPENING OF 4". PROVIDE 4–1/2" TO 5–1/2" CLEARANCE FROM TOP OF FITTING TO GRADE. USE 12" PIPE NIPPLE ABOVE COUPLING.
12. CUT AND POSITION FILL TUBE WITH ANGLE AWAY FROM SUB–PUMP, AS SHOWN.
13. CURB BOX COVERS ARE TO BE PRIMED AND PAINTED ACCORDING TO THE FOLLOWING SPECIFICATIONS:

    *FILL: REGULAR UNLEADED – WHITE W/BLACK CROSS
    REGULAR LEADED – BLUE
    PLUS UNLEADED – BLUE W/WHITE CROSS
    SUPER UNLEADED – RED W/WHITE CROSS
    *VAPOR RECOVERY: ORANGE
    TANK GAUGE: GRAY
    *TANK OBSERVATION WELLS – BLACK TRIANGLE ON WHITE BACKGROUND
    SUBMERSIBLE PUMPS – GRAY
    *DIESEL – YELLOW
    *KEROSENE – BROWN
    *HEATING OIL – GREEN
    *USED OIL – BLACK

    *PAINT SURROUNDING 3" OF CONCRETE PAD TO MATCH.
14. SLOPE CONCRETE AROUND ALL CONCRETE CURB BOXES – 1" RISE OVER 12" RUN.
15. TANK BOTTOMS ARE TO BE INSTALLED LEVEL.
16. DRILL 1/8" RELIEF ORIFICE THROUGH FILL TUBE AT LOCATION SHOWN.
17. FIBERGLASS PIPING SHALL BE LAID AND CONTINUOUSLY SUPPORTED ON A 6" COMPACTED BEDDING OF CLEAN SAND. NO PIPING SHALL BE SUPPORTED BY BLOCKS, PLANKS, OR OTHER DEBRIS.
18. FUEL OIL OR USED OIL TANKS ARE TO BE INSTALLED ONLY WHEN SPECIFIED ON PLOT PLAN. FUEL OIL FITTINGS ARE TO BE SUPPLIED BY GENERAL CONTRACTOR.
19. SEAL AND PLUG UNUSED OPENINGS.
20. MINIMUM BEND RADIUS 8".
21. INTERIOR OF FIBERGLASS RISER TO BE CLEAR OF PEA GRAVEL BACKFILL SO THREADED JOINTS ARE EXPOSED.
22. PROVIDE 6" CLEARANCE BETWEEN TOP OF PVC PIPE AND GRADE.

	SLOTS OR AS PER LOCAL REGULATIONS. ATLANTIC SCREEN NO. T121 OR EQUIV. 13 FT. LONG	OWNER
34	4" PVC-1 PIPE 12 FT. LONG SCH. 40 FOR GAUGE STICK	G. C.
35	1-1/2" X 24" FLEXIBLE CONNECTOR - RESISTOFLEX OR EQUIVALENT	OWNER
36	FIBERGLASS REDUCER BUSHING 2" X 1-1/2" NPT FEMALE	G. C.
37	4" QUICK OPENING SEALED BOX OPW 126A	OWNER
38	FILTER FABRIC - TYPAR OR EQUIV.	G. C.
39	FIBERGLASS TANK - OWENS CORNING OR XERXES	OWNER
40	FIBERGLASS USED OIL TANK - OWENS CORNING OR XERXES	OWNER
41	SHALLOW PAN LINER, FUEL GUARD OR EQUIV. -SEE NOTE 2	OWNER
42	IMPACT VALVE - OPW 10RM OR EQUIV.	OWNER
43	2" STEEL COUPLING SCH 80 EXTRA-STRONG	G. C.
44	RESERVED	
45	2" STEEL COUPLING SCH. 40 GALVANIZED	G. C.
46	ISOLATION SLEEVE, TOTAL CONTAINMENT FJ-042	OWNER
47	COMPRESSION SEAL FOR 2" COUPLING TOTAL CONTAINMENT	OWNER
48	COMPRESSION SEAL FOR 1 1/2" PIPE TOTAL CONTAINMENT	OWNER
49	1.1/2" STEEL COUPLING SCH 80 EXTRA-STRONG	G. C.
50	1 1/2" STEEL PIPE NIPPLE 4" LONG SCH 40 GALVANIZED	G. C.

RETAIL MARKETING
DESIGN AND ENGINEERING
200 PUBLIC SQUARE
CLEVELAND, OHIO 44114

TANK & LINE DETAILS
SUBMERGED (REMOTE) PUMPING
FIBERGLASS PIPING

DWG. NO.: 15-R	REV.: 4
SCALE: N.T.S.	MADE BY: DDK
DATE:	CHECKED BY: RWN

REVISIONS	DATE	DWN	CKD
CHANGED GAUGE POLE HOLDER, TANK GAUGE INFO	4/20/87	CDE	JGD
REV. NOTE 13	5/13/88	CDE	EMJ
REV FLEX ASSEMBLY, MANHOLES, AND OVERFILL	1/22/89	CDE	EMJ
REV. FLEX ASSEMBLY	10/6/89	G.P.D.	DBW

10/9/89

(14)

PIPING DETAIL (17)

UNDERGROUND STORAGE TANKS GENERAL SPECIFICATIONS

GENERAL: EXCAVATE, SET AND FILL AROUND ALL UNDERGROUND TANKS AS SHOWN. TANKS ARE TO BE BALLASTED WITH PRODUCT OR WATER, ACCORDING TO LOCAL REGULATIONS, AFTER INSTALLATION AND BACKFILL. SEE OWNER'S REPRESENTATIVE. ALTERNATE METHODS OF BACKFILLING TANKS SHALL BE AS RECOMMENDED BY TANK MANUFACTURER AND APPROVED BY OWNER'S FIELD REPRESENTATIVE.

GENERAL: WHERE THIS DRAWING IS IN CONFLICT WITH THE LOCAL REGULATIONS, LOCAL REGULATIONS WILL SUPERCEDE THIS DRAWING, IF MORE RESTRICTIVE.

FIBERGLASS TANKS: ALL TANKS ARE TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND APPROVAL OF OWNER'S FIELD REPRESENTATIVE.

PIPE: GLASS FIBER PIPE TO BE A.O. SMITH OR CIBA GIEGY. (BRANDS MAY NOT BE MIXED). STEEL PIPE TO BE SCHEDULE 40 GALVANIZED. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

PIPE JOINT SEAL: RECTORSEAL #5 OR #7 SHALL BE USED ON ALL STEEL PIPE FITTINGS.

TRENCHING: ALL TRENCHING FOR PIPE SHALL BE AS NOTED ON DRAWINGS. SPACE PIPING IN TRENCHES 8" ON CENTER. BACKFILL OVER PRODUCT PIPING AND VENT LINES OUTSIDE THE TANK CAVITY SHALL BE OF CLEAN COMPACTED SAND. COMPACT SAND FILL BEFORE AND AFTER PIPE INSTALLATION USING FLAT PLATE MECHANICAL TAMPER. ALL CONDUIT SHALL BE AS NOTED ON DRAWINGS, AND IN ONE TRENCH, SEPARATE FROM PIPING, TO BUILDING.

TANK VENTS: ALL TANK VENTS SHALL BE 2". SLOPE ALL VENTS AND PIPES DOWN UNIFORMLY TO TANKS.

TANK AND PRODUCT LINE TEST: UPON DELIVERY, ALL UNDERGROUND STORAGE TANKS SHALL BE TESTED ABOVE GROUND WITH AIR PRESSURE AT 5 PSI. USE SOAP AND WATER OR OTHER APPROVED METHOD FOR DETECTING LEAKS. LOOSEN THE PLUG FOR VENTILATION AFTER AIR TEST.

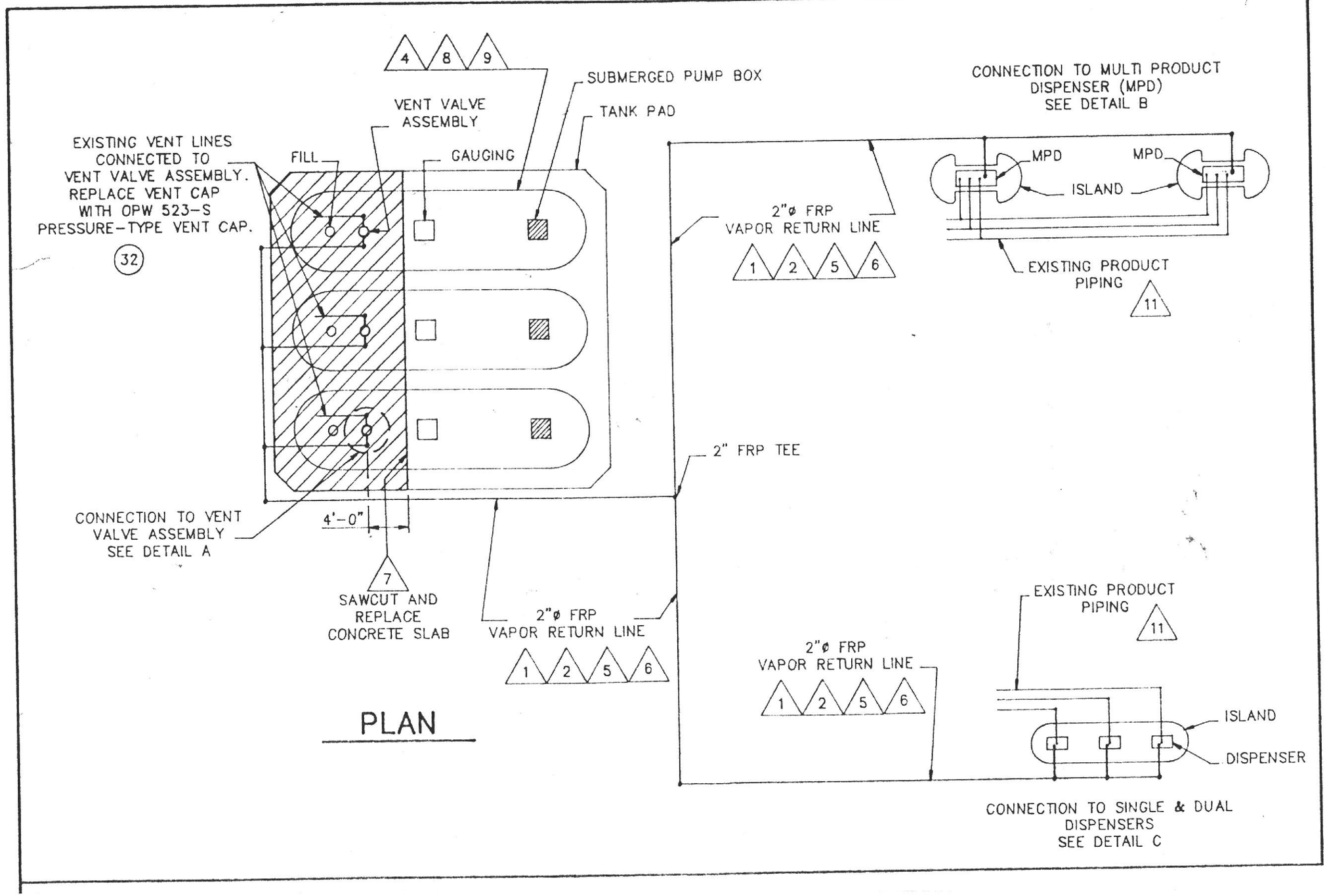
AFTER INSTALLATION BELOW GROUND AND FOLLOWING BACKFILL TO TOP OF TANK AND INSTALLATION OF PIPING CONNECTIONS, ALL UNDERGROUND STORAGE TANKS SHALL BE TESTED WITH AIR PRESSURE AT 5 PSI.

GASOLINE PRODUCT LINES INCLUDING VENT LINES SHALL BE TESTED WITH AIR PRESSURE AT 50 PSI BEFORE BACKFILL USING SOAP AND WATER OR OTHER OWNER APPROVED METHOD OF DETECTING LEAKS.

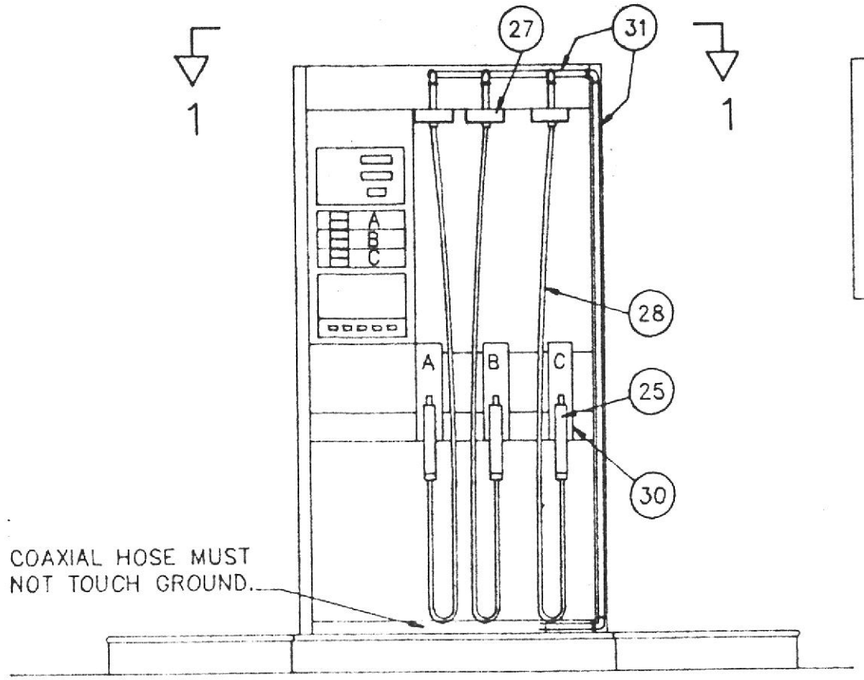
AFTER COMPLETION OF ALL YARD CONCRETE WORK, INCLUDING TANK PADS AND PUMP ISLANDS, A SECOND 50 PSI AIR PRESSURE TEST SHALL BE PERFORMED ON THE GASOLINE PRODUCT LINES PRIOR TO ACTIVATING THE SUBMERGED PUMPS. A PETRO-TITE TANK AND LINE TEST OR OTHER APPROVED TEST SHALL THEN BE CONDUCTED AT THE OWNER'S EXPENSE.

AIR TESTS SHALL BE MAINTAINED WITHOUT FALL-OFF IN PRESSURE FOR A MINIMUM OF 60 MINUTES. ALL TESTS SHALL BE MADE IN THE PRESENCE OF THE OWNER'S FIELD REPRESENTATIVE.

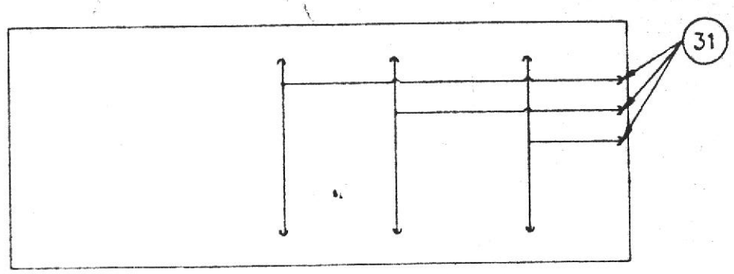
TANK ANCHORING: TO BE DONE ACCORDING TO SPECIFICATIONS OF THE TANK MANUFACTURER. THE ENGINEER WILL DETERMINE THE NECESSITY OF ANCHORING AT A GIVEN SITE.


4
8
9
VENT VALVE ASSEMBLY
SUBMERGED PUMP BOX
TANK PAD
EXISTING VENT LINES CONNECTED TO VENT VALVE ASSEMBLY. REPLACE VENT CAP WITH OPW 523-S PRESSURE-TYPE VENT CAP.
32
FILL
GAUGING
CONNECTION TO VENT VALVE ASSEMBLY SEE DETAIL A
4'-0"
7
SAWCUT AND REPLACE CONCRETE SLAB
2" FRP TEE
2"ø FRP VAPOR RETURN LINE
1
2
5
6
CONNECTION TO MULTI PRODUCT DISPENSER (MPD) SEE DETAIL B
MPD
MPD
ISLAND
EXISTING PRODUCT PIPING
11
2"ø FRP VAPOR RETURN LINE
1
2
5
6
EXISTING PRODUCT PIPING
11
ISLAND
DISPENSER
CONNECTION TO SINGLE & DUAL DISPENSERS SEE DETAIL C

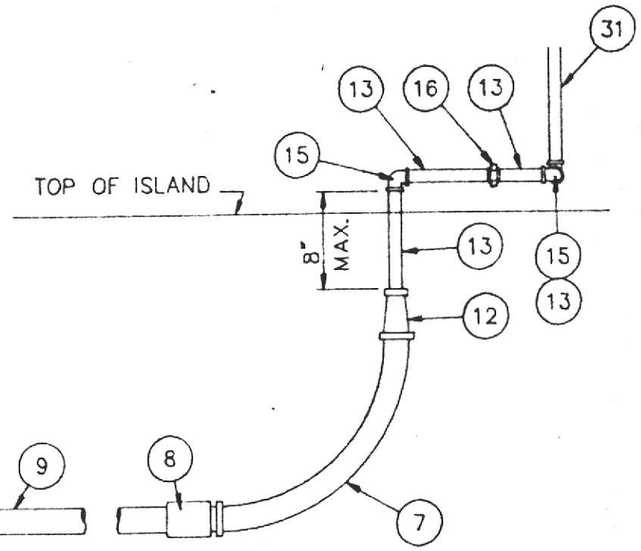
PLAN



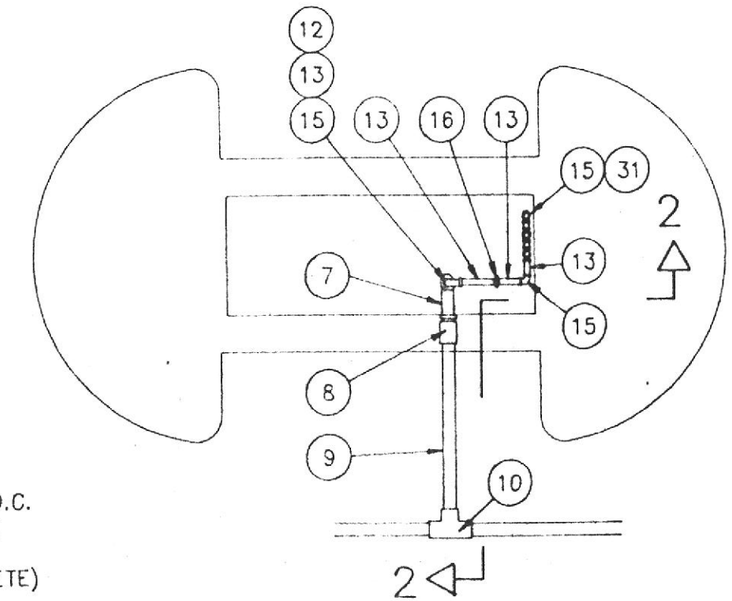
ELEVATION – MPD



VIEW 1–1



MPD SWING JOINT
SECTION 2–2 △3



DETAIL B △3 △11

36" O.C.
. SIDE
@ 18"
ONCRETE)

GENERAL NOTES △

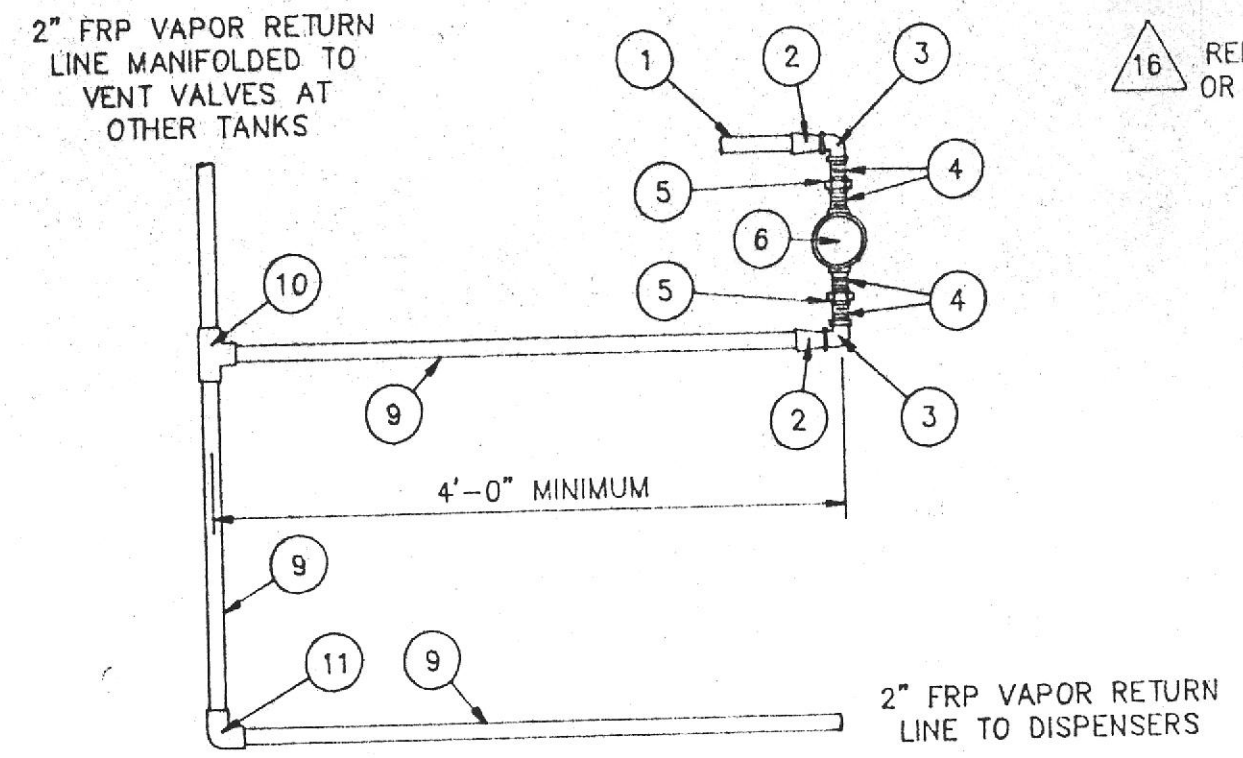
1. FRP VAPOR RETURN LINES ARE 2" DIAMETER. SLOPE LINES 1/8" PER FOOT FROM DISPENSER TO TANKS.
2. FIBERGLASS PIPE AND FITTINGS SHALL BE A.O. SMITH OR AMERON (BRANDS MAY NOT BE MIXED). INSTALL PER MANUFACTURER'S DIRECTIONS.
3. STEEL PIPE SHALL BE SCHEDULE 40 GALAVANIZED. STEEL FITTINGS SHALL BE CLASS 150. USE RECTORSEAL #5 OR APPROVED EQUAL FOR PIPE JOINT SEAL.
4. WHERE EXISTING FIBERGLASS TANK INSTALLATION IS NOT IN ACCORDANCE WITH CURRENT SPECIFICATIONS, CONSULT OWNERS REPRESENTATIVE TO DETERMINE ADDITIONAL SCOPE OF WORK.
5. ALL EXCAVATION WORK SHALL BE DONE BY HAND. USE OF MACHINERY IS PROHIBITED.
6. ALL EXCAVATED MATERIAL SHALL BE HAULED AWAY. DO NOT REUSE FOR BACKFILL EXCEPT WHERE PERMITTED BY NOTE 8.
7. REMOVE TANK PAD TO A MINIMUM DISTANCE OF FOUR (4) FEET BEYOND THE VAPOR RECOVERY ADAPTER TO EXPOSE TANK FITTINGS WITHOUT UNDERMINING REMAINING SURFACE. NEW SURFACE CONCRETE SHALL BE DOWELED INTO EXISTING CONCRETE WITH #4 REBAR AT 24" O.C.
8. TANK EXCAVATION SHALL BE BACKFILLED WITH NEW PEA GRAVEL. EXISTING PEA GRAVEL MAINTAINED IN A DEBRIS FREE CONDITION MAY BE REUSED WHEN APPROVED IN WRITING BY THE OWNER.
9. FILTER FABRIC SHALL BE USED TO SEPARATE SAND BACKFILL FROM THE PEA GRAVEL. CUT FABRIC TO FIT TIGHTLY AROUND PIPING PENETRATION.
10. VAPOR RECOVERY PIPING SHALL BE LAID AND CONTINUOUSLY SUPPORTED ON A 6" COMPACTED BEDDING OF NEW CLEAN SAND. NO PIPING SHALL BE SUPPORTED BY BLOCKS OR PLANKS. TRENCHES SHALL BE BACKFILLED COMPLETELY TO THE UNDERSIDE OF PAVING WITH NEW CLEAN SAND.
11. EXISTING PRODUCT PIPING ENTERS DISPENSER ON ONE SIDE. INSTALL VAPOR RETURN LINE INTO DISPENSER ON OTHER SIDE.
12. REROUTE VENT LINE OR WATER LINE IF IT OBSTRUCTS THE VAPOR RETURN LINE. WHEN NOT PRACTICAL TO MAINTAIN A 6" CLEARANCE, PLACE A 1" THICK PIECE OF STYROFOAM BETWEEN THE VAPOR RETURN LINE AND THE OTHER LINE.
13. IF SEWER PIPING OR CONDUIT IS ENCOUNTERED, REROUTE THE VAPOR RETURN LINE TO A LOCATION WHERE IT CAN PASS OVER OR UNDER THE SEWER/CONDUIT. WHEN NOT PRACTICAL TO MAINTAIN A 6" CLEARANCE, PLACE A 1" THICK PIECE OF STYROFOAM BETWEEN THE VAPOR RETURN LINE AND THE OTHER LINE.
14. IF PRODUCT PIPING IS ENCOUNTERED, REROUTE THE VAPOR RETURN LINE TO A LOCATION WHERE IT CAN PASS OVER OR UNDER THE PRODUCT PIPING. WHEN NOT PRACTICAL TO MAINTAIN A 6" CLEARANCE, PLACE A 1" THICK PIECE OF STYROFOAM BETWEEN THE VAPOR RETURN LINE AND THE OTHER LINE. AS A LAST RESORT, THE PRODUCT PIPING MAY BE REROUTED AS SHOWN ON THE DETAIL.
15. BACKFILL SHALL BE COMPACTED AROUND UNDERGROUND OBSTRUCTIONS SO THE OBSTRUCTIONS ARE CONTINUOUSLY SUPPORTED.
16. SAWCUT EXISTING PAVEMENT. REMOVE A MINIMUM OF 12" OF ASPHALT OR CONCRETE ON BOTH SIDES OF THE TRENCH. ASPHALT REPAIR SHALL BE 5" THICK. REINFORCED CONCRETE REPAIR SHALL BE 8" THICK AT TANK PAD AND 6" THICK AT ALL OTHER LOCATIONS.
17. TESTING PROCEDURE:
    A. BEFORE EXCAVATION WORK:

       DRAIN PRODUCT PIPING BACK TO TANKS.

       A 50 PSI AIR TEST SHALL BE PERFORMED ON EXISTING PRODUCT PIPING.

MATERIAL SCHEDULE ○

NO.	ITEM	SUPPLIED BY
1.	2" DIA. FRP PIPING TO EXISTING VENT	G.C.
2.	2" FRP ADAPTER BELL X NPT MALE	G.C.
3.	2" GALV. 90° ELBOW	G.C.
4.	2" GALV. NIPPLE	G.C.
5.	2" GROUND JOINT UNION	G.C.
6.	VENT VALVE ASSEMBLY, UNIVERSAL #420 OR EQUIVALENT WITH STAINLESS STEEL FLOAT AND 1/8" ORIFICE	OWNER
7.	2" X 24" FLEXIBLE CONNECTOR RESISTOFLEX OR EQUIVALENT	OWNER
8.	2" FRP ADAPTER BELL X NPT FEMALE	G.C.
9.	2" FRP VAPOR RETURN LINE	G.C.
10.	2" FRP TEE	G.C.
11.	2" FRP 90° ELBOW	G.C.
12.	2" X 1" GALV. REDUCER	G.C.
13.	1" GALV. PIPE	G.C.
14.	RESERVED	
15.	1" GALV. 90° ELBOW	G.C.
16.	1" GROUND JOINT UNION	G.C.
17.	1" X 3/4" GALV. REDUCER	G.C.
18.	3/4" GALV. PIPE	G.C.
19.	VAPOR CHECK VALVE	OWNER
20.	GASOLINE CONNECTION HOSE	OWNER
21.	CO-AXIAL HOSE WITHOUT VENTURI. DAYCO PETROFLEX 2000, GOODYEAR MAXXIM	OWNER
22.	HOSE RETRACTOR ASSEMBLY	OWNER
23.	RESERVED	
24.	RESERVED	
25.	STAGE II NOZZLE EMCO WHEATON A-4001 OR EQUIVALENT	OWNER
26.	HANGER ASSEMBLY FOR NOZZLE	OWNER
27.	VAPOR CHECK VALVE EMCO WHEATON A-227-001	OWNER
28.	CO-AXIAL HOSE WITH VENTURI. DAYCO PETROFLEX 2000	OWNER
29.	RESERVED	
30.	NOZZLE HOLSTER TO ACCOMODATE STAGE II NOZZLE	OWNER
31.	VAPOR RETURN PIPING AND MANIFOLD PREFABRICATED BY DISPENSER MANUFACTURER	OWNER
32.	PRESSURE-TYPE VENT CAP OPW 523-S	OWNER



16 REINFO
OR ASP

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SA

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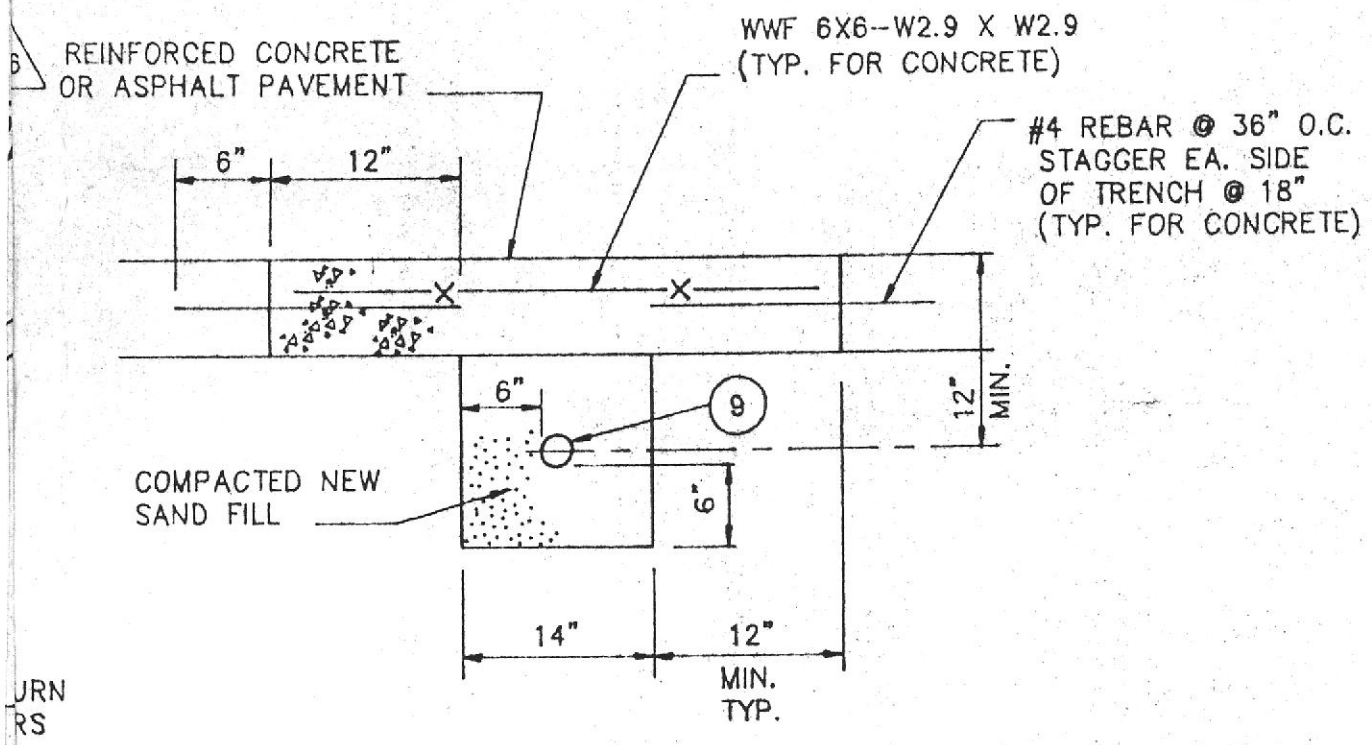
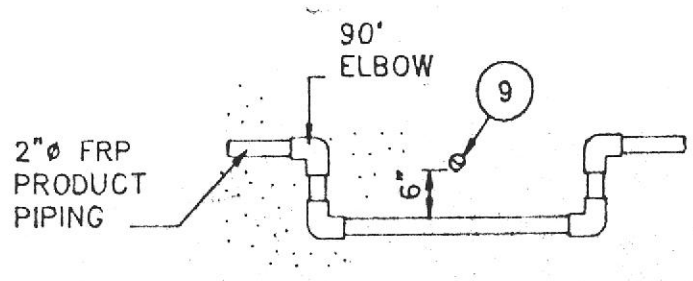
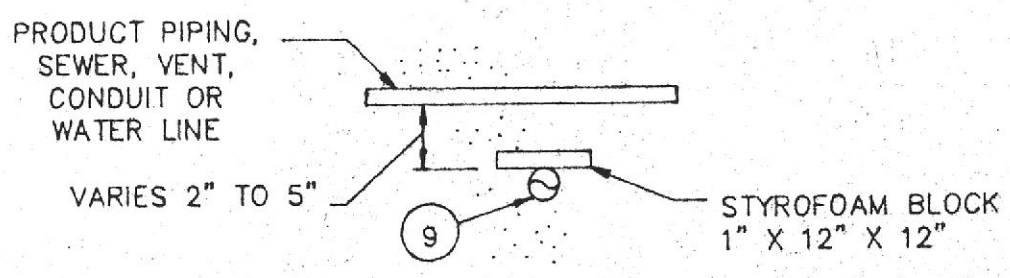
VENT VALVE ASSEMBLY
DETAIL A



TRENCH DETAILS 5 10

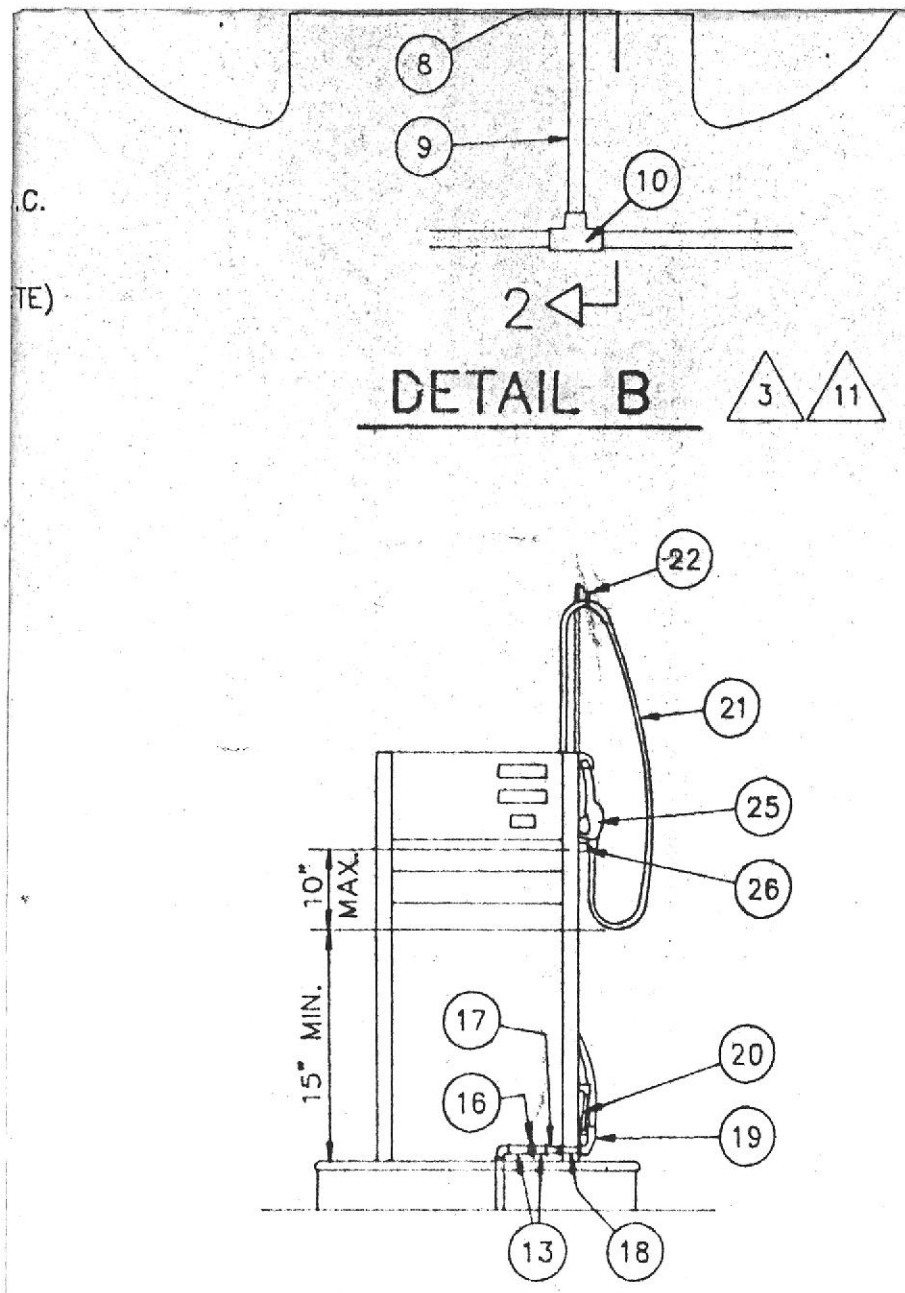


UNDERGROUND OBSTRUCTIONS
PRODUCT PIPING – SPECIAL CASE 14 15



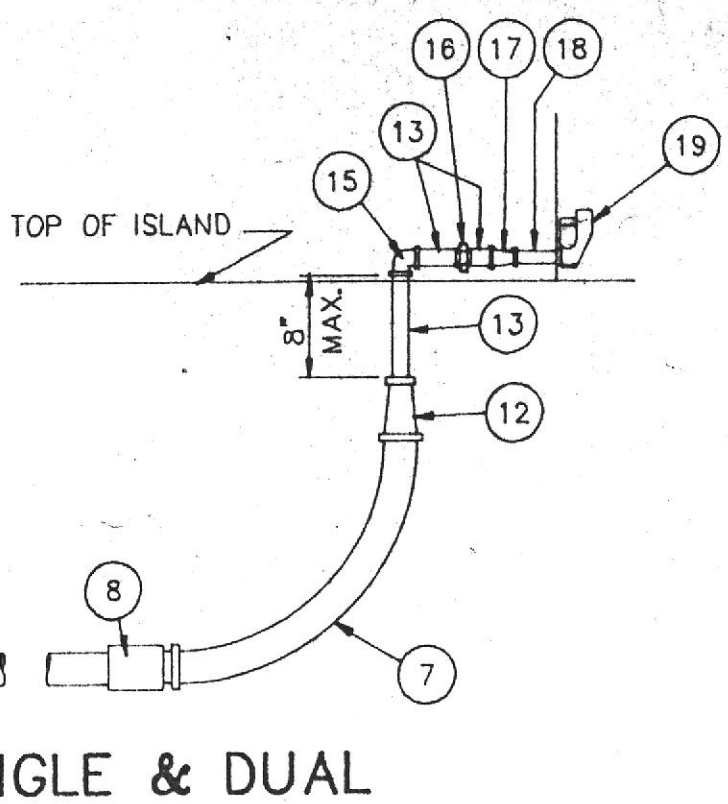
UNDERGROUND OBSTRUCTION
PRODUCT PIPING, SEWER, VENT, CONDUIT OR WATER LINE

12 13 14 15

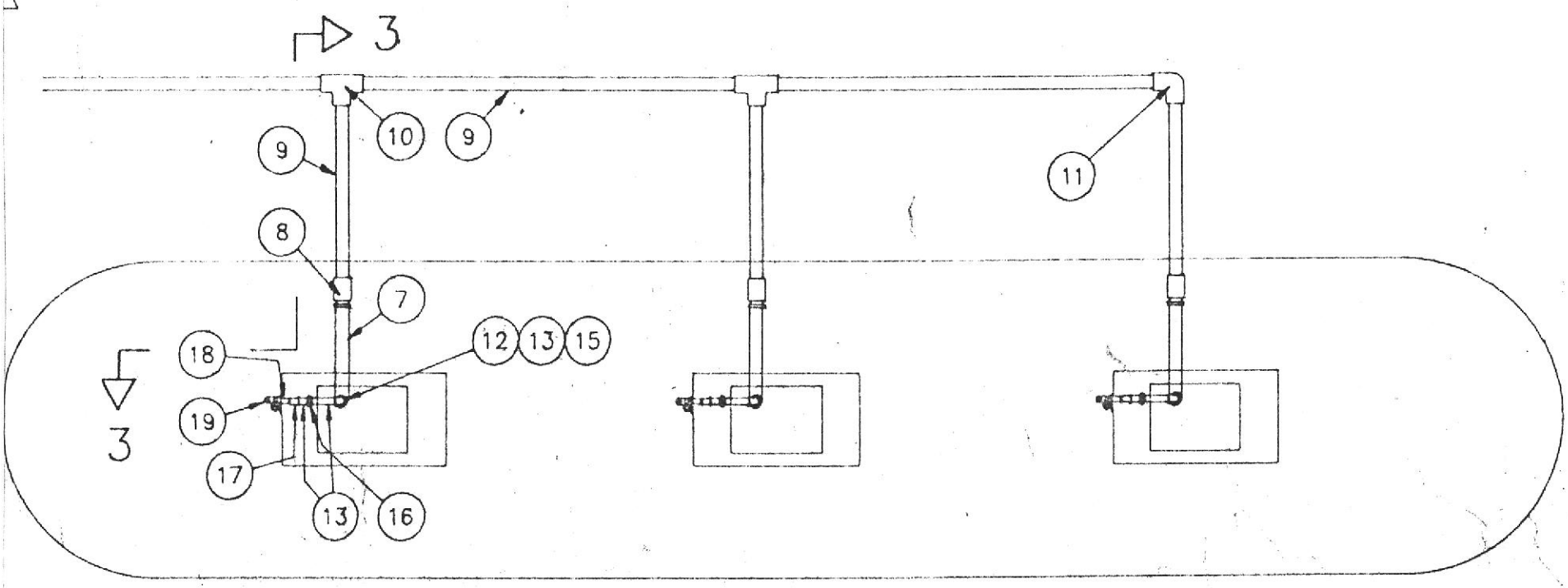


DETAIL B 3 11

ELEVATION – SINGLE & DUAL DISPENSERS



SINGLE & DUAL SWING JOINT SECTION 3–3 3



DETAIL C 3 11

MAINTAIN A 6" CLEARANCE, PLACE A 1" THICK PIECE OF STYROFOAM BETWEEN THE VAPOR RETURN LINE AND THE OTHER LINE.

13. IF SEWER PIPING OR CONDUIT IS ENCOUNTERED, REROUTE THE VAPOR RETURN LINE TO A LOCATION WHERE IT CAN PASS OVER OR UNDER THE SEWER/CONDUIT. WHEN NOT PRACTICAL TO MAINTAIN A 6" CLEARANCE, PLACE A 1" THICK PIECE OF STYROFOAM BETWEEN THE VAPOR RETURN LINE AND THE OTHER LINE.

14. IF PRODUCT PIPING IS ENCOUNTERED, REROUTE THE VAPOR RETURN LINE TO A LOCATION WHERE IT CAN PASS OVER OR UNDER THE PRODUCT PIPING. WHEN NOT PRACTICAL TO MAINTAIN A 6" CLEARANCE, PLACE A 1" THICK PIECE OF STYROFOAM BETWEEN THE VAPOR RETURN LINE AND THE OTHER LINE. AS A LAST RESORT, THE PRODUCT PIPING MAY BE REROUTED AS SHOWN ON THE DETAIL.

(19) 15. BACKFILL SHALL BE COMPACTED AROUND UNDERGROUND OBSTRUCTIONS SO THE OBSTRUCTIONS ARE CONTINUOUSLY SUPPORTED.

16. SAWCUT EXISTING PAVEMENT. REMOVE A MINIMUM OF 12" OF ASPHALT OR CONCRETE ON BOTH SIDES OF THE TRENCH. ASPHALT REPAIR SHALL BE 5" THICK. REINFORCED CONCRETE REPAIR SHALL BE 8" THICK AT TANK PAD AND 6" THICK AT ALL OTHER LOCATIONS.

17. TESTING PROCEDURE:

A. BEFORE EXCAVATION WORK:

DRAIN PRODUCT PIPING BACK TO TANKS.

A 50 PSI AIR TEST SHALL BE PERFORMED ON EXISTING PRODUCT PIPING.

B. BEFORE BACKFILLING WORK:

A 50 PSI AIR TEST SHALL BE PERFORMED ON THE VAPOR RETURN LINES AND PRODUCT PIPING. TEST SHALL BE MAINTAINED WITHOUT FALL-OFF IN PRESSURE FOR A MINIMUM OF 60 MINUTES. CHECK JOINTS WITH SOAP AND WATER.

C. UPON COMPLETION OF JOB:

A SECOND 50 PSI AIR TEST SHALL BE PERFORMED ON THE VAPOR RETURN LINES.

A PETRO-TITE LINE TEST SHALL BE PERFORMED ON EXISTING PRODUCT PIPING.

D. ALL TESTS SHALL BE WITNESSED BY OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE PERFORMED AT CONTRACTOR'S EXPENSE.

23.	RESERVED	
24.	RESERVED	
25.	STAGE II NOZZLE EMCO WHEATON A-4001 OR EQUIVALENT	OWNER
26.	HANGER ASSEMBLY FOR NOZZLE	OWNER
27.	VAPOR CHECK VALVE EMCO WHEATON A-227-001	OWNER
28.	CO-AXIAL HOSE WITH VENTURI. DAYCO PETROFLEX 2000	OWNER
29.	RESERVED	
30.	NOZZLE HOLSTER TO ACCOMODATE STAGE II NOZZLE	OWNER
31.	VAPOR RETURN PIPING AND MANIFOLD PREFABRICATED BY DISPENSER MANUFACTURER	OWNER
32.	PRESSURE-TYPE VENT CAP OPW 523-S	OWNER

BP OIL CO.

RETAIL MARKETING
DESIGN AND ENGINEERING
200 PUBLIC SQUARE
CLEVELAND, OHIO 44114

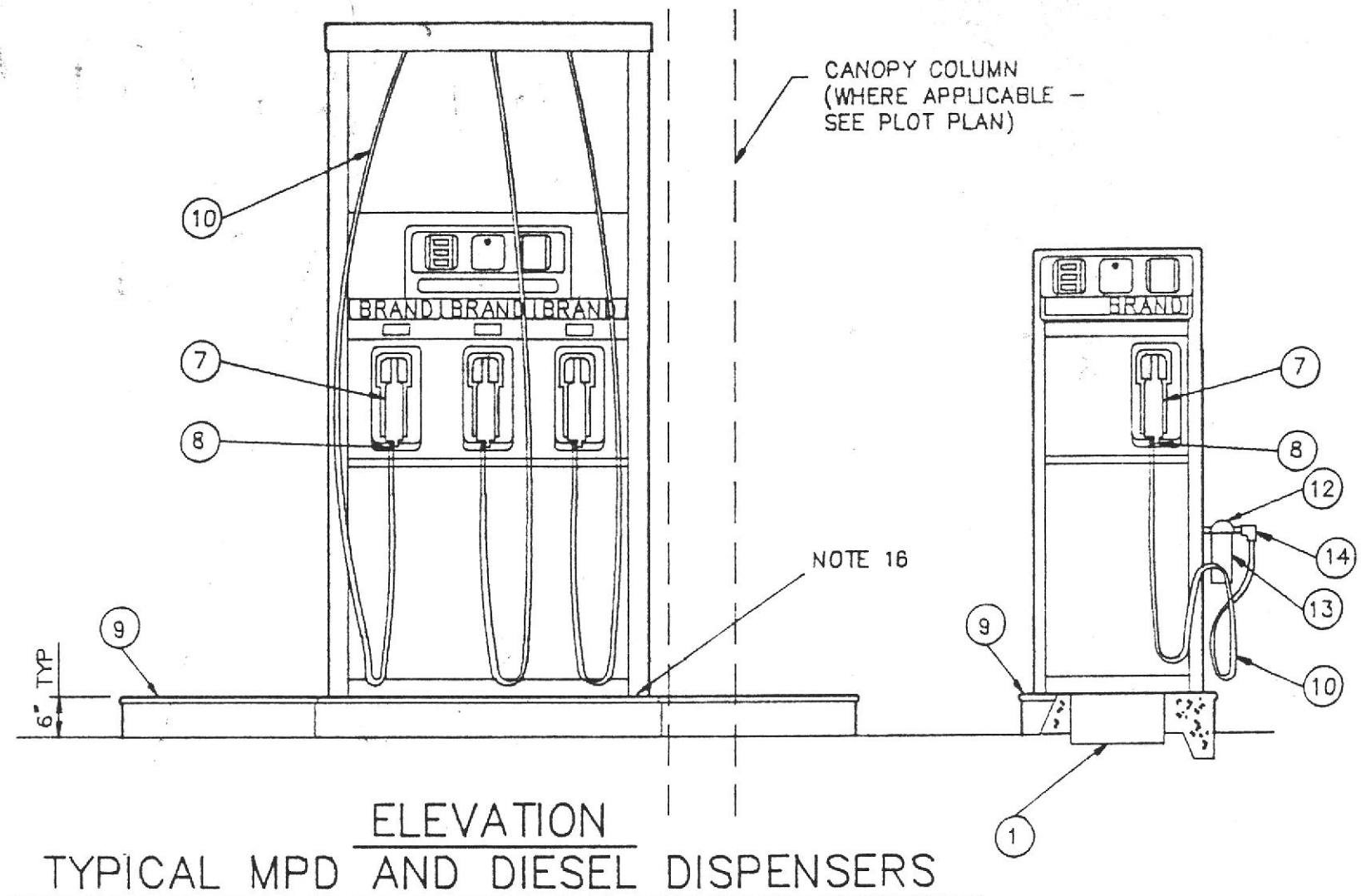
STAGE II VAPOR RECOVERY VAPOR RETURN LINE DETAILS

DWG. NO.: 13R-S2VR | REV.: 1

SCALE: NO SCALE | MADE BY: CDECO

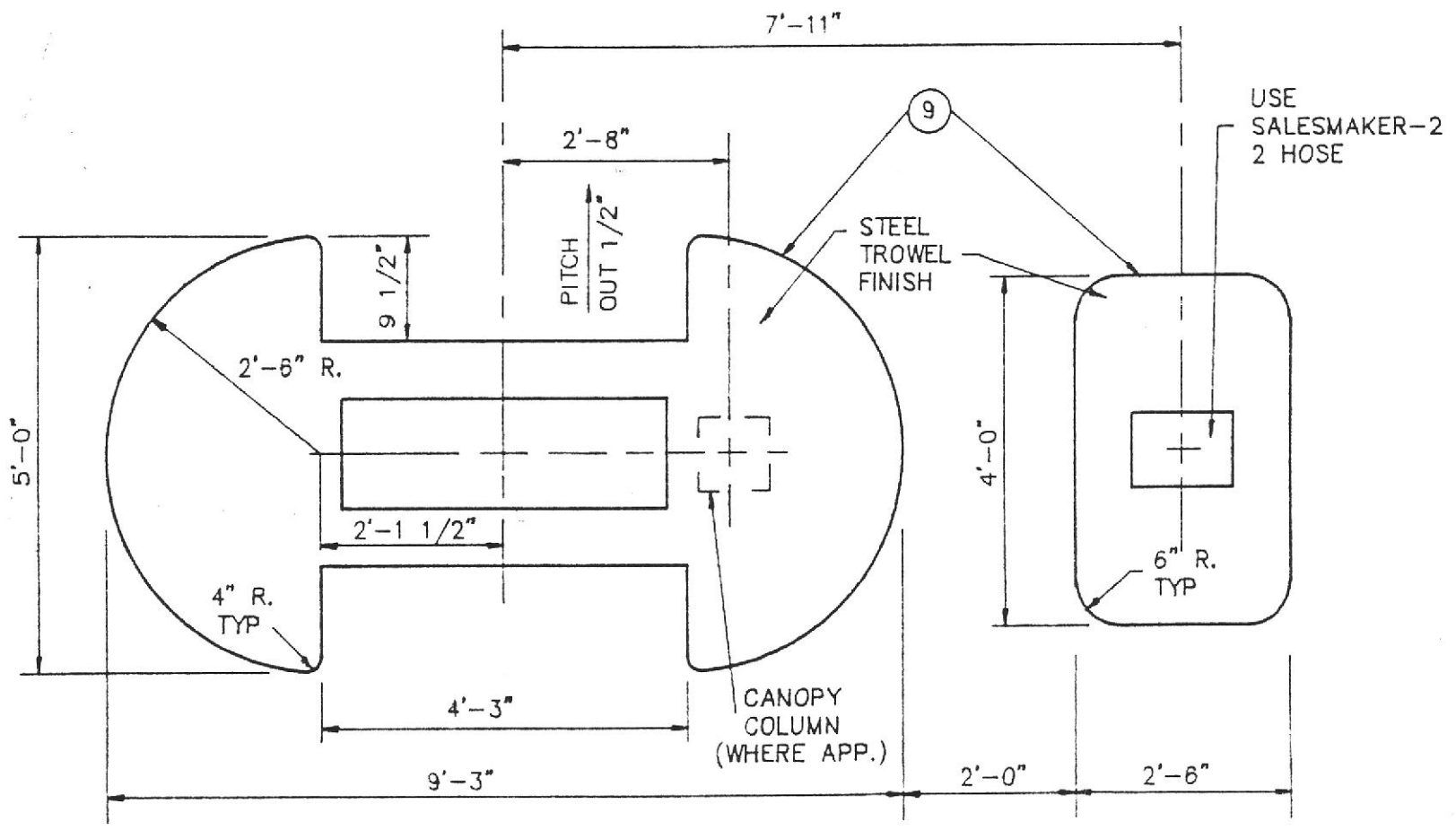
DATE: 4/3/89 | CHECKED BY: DW

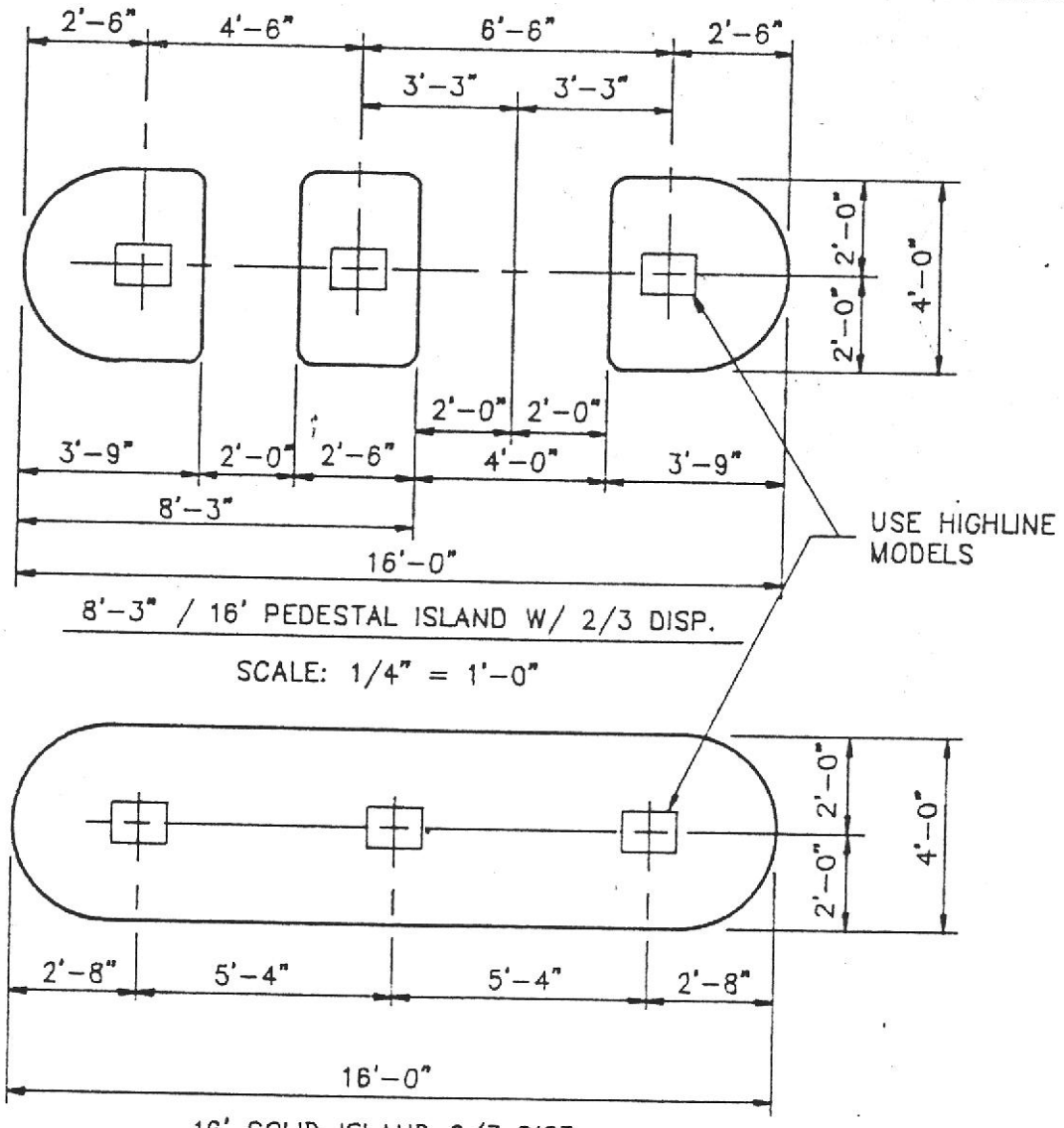
REVISIONS	DATE	DWN	CKD
1. DELETE BREAKAWAYS REV VIEW 1-1	6/20/88	CDE	



ELEVATION
TYPICAL MPD AND DIESEL DISPENSERS

SCALE: 1/2" = 1'–0"





8'-3" / 16' PEDESTAL ISLAND W/ 2/3 DISP.

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

16' SOLID ISLAND 2/3 DISP.

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

ALTERNATE ISLANDS

DISPENSER TERMINAL STRIPS

SINGLE AND DUAL DISPENSERS

GILBARCO		INSTALLER			
BLACK	A-0-1	#3, BLACK	14 AWG	120V AC LIGHTS	
BLACK	A-0-2	#1, BLACK	14 AWG	120V AC DISPENSER POWER	
WHITE	A-0-13	#2, WHITE	14 AWG	DISPENSER POWER NEUTRAL	
WHITE	A-0-11	#4, WHITE	14 AWG	DISPENSER LIGHT NEUTRAL	
TO SOLENOID VALVES		#6, WHITE	14 AWG	PRODUCT A CONTROL NEUTRAL	
		#8, WHITE	14 AWG	PRODUCT B CONTROL NEUTRAL (HIGHLINE ONLY)	
GREEN	A-0-10	#19, GREEN	12 AWG	GROUND	
YELLOW	A-1-6	#5, RED	14 AWG	PRODUCT A CONTROL HOT	CURRENT LOOP TO OTHER DISPENSERS
YELLOW	A-2-6	#7, RED	14 AWG	PRODUCT B CONTROL HOT (HIGHLINE ONLY)	CURRENT LOOP TO OTHER DISPENSERS
	A-4-6				
YELLOW	A-0-19	#13, BLUE	18 AWG	DATA+	TO DISTRIBUTION BOX
YELLOW	A-0-9	#14, BLUE	18 AWG	DATA-	TO DISTRIBUTION BOX

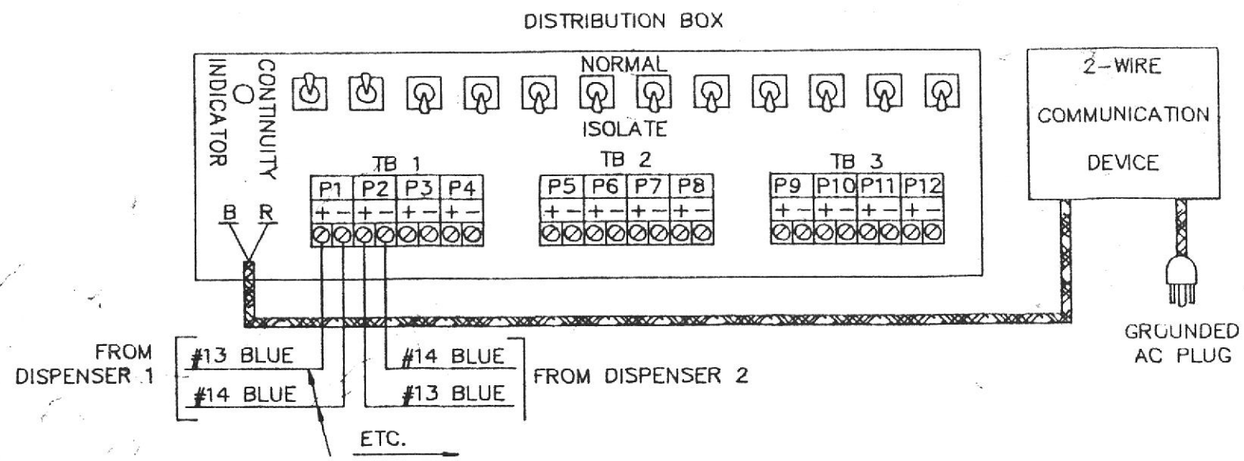
MPD WIRING

GILBARCO		INSTALLER			
BLACK	A-0-1	#3, BLACK	14 AWG	120V AC LIGHTS	
BLACK	A-0-2	#1, BLACK	14 AWG	120V AC DISPENSER POWER	
WHITE	A-0-13	#2, WHITE	14 AWG	DISPENSER POWER NEUTRAL	
WHITE	A-0-11	#4, WHITE	14 AWG	DISPENSER LIGHT NEUTRAL	
TO SOLENOID VALVES		#6, WHITE	14 AWG	PRODUCT A CONTROL NEUTRAL	
		#8, WHITE	14 AWG	PRODUCT B CONTROL NEUTRAL	
		#10 WHITE	14 AWG	PRODUCT C CONTROL NEUTRAL	
GREEN	A-0-10	#19, GREEN	12 AWG	GROUND	
YELLOW	A-1-6	#5, RED	14 AWG	PRODUCT A CONTROL HOT	CURRENT LOOP TO OTHER DISPENSER
YELLOW	A-2-6	#7, RED	14 AWG	PRODUCT B CONTROL HOT	CURRENT LOOP TO OTHER DISPENSER
YELLOW	A-3-6	#9, RED	14 AWG	PRODUCT C CONTROL HOT	CURRENT LOOP TO OTHER DISPENSER
	A-4-6	SPARE		PRODUCT 4 CONTROL	
YELLOW	A-0-19	#13, BLUE	18 AWG	DATA+	TO DISTRIBUTION BOX
YELLOW	A-0-9	#14, BLUE	18 AWG	DATA-	TO DISTRIBUTION BOX

DISTRIBUTION BOX TERMINAL STRIPS

NOTE A: EACH P# DESIGNATION ABOVE REPRESENTS ONE DISPENSER, REGARDLESS OF THE NUMBER OF

NOTE B: WHERE MORE THAN 6 DISPENSER ARE INSTALLED, IN CONJUNCTION WITH A PAM, ADDITIONAL DISTRIB BOXES MUST BE ADDED. UP TO 1 DISPENSERS MAY BE WIRED TO O DISTRIBUTION BOX WHEN A GILBA CONSOLE IS USED.(SEE FIELD ENG

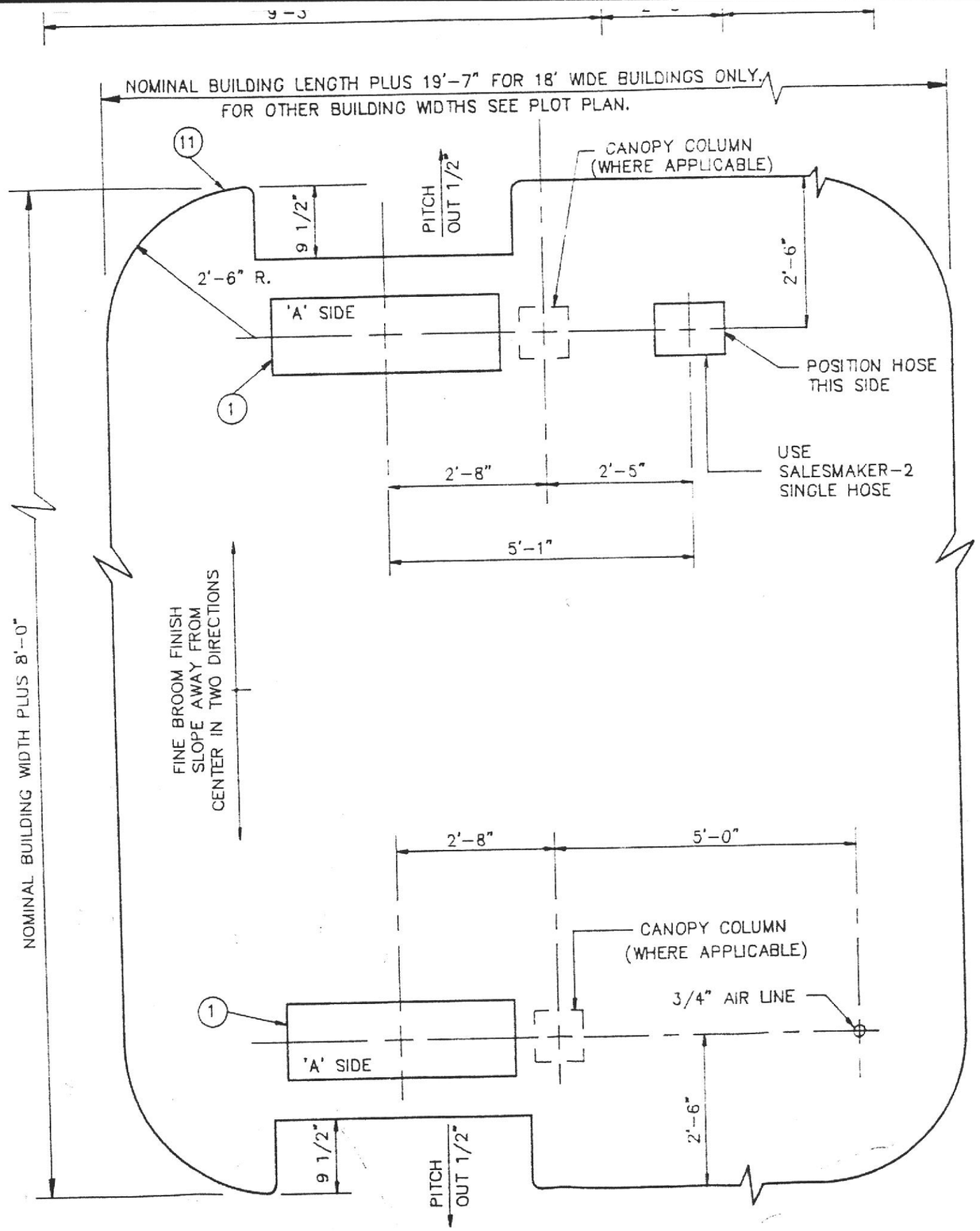


GILBARCO DISPENSING SYSTEM
INSTALLATION NOTES

1. TWO IMPACT VALVES AND CLAMPS ARE REQUIRED WHEN A DUAL PRODUCT TWIN DISPENSER IS SPECIFIED; THREE EACH FOR MULTI PRODUCT DISPENSERS.
2. MOUNTING BRACKET FOR VERTICAL ADJUSTMENT OF VALVE DURING INSTALLATION.
3. USE CLAMP SUPPLIED WITH IMPACT VALVE.
4. MOUNTING RODS TO SIDES OF ISLAND TO LOCATE PUMP BOX.
5. ADAPTER AND IMPACT VALVE TO BE ASSEMBLED TO SUPPLY PIPE BEFORE CLAMPING VALVE TO ISLAND FORM.
6. ALL ELECTRICAL WORK TO CONFORM WITH LOCAL AND NATIONAL ELECTRICAL CODES AT A MINIMUM.
7. ALL WIRES MUST BE CONTINUOUS RUN (NO SPLICES) FROM DISPENSER TO CONSOLE TERMINAL STRIP BOX.
8. ALL SPARE WIRES SHOULD BE TAPED AND LOOPED AT ENDS AND LABELLED.
9. ALL 110VAC TO DISPENSERS MUST BE ON SAME PHASE.
10. SEE MANUFACTURER'S DRAWINGS INCLUDED WITH DISPENSERS FOR FURTHER DETAILS.
11. GENERAL CONTRACTOR TO CALIBRATE DISPENSERS, AND APPLY FOR WEIGHTS AND MEASURES' SEAL.
12. ALL CIRCUIT BREAKERS ARE TO BE SWITCHED NEUTRAL TYPE, AND LABELLED NEATLY, ACCORDING TO CIRCUIT.
13. CONSOLE TERMINAL STRIP BOX AND/OR PUMP INTERFACE BOX TO BE MOUNTED IN UTILITY ROOM WITH OTHER ELECTRICAL APPURTENANCES.
14. SUBMERSIBLE PUMP RELAYS MUST BE USED IF 1 1/2 HP PUMP MOTORS ARE INSTALLED. IF NOT SUPPLIED WITH SUBMERSIBLE PUMP, CONSULT THE ENGINEER.
15. PROVIDE 6" CLEARANCE AROUND ALL SIDES OF CONTROLLER.
16. 1/2" x 2" ANCHOR BOLTS (4) FOR DISPENSER MOUNTING TO BE SUPPLIED BY ISLAND MANUFACTURER.
17. ALL MATERIAL USED IN ISLAND FORM CONSTRUCTION SHALL BE AT LEAST 12 GA. CARBON STEEL.

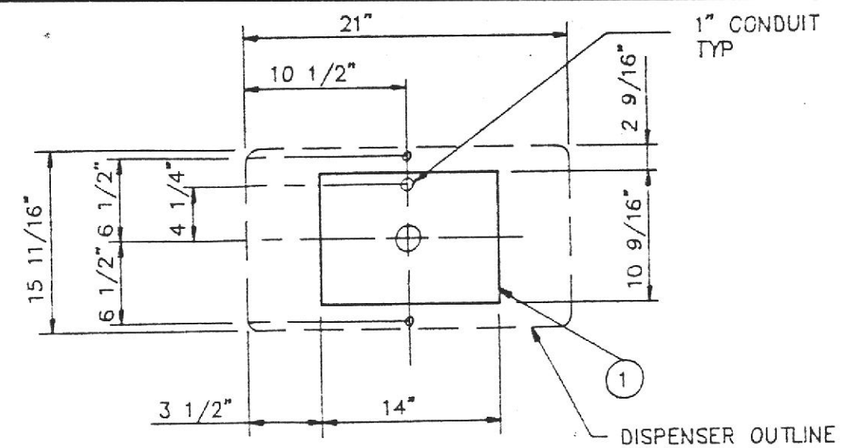
○ — DISPENSING SYSTEM MATERIAL SCHEDULE

REF	ITEM	SUPPLIED BY	INSTALLED BY
A	SUBMERGED PUMPS	OWNER	G.C.
B	PUMP RELAY RED JACKET	OWNER	G.C.
C	PAM	OWNER	G.C.
D	DISPENSERS	OWNER	G.C.
E	CONSOLE	OWNER	G.C.
F	CONSOLE DATA CABLE	OWNER	G.C.
G	DISPENSER CABLE	OWNER	G.C.
H	DISTRIBUTION BOX	OWNER	G.C.
1	PUMP BOX – PERMCO OR EQUIV. INCLUDES MTG. BKT.	OWNER	G.C.
2	IMPACT VALVE – OPW 10RM OR EQUIV. INCL. U-BOLT	OWNER	G.C.
3	1 1/2" UNION – GRD. JT. FURNISHED WITH DISPENSER	OWNER	G.C.
4	1 1/2" X 24" FLEXIBLE CONNECTOR RESISTOFLEX OR TELEFLEX OR EQUIVALENT	OWNER	G.C.
5	2" GLASS FIBER PIPE	G.C.	G.C.
6	2"F X 1 1/2"F GLASS FIBER REDUCER LG. END PLAIN SM. END 1 1/2" NPT FEMALE	G.C.	G.C.
7	NOZZLE OPW 11A OR EQUIV.	OWNER	G.C.
8	SWIVEL HUSKY 1 + VI 3/4" X 3/4"	OWNER	G.C.
9	ISLAND FORM 9 3/4" HIGH	OWNER	G.C.
10	HOSE 5/8" X 12 FT.	OWNER	G.C.
11	ISLAND FORM 13" HIGH	OWNER	G.C.
12	DIESEL FILTER HEAD	OWNER	G.C.
13	CIM-TEK DIESEL FILTER	OWNER	G.C.
14	PUMP OUTLET SWIVEL	PUMP MFG	G.C.
15	ISOLATION SLEEVE, TOTAL CONTAINMENT FJ-036	OWNER	G.C.
16	COMPRESSION SEAL FOR 2" COUPLING, TOTAL CONTAINMENT	OWNER	G.C.
17	COMPRESSION SEAL FOR 1 1/2" PIPE, TOTAL CONTAINMENT	OWNER	G.C.
18	1 1/2" STEEL COUPLING SCH. 40 GALVANIZED	G.C.	G.C.
19	1 1/2" STEEL PIPE NIPPLE 4" LONG SCH. 40 GALVANIZED	G.C.	G.C.

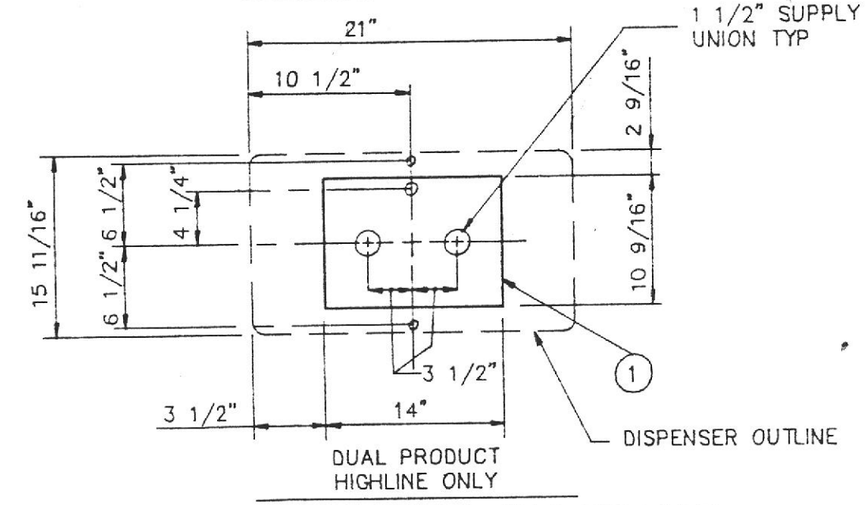


STANDARD ISLAND LAYOUTS

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



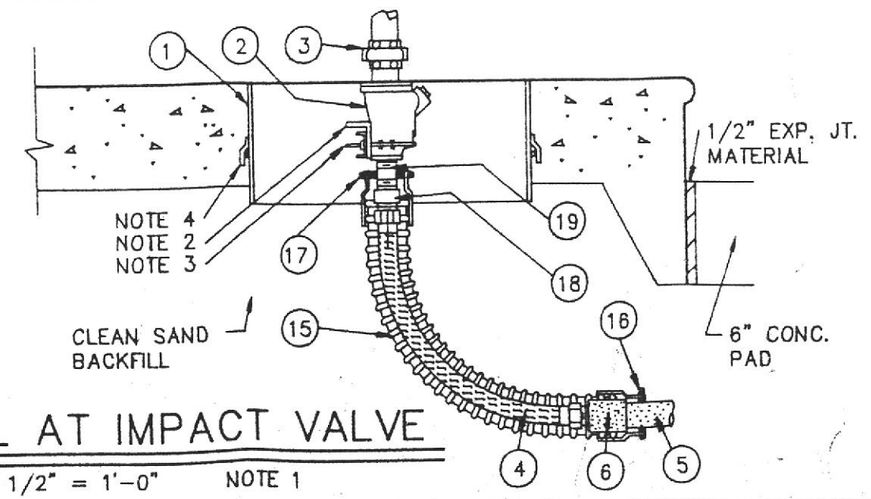
SINGLE PRODUCT
SALESMAKER AND HIGHLINE



DUAL PRODUCT
HIGHLINE ONLY

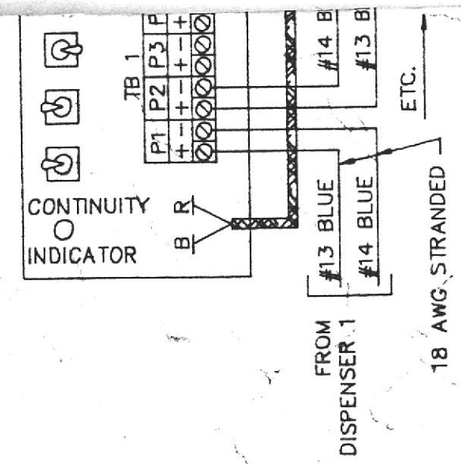
PUMP MOUNTING DIAGRAMS

SCALE: 1" = 1'-0"



DETAIL AT IMPACT VALVE

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



NOTE A: EACH P# DESIGNATION ABOVE REPRESENTS ONE DISPENSER, REGARDLESS OF THE NUMBER OF HOSES

NOTE B: WHERE MORE THAN 6 DISPENSERS ARE INSTALLED, IN CONJUNCTION WITH A PAM, ADDITIONAL DISTRIBUTION BOXES MUST BE ADDED. UP TO 12 DISPENSERS MAY BE WIRED TO ONE DISTRIBUTION BOX WHEN A GILBARCO CONSOLE IS USED. (SEE FIELD ENGINEER).

DISTRIBUTION BOX TERMINAL STRIPS

BP OIL CO.

RETAIL MARKETING
DESIGN AND ENGINEERING
200 PUBLIC SQUARE
CLEVELAND, OHIO 44114

DISPENSERS AND ISLANDS GILBARCO MPD 2, 3 SALESMAKER 2 AND HIGHLINE MODELS

DWG. NO. 13-R-G	REV. 5
SCALE AS NOTED	MADE BY CLEVELAND DETAIL
DATE MAY 4, 1987	CHECKED BY JGD

REVISIONS:	DATE	DWN	CKD
1. CHANGE 2" ISLAND FORM RADIUS TO 4"	6-19-87	CDE	RW
2. CHANGE ISLAND FORM DIMENSIONS & NOTES	10-21-87	CDE	EMJ
3. ADD AIR LINE & SPEAKER CONDUIT	4-15-88	CDE	
4. REV. ISLAND LENGTH NOTE	8-16-88	CDE	
5. REV IMPACT VALVE, MPD PLAN, MAT'L SCHED.	3-8-89	CDE	

4 of 4 3/15/89

5

EARTHWORK

1.01 GENERAL:

A. Provide shoring, barriers and railings as required by law or regulations for the protection of employees, the public and adjacent property.

B. Close open ends of abandoned underground utilities which are indicated to remain in place. Provide sufficiently strong closures to withstand any hydrostatic or earth pressure which may result after ends of abandoned utilities have been closed.

C. Properly barricade, protect and maintain any open trench or excavation to prevent accidental or unauthorized entrance.

D. Referenced Publications

ASTM D698	Moisture-Density relations of soils using 5.5-lb rammer and 12-in drop.
ASTM D1556	Density of soil in place by the sand-cone method.
ASTM D2049	Relative density of cohesionless soils.
ASTM D2167	Density of soil in place by the rubber-balloon method.

1.02 SITE CLEARING:

A. Site shall be cleared of any improvements or obstructions within the entire area to be developed or as shown on the drawings. For example, foundations shall be removed to a minimum of three feet below grade. The site shall also be grubbed free of all sod, roots, or any other similar materials. Trees up to 24" diameter shall be grubbed to a minimum of two feet below grade; trees exceeding 24" diameter shall be grubbed to a minimum of three feet below grade. All trash and debris shall be removed from the site prior to placing any fill, concrete or paving.

B. The Contractor is responsible for locating all underground plumbing or electrical lines. Cooperate with utility companies to maintain utility lines in continuous operation. No disruption of utility services shall be allowed without Owner and Utility Company approval.

C. Any existing utility services or underground lines exposed by excavation or grading shall be protected and the proper utility company notified.

D. Demolish and completely remove from the site any existing underground utilities which are indicated to be removed. Coordinate with utility companies for shut-off of services if lines are active.

1.03 EXCAVATION:

A. In performing the excavation, the Contractor shall retain sufficient clean earth for all backfilling or grading.

B. Excavations for foundations shall be carried to depth shown on drawings or deeper, if necessary, to attain proper soil bearing value. Deeper foundations shall be approved in writing by the Owner and shall conform to all governing codes.

C. Protect excavations from the accumulation of surface water. Provide for dewatering of excavations. Allow excavations to dry to optimum moisture content before concrete work or backfill is commenced. Refer to Section 1.05.

D. Excavations for piping shall conform to limits, depths and materials shown on the drawings and to governing codes and regulations.

E. Sheeting, shoring, or bracing at any open trench shall be provided by the Contractor. He shall submit such design to the Owner sealed by a Registered Engineer.

F. In cut areas located under pavement and foundations, Contractor shall scarify existing soil to a minimum depth of 4 inches and then recompact as backfill per Section 1.05.

G. Contractor shall remove existing topsoil from area to receive paving and foundation work unless these areas are indicated to receive more than 3 feet of fill. In no case shall the Contractor use untreated or stabilized topsoil as compacted subgrade material under paving or foundation structures unless specifically approved by the Owner. Topsoil shall be stockpiled for re-use in landscape areas. Appropriate soil conservation measures shall be taken.

H. If in the opinion of the Owner, unsatisfactory soil materials exist on the site, the Contractor shall remove such materials after written approval from the Owner. The Contractor shall replace these unsatisfactory soils with an approved structural fill.

1.04 SOIL TEST BORINGS:

A. If conditions warrant, the Owner will have soil test borings and soil report prepared. Copy of borings and pertinent information from the report would be included and made a part of these Specifications. Contractor shall carefully review this information. No additional compensation will be considered for excavation of any type material that is indicated as being present in the soil boring.

B. Excavations for Piers:

1. Drill holes straight and true at the locations and to depths shown. Actual location of the piers shall not deviate from the location shown by more than the tolerances hereinafter specified.

2. When concrete is placed directly against the excavation, do not allow the hole to dry out. If necessary, re-dampen the walls of the excavation without allowing water to collect at the bottom. Place all concrete the same day as holes are excavated.

3.03 ALIGNMENT TOLERANCES:

A. Location: The maximum allowable variation of the center of the top of any pier for the required locations, shall be four percent of the shaft diameter or 2 inches, whichever is less. The shaft shall not be out of plumb by more than 5 percent of shaft diameter, or 4 inches in its full height, whichever is less.

B. Size: Provide piers having a minimum shaft diameter equal to that shown.

C. Corrective Measures: If the above tolerances are exceeded, the Contractor shall design and furnish additional or corrective construction to compensate for the discrepancy at no extra cost to the Owner. The corrective construction shall be submitted to the Owner for review prior to its execution.

3.04 PLACING CONCRETE:

Comply with Concrete Specification.

CONCRETE

1.01 MATERIALS:

A. Cement:

1. An approved standard brand Portland Cement conforming to ASTM C150. Type I normal strength or Type III high early strength.

2. Air-entraining cement shall be an approved standard brand Type 1A Portland Cement which conforms to ASTM C150.

B. Admixtures:

1. Air-entraining admixtures shall conform to ASTM C260.

2. Any other admixtures must be approved in writing by the Owner prior to use. Chemical admixtures shall conform to ASTM C494.

C. Aggregates:

1. Concrete aggregate shall conform to ASTM C33.

2. Fine aggregate shall consist of natural sand having clean, hard, strong, durable, uncoated grains. It shall be free from injurious amounts of dust, lumps, soft or flaky particles, shale, alkali, organic matter, or other deleterious substances. At least 95 percent of the fine aggregate shall pass through a No. 4 sieve and not more than 5 percent shall pass through a No. 100 sieve. In addition, not more than 45 percent shall be retained between any two consecutive sieves.

3. Coarse aggregate shall consist of crushed stone or washed gravel having clean, hard, strong, durable, uncoated particles free from injurious amounts of soft or flaky pieces, alkali, organic matter, or other deleterious substances. Coarse aggregate shall be a maximum of 1-1/2 inches, with at least 95 percent passing a 1-1/2 inch sieve. Not more than 5 percent shall pass a No. 4 sieve.

D. Water: Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkali, silts, organic materials, or other substances that may be deleterious to concrete or steel.

E. Metal Reinforcement:

1. Reinforcing bars shall be deformed bars conforming to ASTM A615, Grade 60.

2. Bars shall be held in place by 18 gauge or heavier annealed iron wire.

B. In the event that solid rock over one cubic yard in volume or other materials not indicated on the soil report are encountered, extra cost for this excavation will be allowed after written approval by the Owner. Extra cost will be in accordance with unit prices quoted in bid with quantities to be approved by the Owner. Where installing pipe or conduit, excavate or remove rock to 6 inches below required elevation. Backfill with crushed stone or gravel.

1.05 BACKFILLING:

A. Areas under paving and buildings shall be rolled with a sheeps-foot roller for soils containing clay or silt (i.e.: cohesive soils), and with either a 3-wheel 10-ton vibratory roller or 7-ton tractor for sand and gravel soils (i.e.: cohesionless soils). Fill with cohesive soils shall be compacted to a density equal to 95% of standard proctor density as determined by ASTM D698. Fill with cohesionless soils shall be compacted to a density equal to 65% of relative density as determined by ASTM D2049.

Field density for cohesive soils shall be determined by the sand cone method (ASTM D1556). Conversely, the field density for cohesionless soils shall be determined by the rubber ballon method (ASTM D2167).

The Owner may employ an independent testing laboratory to make any test or inspection to show compliance with these specifications. If such special testing reveals a failure of the Work to comply with the requirements of the Contract Documents, then the Contractor shall bear all costs thereof. Otherwise the Owner shall bear such costs.

B. Before compaction, moisten or aerate each layer of backfill as necessary to provide optimum moisture content.

C. No cinders, ashes, organic matter, or rubbish will be permitted. Fill shall be placed in layers not more than 8 inches in loose depth.

D. Backfill for underground storage tanks is specified on the tank installation drawing.

E. Contractor shall not backfill trenches until all testing required by applicable codes is conducted and approved.

F. Product piping and vent lines shall be laid and continuously supported on a 6" compacted bedding of clean sand. No piping shall be supported by blocks or planks. Trenches shall be backfilled completely to the underside of paving with clean sand. Backfill shall be compacted by manual or power tamping to obtain the required compaction. Refer to piping detail on the tank installation drawing.

G. Electrical conduits shall be laid on a 4" compacted bedding of cle sand. The sand backfill shall envelop all conduits and continue t a depth of 4" above the top of conduits. Voids between conduits a not permitted. Clean earth may be substituted for sand when the trench contains only one conduit.

H. Compressed air and potable water piping shall be laid on a 4" compacted bedding of clean sand. The sand backfill shall continue to a depth of 4" above the top of the pipe.

I. Sewer piping shall be laid and continuously supported on a 6" compacted bedding of gravel or crushed stone of which 100% will pas through a 1/2 inch sieve. The bedding shall be shaped for clearanc of all joints and fittings, tamped in place, and graded evenly to insure uniform bearing for the full length of the pipe. No piping shall be supported by blocks, planks, or mounds of bedding material

Backfill only after piping and appurtenances have been inspected, tested and approved. Backfill around the pipe to a depth of 12" above the top of the pipe. Use gravel or crushed stone of which 100% will pass through a 1/2 inch sieve in layers not exceeding 6" thickness, taking care not to disturb the pipe or injure any pipe coating.

Place backfill from 12" above pipe in layers not exceeding 8" in depth. Backfill material shall be free of stones larger than 3 inches in diameter, non-corrosive and non-organic in nature. Material shall be granular and exclude all cinders, building materials, waste and rubbish. Do not use frozen or semi-frozen backfill material.

J. The Contractor shall remove all debris from landscape areas to a depth of two feet and then backfill with clean soil. These areas shall be backfilled to within 6 inches of grade. Where curbs exist, backfill to 6 inches below top of curb.

Landscaping work shall be performed by others. It includes backfilling landscape areas to grade with 6 inches of topsoil.

1.06 GRADING:

A. Uniformly compact backfill and grade areas to indicate slope with a tolerance of 1/2 inch above or below required elevation.

1.07 PROTECTION:

A. Protect newly graded areas from traffic and erosion. Repair, regrade and recompact grades in settled, eroded and rutted areas to specified tolerance.

3. Welded wire fabric shall conform to ASTM A185. It shall be 6 x 6 - W2.9 x W2.9 unless specified otherwise on the drawings.

F. Non-Metallic Non-Shrink Grout: Pre-mixed, non-metallic, non-staining product containing selected silica sands, ASTM C150 Type I portland cement, and shrinkage compensating agents. Acceptable grouts are Embeco by Master Builders and Five Star Grout by U.S. Grout Corp.

1.02 MIX DESIGN:

A. The minimum 28-day compressive strength of concrete shall be 4,000 psi. No less than 6 bags (564 pounds) of cement shall be used in each cubic yard of concrete. The maximum water cement ratio shall not exceed 0.44 (5 gallons/bag of cement).

B. The concrete shall have a maximum 4" slump when tested with a standard slump cone (ASTM C143). If the above concrete develops a consistency of difficult workability, then a superplasticizer admixture may be used when approved by the Owner. Do not add water to increase slump.

C. All concrete to be finished including foundations, walks, pavement, curbs, and retaining walls shall be air-entrained. Entrained air in concrete shall be a minimum of 5% and a maximum of 7% by volume. The air content shall be measured at point of discharge into forms.

D. Contractor shall submit a mix design for approval by Owner at least two weeks before concrete work begins. Design shall detail all constituents and gradation. The concrete shall conform to "Standard Specification for Ready-Mixed Concrete" (ASTM C94).

E. Contractor shall assure the Owner that the concrete meets specifications by furnishing batch tickets when the concrete is delivered to the site.

1.03 MIXING AND PLACING CONCRETE:

A. Mixing and placing concrete shall conform to "Building Code Requirements for Reinforced Concrete" (ACI 318).

B. Conveying: Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of materials.

C. Depositing:

1. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Use chutes, bottom dump buckets, or other method approved by the Owner. Concrete shall not be spread horizontally using vibrating equipment.

2. The concreting shall be carried on at such a rate that the concrete is at all times plastic and flows readily into the spaces between the bars. No concrete that has partially hardened or been contaminated by foreign materials shall be deposited in the structure, nor shall retempered concrete be used.

3. Once concrete work has begun, it shall be carried on as a continuous operation until the placing of the panel or section is completed.

4. All concrete shall be thoroughly consolidated by suitable means during placement, and shall be thoroughly worked around the reinforcement and embedded fixtures and into the corners of the forms.

D. Cold Weather Requirements: Follow requirements of ACI 306 and the following:

1. Adequate equipment shall be provided for heating the concrete materials and protecting the concrete during freezing or near-freezing weather. All concrete materials and all reinforcement, forms, fillers, and ground which contact the concrete shall be free from frost. No frozen materials or materials containing ice shall be used.

2. Concrete delivered in cold weather shall have the applicable minimum temperature as follows:

Air Temperature Deg. Fahr.	Minimum Concrete Temperature Deg. Fahr.
30 - 45	60
0 - 30	65
Below 0	70

3. Concrete shall be maintained above 50°F and in a moisture condition for at least the first seven (7) days after placing.

4. The maximum temperature of concrete produced with heated aggregates, heated water, or both, shall at no time during its production or transportation exceed 90° F.

E. Hot Weather Requirements:

1. Follow requirements of ACI 305.

2. During hot weather, steps shall be taken to reduce concrete temperature and water evaporation by proper attention to ingredients, production methods, handling, placing, protection, and curing. The preferred protection is a covering of kraft paper (ASTM C171) for a period of twenty-four hours after placing.

DRILLED PIERS

T 1 - GENERAL

1 DESCRIPTION OF WORK:

A. Work Included: Fabrication and placement of temporary steel casing for drilled piers. Temporary steel casings shall be used if required by soil conditions at the site. No extra charge shall be paid by the Owner for use of casings.

B. Work of Other Sections:
1. Earthwork
2. Concrete

2 QUALITY ASSURANCE:

A. Examination of Site: Examine the site, the drawings, records of existing utilities and construction, the subsurface exploration reports prepared by the soil testing laboratory and the soil samples to determine all conditions under which the caissons will be installed.

B. Bottom Elevations of Piers: Construct piers to the bottom elevation established by the Owner on the site.

C. Codes and Standards: Comply with the requirements of the "Building Code Requirements for Reinforced Concrete" (ACI 318).

D. Methods: Use equipment of adequate capacity and provide methods approved by the Owner for pier construction procedures. Employ only labor and supervisory personnel experienced in this type of work.

E. Protection: The Contractor shall provide a protective cage or casing for inspection and testing of all piers and to protect workmen during hand excavation or other operations requiring entry into shaft. Holes shall be covered and protected, with casing in place, while tests are being made.

F. Document Precedence: In case of conflict between contract documents including Architectural Drawings, Structural Drawings and Specifications, the Contractor shall notify the Owner prior to submitting proposal. In case of conflict between the Structural Drawings and Specifications, Structural Drawings shall govern.

)3 JOB CONDITIONS:

A. Concealed Subsurface Conditions: Variations with conditions shown on the soil report shall be adjusted as described in the General Conditions and Section 1.04 of the Earthwork Specifications.

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)4 FORMWORK:

A. Forms for all contact faces shall be dressed lumber or manufactured forms. They shall conform to the shape, lines and dimensions of the member as specified on the drawings.

B. Forms shall be substantial and sufficiently tight to prevent leaks. They shall be properly braced or tied together to maintain position and shape.

C. Prior to pouring the concrete, all debris shall be removed from the formwork and the forms shall be wet down. No concrete shall be poured if the subgrade has water standing or is muddy.

D. Forms shall be removed in such a manner as to ensure the complete safety of the structure. Where the structure as a whole is adequately supported, the forms may be removed after 24 hours provided the concrete is sufficiently strong to carry its own weight and all other construction loads which may occur.

05 REINFORCEMENT:

A. Metal reinforcement shall be free from loose flaky rust, mud, oil, or other coatings which will adversely affect bonding capacity.

B. Reinforcement shall be accurately placed and adequately supported by concrete masonry units or other approved spacers. Reinforcement shall be secured against displacement within tolerances as specified in "Building Code Requirements for Reinforced Concrete" (ACI 318).

C. Welded wire fabric shall be installed in lengths as long as practical. The minimum overlap length measured between outermost cross wires of each fabric sheet shall not be less than one spacing of cross wires plus two inches.

D. Splices in deformed reinforcing bars are not permitted unless approved by the Owner.

E. When approved in writing by the Owner, synthetic polypropylene fibers may be substituted for welded wire fabric as reinforcement in all slabs on grade except approaches and the slab over the underground storage tanks. Acceptable manufacturers are Fibermesh or approved equal. Fibers shall be mixed per the manufacturer's recommendations (approximately one pound to one and one-half pounds of fibers per cubic yard of concrete).

06 FOUNDATIONS:

A. Exposed surfaces shall have a smooth finish. Exposed edges shall have a 1" chamfer.

1.04 SUBMITTALS:

A. Sequence of Installation: Submit a proposed method and sequence of installing reinforced concrete for review before delivering any material to the jobsite. Prepare the sequence to avoid delay of, and damage to, the work of other trades.

B. Shop Drawings: Include procedures for concrete placement, diagrams, schedules, and complete details of reinforcement. Do not begin operations before drawing review by the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Temporary Steel Casings: Casings shall be of sufficient strength to withstand handling stresses due to concrete, water, earth, and surcharge pressures. Diameter of casing in relation to diameter of excavation shall be such that void space outside casing in minimized.

B. Reinforced Concrete: Comply with Concrete Specifications.

PART 3 - EXECUTION

3.01 INSPECTION:

A. Examine substrates, adjoining construction, and conditions under which the work is to be installed. Do not proceed with the work until unsatisfactory conditions detrimental to the proper and timely completion of the Work have been corrected.

3.02 EXCAVATION:

A. Machine-Dug Sections:

1. Pier excavations may be done with rotary rigs. Use temporary steel casings, if necessary, to prevent cave-in of soil and to reduce water seepage. Continuously advance casings by an approved method to the level of the excavations.

2. Withdraw casings of shaft that is filled with concrete. Casing should be retrieved at a uniform rate and with a controlled force. Maintain a minimum of 5 ft. of concrete head above the bottom of the casing as it is extracted.

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B. Foundation depths shall be increased if required by frost line conditions or local codes. Any additional depth requirements shall be approved by the Owner before pouring.

C. The top of foundations shall be poured within ± 1/4" of the elevation shown on the drawings.

D. Anchor Bolts:

1. The tolerance for horizontal alignment of anchor bolts shall be ± 1/8".

2. The tolerance for vertical alignment of anchor bolts shall be ± 1/8" out of plumb.

E. Drilled Piers:

1. Do not begin placing of concrete until the excavation and reinforcing steel for the entire unit has been completed, inspected and approved by the Owner. The bottom of the pier shall be cleaned and sealed if seepage of water exists. All water shall be removed just prior to placing concrete.

2. Place concrete immediately after mixing, and in no case more than sixty minutes after water has been added. Place concrete continuously in each pier to top of shaft. In no case suspend the placement of concrete in the drilled pier, once started, for more than thirty minutes.

3. The top 5 feet of the concrete in the shaft shall be thoroughly vibrated and excess water removed.

1.07 WALKS, PAVING, CURBS AND WALLS:

A. The subgrade or base shall be sprinkled and thoroughly moistened prior to concrete placement. No concrete shall be poured if the subgrade has water standing or is muddy.

B. Concrete shall be poured monolithically within limits of expansion joints shown on the drawings.

C. All walks and paving shall be wood floated, wood troweled and then lightly steel troweled to secure a semi-smooth surface. Surface shall then be broom finished to match approved sample.

D. Islands for dispensers and amenity units shall have a steel towel finish. Elevation tolerance for these islands shall be ± 1/4 inch.

E. Exposed surfaces of curbs and retaining walls shall have a smooth finish. Remove fins and projections, patch defective areas with cement grout, and rub with carborundum brick and cement mortar to a smooth uniform texture.

F. Concrete paving outside property lines shall be the thickness shown on drawings, except where stricter requirements are indicated by local building codes. Local building codes shall take precedence.

1.08 REPAIR OF DEFECTIVE CONCRETE SURFACES:

Do not patch defective concrete until examined and approved by the Owner. Where so approved, make repairs in accordance with detailed instructions given by the Owner.

1.09 CONCRETE JOINTS:

A. Contractor shall provide construction, expansion, and control joints as indicated or required.

B. Construction joints shall be used whenever placing operations are interrupted. These joints shall be keyed and located so the strength and appearance of the structure is not impaired.

C. Expansion joints shall be installed as indicated on the drawings. Flexible joint filler shall be minimum 1/2 inch thick preformed sponge rubber (ASTM D1752) or approved equal. Joint filler shall extend full depth of the slab.

D. Control joints shall be installed as indicated on the drawings. These joints shall be achieved by making construction joints or by sawcutting the concrete.

The minimum depth of sawcut joints shall be one-fourth of the slab depth plus 1/4 inch. Cutting shall be timed properly with the set of the concrete. It shall be started as soon as the concrete has hardened sufficiently to prevent aggregates from being dislodged by the saw, and shall be completed before shrinking stresses become sufficient to produce cracking.

E. Where trenches cross existing concrete slabs, the Contractor shall sawcut the concrete to a sufficient depth so a straight, square edge is formed on both sides of the trench. New and existing concrete shall be doweled together with #4 reinforcing bars at forty-eight inches on center (stagger each side at twenty-four inches).

1.10 SURFACE TREATMENT:

All concrete work shall receive two applications of a mixture of 50% boiled linseed oil and 50% mineral spirits. Each coat shall be applied at a rate of 400 square feet per gallon with a roller. A spray application is acceptable if overspray can be prevented. The first coat must be dry to the touch before the second coat is applied.

BRICK MASONRY

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

A. This section includes material specifications and installation requirements for non-load-bearing masonry walls in landscape areas. These walls are not intended to be retaining walls. A maximum grade difference of six inches across a wall is permissible.

B. Work of Related Sections:

1. Earthwork
2. Concrete

PART 2 - PRODUCTS

2.01 BRICK:

A. Clay and shale common brick shall conform to ASTM C62 except that brick absorption shall be between five and twenty-five grams of water absorbed in one minute by a dried brick set flat side down in 1/8 inch of water. Bricks shall be Grade MW (medium weather).

B. The Contractor shall submit a sample of five units for approval by Owner.

2.02 MORTAR:

A. Mortar shall conform to ASTM C270, Type M.

B. Mortar shall be composed of one part portland cement type 1 (ASTM C150), one part lime (ASTM C6), and six parts sand (ASTM C144). Mortar shall also contain a waterproofing admixture. The admixture shall be one of the following.

1. Hydratite Plus — by W. R. Grace and Company
2. Omicron Mortarproofing — by Master Builders Company
3. Hydrocide Power — by Sonneborn Building Products, Inc.

C. Mortar color shall be natural unless specified otherwise by the Owner.

2.03 REINFORCEMENT:

Wall reinforcement shall be truss design, 8 gage welded steel wire with 0.8 ounce hot-dip zinc coating (after fabrication). Width of reinforcement shall be 1-1/2 inches to 2 inches less than the wall thickness. The reinforcement shall be Dur-O-Wal or approved equal.

PART 3 - EXECUTION:

3.01 LAYING BRICK:

A. Brickwork shall be supported by a concrete wall footing as indicated on the drawings. Design bearing pressure is 2000 psf. Contractor shall advise the Owner if the actual bearing pressure is less than 2000 psf.

B. All brickwork shall be plumb, square, and true to dimensions. Two wythes brick walls shall be laid in a running bond with a top rowlock course.

C. Brick shall be laid with shove joint in full mortar beds. 3/8 inch joints shall be finished with a concave pointing tool. This tool shall be applied in a manner which compacts setting mortar and forms a close continuous contact with the brick.

D. Horizontal reinforcement shall be installed so the side rods are fully engaged in the mortar. Contractor shall install reinforcement every third course.

E. All brick which requires cutting or fitting shall be cut accurately to size with a motorized carborundum or diamond saw.

F. All brick shall be thoroughly wet before laying, but brick laid in freezing weather must be protected from the formation of ice.

3.02 CLEANING UP:

A. Major spatter and droppings shall be removed from exposed surfaces as the work proceeds.

B. Upon completion, all exposed masonry shall be thoroughly cleaned with stiff brushes and water. In extreme cases, a dilute solution of muriatic acid may be used for cleaning brickwork, but it shall be preceded and followed by a copious bath of fresh clean water.

ASPHALT PAVING

PART 1 - GENERAL

1.01 DEFINITIONS:

A. Asphalt Surface Course: The top course of an asphalt pavement, sometimes called an asphalt wearing course.

B. Asphalt Intermediate Course: The course located between a base course and an asphalt surface course. The intermediate course is sometimes called a binder course.

C. Base Course: The layer of material immediately beneath the intermediate course for a Type "A" pavement or beneath the surface course for a Type "B" pavement.

1.02 DESIGN THICKNESS FOR PAVEMENTS

A. Type "A":

Surface Course	= 1-1/2"
Intermediate Course	= 2"
Base Course	= 6"
Total	9-1/2"

B. Type "B":

Surface Course	= 2"
Intermediate Course	= None
Base Course	= 6"
Total	8"

C. Selection of Type "A" or Type "B" pavement design is specified on the plot plan. Dimensions represent minimum compacted thicknesses.

D. If state requirements vary from this specification, then state codes shall take precedence for approaches in the right-of-way.

PART 2 - PRODUCTS

2.01 BASE COURSE:

A. The aggregate shall be clean, tough, durable crushed limestone or crushed air-cooled blast furnace slag from a minimum size not less than one (1) inch to the maximum size not more than two (2) inches, with a sieve analysis tolerance of ten (10) per cent on both maximum and minimum sizes. Aggregate shall weigh not less than 90 pounds per cubic foot for limestone and 70 pounds per cubic foot for crushed slag when shaken to refusal.

B. The screenings shall consist of the same materials as specified above for coarse material, free from dirt or other foreign substances. This material shall not exceed a maximum size of one-half (1/2) inch and all smaller sizes down to and including dust.

2.02 ASPHALT INTERMEDIATE COURSE:

The appropriate hot-mix designation for each state is specified in the chart at the end of this specification.

2.03 ASPHALT SURFACE COURSE:

The appropriate hot-mix designation for each state is specified in the chart at the end of this specification.

2.04 TACK COAT:

The tack coat shall consist of one part water to one part SS-1 asphalt emulsion. It shall be applied at a rate of 0.05 to 0.15 gallons per square yard.

2.05 TRAFFIC MARKING PAINT:

Glidden "Traffic Zone Paint", Sherwin-Williams "Pro-Mar" Series B36, or approved equal. Color shall be selected by Owner.

PART 3 - EXECUTION

3.01 EQUIPMENT:

Equipment used shall be of the type, size, weight and shape best suited to obtain uniformity, density and shaping as required by the plans and specifications.

3.02 WEATHER LIMITATIONS:

No paving shall be installed when the temperature is below 50° F or when the surfaces contain frost or an excess of moisture.

3.03 PREPARATION:

A. The subgrade shall be properly prepared and rolled over the full width with a roller of suitable weight (preferably a three-wheel roller weighing 10 tons) before placing the base course. Check for unstable areas and areas requiring additional material and compaction. Replace unacceptable areas with new material as specified in Earthwork Specification.

B. When abutting existing paving, a joint shall be cut to a sufficient depth so a straight, square edge is formed.

BP OIL COMPANY
RETAIL MARKETING
DESIGN AND ENGINEERING
200 PUBLIC SQUARE
CLEVELAND, OHIO 44114

STANDARD SPECIFICATIONS

DWG. NO. BP - 5-1 REV.

SCALE MADE BY BILL H

DATE 7-27-89 CHECKED BY

REVISIONS:	DATE	DWN	CKD

24X36

C. When a very wet, unstable subgrade condition exists, a geotextile fabric should be placed on the subgrade before installing the aggregate base. The Contractor shall obtain written approval from the Owner before proceeding with this work. The cost to furnish and install the geotextile fabric shall be listed as a separate item in the Contractor's bid.

This fabric performs a separation function by preventing fines from pumping up into the aggregate base. Fabric panels shall overlap a minimum of two feet. Acceptable nonwoven fabrics include: Typar 3401, Trevira S1114, Supac 5NP, or approved equal.

3.04 BASE COURSE:

The coarse aggregate of the base course shall be spread evenly upon the prepared subgrade in sufficient quantity to form a compacted depth of six (6) inches. This course shall be rolled with a three-wheel power roller weighing not less than ten (10) tons. Rolling shall continue until the stone is locked and does not creep or wave ahead of the wheels. Sufficient screenings shall then be applied to completely fill the voids and the base course again rolled, adding screenings as required. Rolling shall continue and additional screening shall be applied where necessary until the coarse material is well bonded and firmly set to produce a rough granular surface.

3.05 TACK COAT:

If the asphalt intermediate course has been used by traffic and is in a worn condition, then it shall be cleaned and coated with a tack coat before applying the asphalt surface course.

3.06 ASPHALT CONCRETE COURSES:

The prepared base course shall be cleaned of all foreign substances before applying the asphalt concrete courses. Before starting to roll the pavement, the roller wheel should be well swabbed with a mixture of one-half kerosene or fuel oil, and one-half water. Each premixed asphalt concrete course shall be spread to a uniform loose-fill thickness and rolled with a 10-ton, three-wheel power roller. The finished surface shall be uniform, free from ruts or irregularities in contour, and true to the established grade. It must present a smooth riding surface.

3.07 QUALITY ASSURANCE:

A. The pavement surface shall be constructed such that adequate drainage is achieved. The Contractor shall upon completion of each section of paving, make a water test for drainage at the discretion of the Owner. Any portion where water stands shall be reworked even to the point of replacement so that it drains properly to the satisfaction of the Owner.

B. The surface of the completed work, when tested with a ten-foot straightedge, shall not contain irregularities in excess of 1/4 inch. Defective paving shall be replaced.

3.08 MARKING PAVEMENT:

Clean surface to remove loose material and dirt. Apply 4-inch wide paint stripes with mechanical equipment to produce uniform straight edges. Apply 2 coats at manufacturer's recommended rates.

3.09 PROTECTION:

A. Protect exposed finished surfaces adjacent to paving work from becoming disfigured during application of paving materials and from physical damage resulting from contact with paving equipment. Surfaces damaged during the course of this work shall be cleaned, repaired or replaced by the Contractor at no additional expense to the Owner.

B. Provide temporary barricades to keep traffic off of completed paving work. Barricades shall be left in place a minimum of three days after paving work is completed.

3.10 CLEANING UP:

Immediately prior to turning over to Owner, remove all trash, temporary wood forms, and other debris. Dispose of all excess material and rake entire area smooth and clean.

3.02 All pipe shall be cut off even and reamed full bore.

3.03 Threaded Pipe Joints: Threads shall be cut smooth, true and full standard size. Cut threads so no more than three threads remain exposed after the joint is made. Ream all pipe ends after cutting and clean before installation. Use a non-hardening, Teflon-based thread sealant applied to the male threads. Teflon tape is not acceptable.

3.04 Soldered Pipe Joints: Remove all slivers and burrs remaining from the tube cut by reaming and filing both pipe surfaces. Clean fitting and tube with emery cloth. Remove residue from the cleaning operation, apply flux, and assemble joint. Solder shall fill the joints by capillary action. Solder shall cover the joint periphery. Wipe joints clean.

3.05 Above ground pipe shall be supported every four (4) feet and at all changes in direction. Underground pipe shall be continuously supported.

3.06 All piping systems shall be cleaned and flushed out prior to operation.

3.07 No part of the work shall be covered until it is inspected, tested, and approved. Testing shall comply with all governing state and local codes.

3.08 Potable water system shall be hydrostatically tested at line pressure for a duration of one hour.

3.09 Compressed air system shall be pneumatically tested with air at 200 psig for a duration of one hour. The Contractor shall gradually increase the pressure to not more than one-quarter of the test pressure; then the pressure shall be increased in steps of approximately one-tenth of the test pressure until the required 200 psig is reached. All joints shall be examined with a soap and water solution. Equipment and in-line devices such as the regulator and fill valve shall be protected from the high test pressure.

EXTERIOR PAINTING

1.01 MATERIALS:

A. Owner shall furnish Valspar paint (via BP Oil supply arrangement) for dark gray, light gray, and BP green paints, unless specified otherwise. Contractor shall furnish all other materials.

B. All paint materials shall be delivered to the job in the manufacturer's original container and bearing its label.

C. Valspar Corporation is the only acceptable manufacturer for dark gray, light gray, and BP green colors. Acceptable manufacturers for all other materials are Porter, Yenkin-Majest Sherwin - Williams, or approved equal.

D. Urethane Paint System

Item	Valspar Color Code
Ferrous Metal Primer	13-F-28 Solvent-Based Metal Primer
Galvanized Metal Primer	42-F-106 Water-Based Acrylic Enamel reduced 25% with clean, fresh water
Thinner for Primer	7-T-33
Dark Gray Finish	20 Series Alkyd Enamel
Light Gray Finish	V40-F-105 Urethane Enamel
BP Green Finish	V40-G-102 Urethane Enamel
Thinner for Urethane Finish	7-T-59

E. Acrylic Enamel Paint System

Item	Valspar Color Code
Ferrous Metal Primer	13-W-123 Water-Based Metal Primer
Galvanized Metal Primer	13-W-123 Water-Based Metal Primer
Dark Gray Finish	42-F-107 Water-Based Acrylic Enamel
Light Gray Finish	42-F-106 Water-Based Acrylic Enamel
BP Green Finish	42-G-105 Water-Based Acrylic Enamel

FIGURE I
STATE MIX DESIGNATIONS

STATE	ASPHALT SURFACE COURSE DESIGNATION	ASPHALT INTERMEDIATE COURSE DESIGNATION
Alabama	Mix C	Mix A
California	Type B	Type A
Florida	S-II or Modified III	S-III
Georgia	Type F	B Modified
Kentucky	402	403
Maine	Grading C	Grading A
Massachusetts	I-1	I-1
Michigan	1100T - 20AA	700 - 20C
Mississippi	SC - 1	BB - 1
New Hampshire	Type F	Type B
New Jersey	I - 5	I - 2
North Carolina	I - 1	HB
Ohio	404	301
Oregon	Class C	Class B
Pennsylvania	ID-2A	ID-2A
South Carolina	403 (Type 2)	311 (Type 1)
Tennessee	411-D	307-B
Virginia	S - 4	B - 2
Washington	Class B	Class E
West Virginia	401	401

1.02 PROTECTION:

Contractor shall protect all surfaces which do not require painting. Special protection shall be provided when painting adjacent to items such as Underwriter's labels, hardware, and light fixtures. Surfaces damaged during the course of this work shall be cleaned, repaired or replaced by the Contractor at no additional expense to the Owner.

1.03 PREPARATION:

All surfaces shall be free of dirt, grease, oil, concrete spatter, and any foreign matter which would adversely affect the finished appearance or protective properties of the paint applied. Bare metal surfaces shall be hand tool cleaned with scrapers and wire brushes (SSPC-SP2) and solvent cleaned (SSPC-SP1). Shop primer coats which have been marred shall be wire brushed to bare metal and reprimed with the specified primer. Surfaces shall also be free of moisture before applying paint.

1.04 APPLICATION:

A. The acrylic enamel paint system (Section 1.01E) shall be used for the first four items of the color schedule. The urethane paint system (Section 1.01D) shall be used for the remaining items in all marketing areas except California. The acrylic enamel paint system shall be used for all items in the State of California.

B. All materials shall be brushed or rolled in even, thorough coats without runs, sags or blemishes by skilled craftsmen. Spray application is not permitted.

C. Paint shall be applied when the ambient or surface temperature is between 45°F and 90°F or as specified by the manufacturer. All coats shall be thoroughly dry before applying succeeding coats.

D. All finish paints shall be applied only with the specific prime coat(s) recommended by the manufacturers. Do not thin, alter, or substitute materials unless approved by Owner.

E. All work shall receive a full prime and two (2) finish coats. For surfaces previously painted with urethane paint, the field prime coat may be omitted and two finish coats shall be applied.

F. When painting tank manholes for fill, vapor recovery, and monitor wells, the surrounding 3" of concrete slab shall also be painted to match the color of the manhole.

G. Canopy columns and sign poles are normally shrouded with an aluminum composite material and are not painted. If they are not shrouded, then the Contractor shall paint them light gray.

STORM AND SANITARY SEWERS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

A. Sewer system work includes, but is not limited to, pipe, fittings and drainage structures for storm and sanitary sewers.

B. Work of other Related Sections:

1. Earthwork
2. Concrete

PART 2 - PRODUCTS

2.01 MATERIALS:

A. General:

1. Sewers shall be poly vinyl chloride pipe unless specified otherwise on the drawings or by local codes.

2. Furnish ells, tees, wyes, couplings, end caps, and other fittings of the same type and class of material as the pipe.

3. Drainage structures such as catch basins and trench drains are specified on the drawings.

B. Poly Vinyl Chloride Pipe: ASTM D3034. Standard dimension ratio (SDR) shall not exceed 35. Joints shall be bell and spigot type with neoprene rubber gaskets conforming to ASTM D3212.

C. Cast Iron Soil Pipe: ASTM A74. Joints shall be bell and spigot type with neoprene rubber gaskets conforming to ASTM C564. Furnish service weight pipe. If local requirements vary from this specification, then local codes shall take precedence.

D. Reinforced Concrete Pipe: ASTM C76, Class III. Joints shall be modified tongue and groove type with rubber gaskets complying with ASTM C443.

E. Nonreinforced Concrete Pipe: ASTM C14, Class 2. Joints shall be modified tongue and groove type with rubber gaskets complying with ASTM C443.

H. New lighting poles are prepainted silver at the factory. If the surface is marred during shipment, then the Contractor shall touch up the pole with Rustoleum Satin Aluminum. If an existing pole remains which is not light gray, then the Contractor shall paint the entire pole light gray.

1.05 CLEAN UP:

Upon completion, Contractor shall remove all excess contractor-purchased materials, equipment, tools, and all debris due to his work from the premises. All areas shall be left broom clean or a satisfactory equivalent. Unused paint (furnished by the Owner) shall be returned to the Owner.

1.06 COLOR SCHEDULE:

Item	Color
1. Dispenser Island Forms	- Dark Gray
2. Building Sidewalk Forms	- Dark Gray
3. Amenity Unit Forms	- Dark Gray
4. Tank Manholes	- See Below
5. Fixtures on Islands	- Dark Gray
6. Tank Vents	- Light Gray
7. Structural Steel Above Horizontal Canopy Deck	- Light Gray
8. Rear Canopy Support Above Sales Kiosk	- Light Gray
9. Canopy Columns	- Light Gray
10. Sign Poles	- Light Gray
11. Lighting Poles	- Light Gray

Colors for Tank Manholes (All Marketing Areas):

Regular Unleaded Fill	- White w/Black Cross
Regular Leaded Fill	- Blue
Plus Unleaded Fill	- Blue w/White Cross
Super Unleaded Fill	- Red w/White Cross

PART 3 - EXECUTION

3.01 PIPE PREPARATION AND HANDLING:

A. Inspect all pipe and fittings prior to lowering into trench to ensure no cracked, broken, or otherwise defective materials are being used. Clean ends of pipe thoroughly. Remove foreign matter and dirt from inside of pipe and keep clean during and after laying.

B. Use proper implements, tools, and facilities for the safe and proper protection of the work. Lower pipe into the trench in such a manner as to avoid any physical damage to the pipe. Remove all damaged pipe from the jobsite. Do not drop or dump pipe into trenches under any circumstances.

3.02 INSTALLATION OF PIPE AND FITTINGS:

A. Install pipe and fittings in accordance with governing authorities having jurisdiction, except where more stringent requirements are indicated in the contract documents.

B. Start pipe laying by proceeding upgrade with spigot ends pointing in direction of flow. Lay pipes uniformly to line and grade so that finished sewer will present a uniform bore. All changes of directions shall be made by use of proper fittings or manholes. No joint deflection allowed. Install all sewers at uniform grade between manholes and other drainage structures unless shown otherwise.

C. Check pipe for alignment and grade after joint has been made. Ensure pipe bedding forms a continuous and uniform support for the pipe barrel between joints. Apply sufficient pressure in making the joint to assure the joint is seated as defined in manufacturer's standard installation instructions. Place sufficient pipe cover material to secure pipe from movement before next joint is installed to assure proper pipe alignment and joint makeup.

D. Prevent excavated or other foreign material from getting into the pipe during the laying operation. Close and block the open end of the last laid section of pipe to prevent entry of foreign material or creep of the gasketed joints when laying operations are not in progress. Also close off pipes which are stubbed off for catch basin construction or other drainage structures.

E. Employ such means as well pointing, ditching, pumping or bailing to prevent water from entering the trench during the laying operation and allow for proper construction of the backfill in pipe zone. Do not lay pipe in water.

F. Clear dirt and other superfluous material from the interior of sewers as the work progresses. Maintain a swab or drag in the line and pull past each joint as it is completed.

1.06 COLOR SCHEDULE (Continued):

Item	Color
Diesel Fill	- Yellow
Kerosene Fill	- Brown
Heating Oil Fill	- Green
Used Oil Fill	- Black
Vapor Recovery	- Orange
Tank Gauge	- Gray
Tank Observation Well	- Black Triangle on a White Background
Submersible Pumps	- Gray

COMPRESSED AIR AND POTABLE WATER

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

A. This section includes material specifications and installation requirements for compressed air and potable water systems.

B. Work of Other Related Sections: Earthwork.

PART 2 - PRODUCTS

2.01 GENERAL:

A. All piping material shall be new and free of defects and shall be subject to standard mill test before being shipped.

B. All pipe and fittings shall be equal to or better than the grade specified.

C. Pipe shall be labeled. Fittings and valves shall have the manufacturer's name or trademark legibly raised or cut into each piece.

2.02 COMPRESSED AIR:

A. Pipe: Seamless Steel, Schedule 40, ASTM A120, hot-dipped galvanized per ASTM A153.

B. Fittings: Threaded, malleable iron, Class 150, ANSI B16.3, hot-dipped galvanized per ASTM A153.

C. Joints: Threaded

2.03 POTABLE WATER:

A. Pipe: Copper tube, seamless, type K, soft temper, ASTM B88.

B. Fittings: Wrought copper, solder type, ANSI 16.22.

C. Joints: Soldered, 95-5 tin-antimony solder.

PART 3 - EXECUTION

3.01 Open ends of pipes shall be properly sealed at all times to keep dirt and other foreign matter out of the piping. Plugs shall be commercially manufactured products.

ELECTRICAL

PART 1 - GENERAL

1.01 STANDARDS:

The standard electrical service shall be three phase 120/208 volt (4-wire). "Wild Leg" delta systems are not permitted. Single phase 120/240 volt (3 wire) systems may be used only if 120/208 volt, three phase service is not available.

This work shall meet the standards set forth in the applicable portions of the following recognized codes and standards:

1. Certified Ballast Manufacturers (CBM)
2. Factory Mutual (FM)
3. Institute of Electrical and Electronics Engineers (IEEE)
4. Illuminating Engineering Society (IES)
5. Insulated Power Cable Engineering Association (IPCEA)
6. National Electrical Code (NEC)
7. National Electrical Contractor's Association (NECA)
8. National Electrical Manufacturer's Association (NEMA)
9. National Fire Protection Association (NFPA)
10. Underwriters Laboratories, Inc. (UL)
11. OSHA - Occupational Safety and Health Act
12. ANSI - American National Standards Institute
13. NESC - National Electrical Safety Code
14. Local and State Codes

1.02 ELECTRICAL SYSTEM IDENTIFICATION:

A. Conduit Systems: Provide adequate marking of major conduit which is exposed or concealed in accessible spaces, to distinguish each run as either a power or signal/communication conduit. Provide self-adhesive or snap-on type plastic or metallic markers. Locate markers at ends of conduit runs.

B. Underground Cable Identification: Bury a continuous bright-colored plastic ribbon cable marker with each underground cable (or group of cables). Locate each directly over cables, 6 inches to 8 inches below finished grade.

C. Cable/Conductor Identification: Coordinate a uniform and consistent scheme of color identification throughout the building system. On large conductors, secure identification by means of painted color banding or plastic tape.

1. Color scheme for branch circuits shall be as follows:

120/208 Volt

Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
Ground	Green

1.03 SITE CONDUIT ROUTING, BURIAL DEPTH AND SPACING.

A. All underground site conduit shall be buried a minimum of 24" below finished grade. Right angle sweep elbows must be used at the base of each riser - no gradual rise of conduits to surface grade is permitted.

1.04 CUTTING AND PATCHING:

A. Cutting and patching of other work to accommodate the installation of electrical work is permitted. See Concrete or Asphalt Concrete Paving Specifications for pavement repairs. Except as individually authorized by the Owner, cutting and patching of electrical work to accommodate the installation of other work is not permitted.

B. Filling in and finishing the building floor at conduit chase is required after installing all incoming conduits.

1.05 BRANCH CIRCUIT WIRING:

A. Each 120 volt branch circuit must have its own neutral return conductor - no split neutrals permitted.

1.06 TEMPORARY POWER:

A. The General Contractor shall be responsible for installing the temporary electric supply for use during construction. The use of the supply will be made available to the Building/Canopy Erector and any other contractor working at the site. The Owner will be responsible for the electricity costs incurred during construction.

PART 2 - PRODUCTS

2.01 CONDUIT

A. For each electrical raceway system indicated, provide a complete assembly of conduit with fittings, including, but not necessarily limited to, connectors, nipples, couplings, expansion fittings, bushings, locknuts, other components and accessories as needed to form a complete system of the type indicated, and as required by the NEC.

B. All conduit shall be heavy wall galvanized steel except as noted otherwise on the drawings. Plastic conduit may be used where permitted by code, but under no circumstances may plastic conduit be used for data wiring. All conduit shall be corked or capped prior to complete installation to prevent any foreign matter from obstructing the conduit. All wiring and fittings shall be Class I, Group D, as required by code. All required seal-off fittings shall be installed, and seal shall be poured after testing procedures are complete.

C. Conduit runs exceeding 25 feet in length shall be equipped with suitable wire insert to enable the pulling of a fish tape for additional wiring.

D. Provision for expansion shall be provided by a minimum of one expansion fitting installed in each straight run of conduit exceeding 150 feet in length and at 150 foot intervals thereafter.

E. Drains shall be installed at the bottom of vertical conduit runs exceeding 10 feet in length.

F. All conduit shall be rigidly supported from structural members with malleable iron conduit clamps, not to exceed 8 feet on center. "All thread" is not acceptable for mounting, use U-bolts instead.

G. Conduit Specifications:

Conduit: Provide conduit and fittings as indicated.

1. Rigid Steel Conduit: ANSI C80.1, hot-dipped galvanized.
2. Rigid Steel Conduit Fittings: ANSI C80.4.

Flexible Metal Conduit:

1. Liquid-tight Flexible Metal Conduit: Liquid-tight flexible metal conduit comprised of single strip, continuous, flexible, interlocked, double-wrapped steel, galvanized inside and outside; forming smooth internal wiring channel; with liquid-tight jacket of flexible PVC.

2. Liquid-tight Flexible Metal Conduit Fittings: Liquid-tight, zinc-coated steel.

H. Fittings: Provide fittings as supplied by Crouse-Hinds, Appleton or equal. Fittings shall have rubber or Neoprene gaskets where installed in damp areas. Fittings installed in hazardous areas shall comply with NEC and UL 886.

2.02 BOXES AND PANELBOARDS:

A. General: Provide electrical materials and components for a complete assembly as supplied by Crouse-Hinds, Appleton, Square D, or equal.

B. Interior Outlet Boxes: Provide galvanized steel interior outlet wiring boxes, of the type, shape, and size, including depth of box to suit each respective location and installation; constructed with stamped knockouts in back and sides, and with threaded holes with screws for securing box covers or wiring devices. Provide "gang" boxes where devices are shown to be grouped.

1. Type for Various Locations:

a. General: Furnish boxes to suit the use by taking into account space available, appearance, and Code requirements.

b. Surface: Type FS or FD box with surface cover.

2. Interior Outlet Box Accessories: Provide outlet box accessories as required for each installation, compatible with outlet boxes being used and meeting requirements of individual wiring situations.

C. Weatherproof Outlet Boxes: Provide hot dipped galvanized cast-iron weatherproof outlet wiring boxes, of the type, shape, and size, including depth of box, with threaded conduit ends, Lexan fiberglass reinforced coverplate with spring-hinged waterproof caps suitably configured for each application, including face plate gasket and corrosion-resistant fasteners. If the outlet box is located in a hazardous area, those requirements take precedent.

D. Junction and Pull Boxes: Provided junction and pull boxes, with screw-on covers, of the type, shape, and size, to suit each respective location and installation.

E. Conduit Bodies: Provide galvanized cast-metal conduit bodies, of the type, shape, and size, to suit each respective location and installation, constructed with threaded conduit ends, removable cover, and corrosion-resistant screws.

F. Bushings, Knockout Closures, and Locknuts: Provide corrosion-resistant punched-steel box knockout closures, conduit locknuts, and insulated conduit bushings of the type and size to suit each respective use and installation.

G. Explosion-Proof: Provide conduit boxes, bodies, and seals as required to conform to the application sections of NEC for the type of hazardous location as defined by NEC. Components shall comply with UL Standard 886.

H. Panelboards: Provide Square D panelboards as required. Choose the appropriate plug-in breakers for the functions that they are required to power from the selection of Square D products. If rotating equipment is supplied from the panelboard, the breaker toggle must be fitted with a permanent locking attachment. The attachment must be capable of securing the breaker in the off position using a common padlock.

2.04 CABLE, WIRE, AND CONNECTORS:

A. Wire and Cable: Provide factory-fabricated wire and cable of the size, rating, material, and type as indicated for each use, as specified or otherwise indicated. Wires and Cables shall be pulled into their conduits using a lubricant per manufacturer's recommendations. No oil or grease shall be used for this purpose. If no manufacturer's recommendation is made, use Flaxsoap, Y-ER-EAS, or owner approved equal.

B. Conductors: Provide soft or annealed copper wires meeting, before stranding, the requirements of ASTM B-3, "Standard Specification for Soft or Annealed Copper Wire for Electrical Purposes," latest edition.

1. Conductors for power and control wiring shall be stranded copper. No aluminum or copper clad aluminum wiring is permitted.

2. The minimum size for power wiring is #12 AWG unless stated otherwise on the drawings.

C. Insulation: Insulation shall meet or exceed the requirements of UL 83, "Standard for Thermoplastic Insulated Wires."

1. Insulation for conductors sized No. 18 AWG through No. 16 AWG shall be UL Type TFFN gasoline and oil resistant and be so marked.

2. Insulation for conductors sized No. 14 AWG through No. 10 AWG shall be UL Type THHN/THWN gasoline and oil resistant and be so marked.

3. Insulation for conductors sized No. 8 AWG and larger shall be UL Type THHN/THWN gasoline and oil resistant and be so marked.

4. All wiring inside lighting fixtures shall be temperature rated per the NEC.

D. Connectors for Building Wire and Cable: Provide factory-fabricated, metal connectors of the size, rating, material, type, and class required for each use.

1. Terminal lugs are to be used whenever possible. Connections for conductors up to a maximum of one No. 6 AWG wire with two No. 8 AWG wires may use twist-on pressure connectors of required size. Lug/bolted connections are required for all conductors larger than #6 AWG.

2. All motor leads, #10 AWG and larger, shall be connected using pressure fitted lugs and bolted.

3. Splices are not permitted in feeders, motor leads, or communication/data wiring.

4. The use of terminal strips for wiring connections is encouraged except when in conflict with #3 above.

required by the National Electrical Code (NEC), the local electrical inspection department, and The Power Company. It is recommended that the grounding system incorporate incoming copper water lines, if available, in addition to 5/8" x 10'0" grounding rod. Approved pressure connectors or Cad Welds shall be used to connect ground wires to rods.

2.06 SAFETY AND DISCONNECT SWITCHES:

A. General: Provide heavy-duty type, dead-front, sheet steel-enclosed, surface-mounted safety switches of the type and size indicated. Safety switches shall be rated for the voltage of the circuit in which they are installed. Safety switches used as motor disconnects shall be horsepower rated for the motor served. Switches shall be quick-make, quick-break type with externally operable, indicating, and lockable handle. Safety and disconnect switches shall be as manufactured by General Electric, Square D, Westinghouse or approved equal.

B. Fusing: Fuse clips shall be positive pressure rejection-type fuse clips suitable for use with UL Class R fuses. Bussman dual element, current-limiting, time delay, Class RK-1 shall be used.

2.07 LIGHTING FIXTURES:

A. General: Provide lighting fixtures, of the size, type, and rating indicated, complete with, but not necessarily limited to, lamps, lampholders, reflectors, ballasts, starters, and wiring.

B. Ballast - Fluorescent: Provide low noise, high power factor, rapid start, Class "P", thermally protected, encased, and potted ballasts. Use ballasts for exterior or indoor non-conditioned spaces with a "C" sound rating and a 0°F temperature rating.

2.08 EQUIPMENT FOR CLASSIFIED AREAS:

A. In accordance with Article 500 of the NEC and following the recommendations set forth in American Petroleum Institute Standards API-RP-500 and API-RP-540. All material and equipment shall be suitable for use in the classified area in which it is installed.

B. Owner's Representative is the final arbitrator of all questions regarding area classifications.

BP OIL COMPANY
RETAIL MARKETING
DESIGN AND ENGINEERING
200 PUBLIC SQUARE
CLEVELAND, OHIO 44114

STANDARD SPECIFICATIONS

DWG. NO. BP.-S-2		REV.
SCALE	MADE BY Bill H	
DATE 7-27-89	CHECKED BY	

REVISIONS:	DATE	DWN	CKD
		24X36	

PART 3 - EXECUTION AND TESTING:

3.01 INSTALLATION AND TESTING:

A. General: Install electrical systems as shown, in accordance with the manufacturer's written instructions, the applicable codes and regulations and owner's instructions.

B. Conductor Tests: Megger tests shall be made on the circuits before seals are poured. The Test is mandatory for incoming service conductors and motor leads to submerged pumps. The resistance between conductors and between all conductors and ground shall not be less the ten (10) megohms for all circuits less than 600 volts.

NOTE: Megger tests must not be performed after wires have been connected to a piece of equipment or terminal strip due to possible damage to the equipment.

C. Equipment Tests: Operational tests shall be performed on all electrical equipment to prove satisfactory performance. This shall include mechanical and electrical operation from all control points and operation of relays and all safety devices.

PART 4 - ELECTRICAL WORK CLOSEOUT:

A. All site electrical systems must have passed functional testing and be fully operable.

B. All site electrical systems must pass inspection by the local approving authorities.

C. All buried site power and control subsystems must have passed appropriate conductor megger testing.

D. All electrical panelboards must have type written schedules that accurately identify breakers by function and panel position.

E. All conduits and conductors must be properly tag identified.

F. All unterminated electrical work provided by this contract intended for interface with another contractors must be properly secured.

G. All appropriate conduit seals for hazardous locations must be poured.

H. All spare conduits shall have a pull wire installed and shall be capped on both ends.

I. All electrical systems must pass the inspection of the owner's representative.

J. All electrical as built drawings must be in the possession of the owner's representative.

593G/35
06/07/89

MAIN SERVICE CONDUIT AND CABLE REQUIREMENTS

OPTIONS	3 PHASE 120/208V (4-WIRE) "Y"		1 PHASE 120/240V (3-WIRE)	
	CONDUIT	CABLES	CONDUIT	CABLES
1. Building Only	1 ea. 2.5"	4 ea. #250 MCM (3 hot, 1 neutral)	1 ea. 2"	3 ea. #250 MCM (2 hot, 1 neutral)
Building With:				
2. Roll Over Car Wash (ROW)	1 ea. 2.5"	4 ea. #250 MCM (3 hot, 1 neutral)	2 ea. 2.5"	3 ea. #350 MCM (2 hot, 1 neutral)
3. Support Building	1 ea. 2.5"	4 ea. #250 MCM (3 hot, 1 neutral)	1 ea. 2"	3 ea. #250 MCM (2 hot, 1 neutral)
4. High Rise ID Sign	1 ea. 2.5"	4 ea. #250 MCM (3 hot, 1 neutral)	1 ea. 2"	3 ea. #250 MCM (2 hot, 1 neutral)
5. Support Bldg., ROW	1 ea. 3"	4 ea. #500 MCM (3 hot, 1 neutral)	2 ea. 3"	3 ea. #500 MCM (2 hot, 1 neutral)
6. High Rise ID Sign, ROW	1 ea. 3"	4 ea. #350 MCM (3 hot, 1 neutral)	2 ea. 2.5"	3 ea. #350 MCM (2 hot, 1 neutral)
7. High Rise ID Sign, Support Building	1 ea. 3"	4 ea. #350 MCM (3 hot, 1 neutral)	1 ea. 2.5"	3 ea. #350 MCM (2 hot, 1 neutral)
8. High Rise ID Sign, Support Building, ROW	1 ea. 3"	4 ea. #500 MCM (3 hot, 1 neutral)	2 ea. 3.5"	3 ea. #500 MCM (2 hot, 1 neutral)
* Default Specification	1 ea. 3"	4 ea. #350 MCM (3 hot, 1 neutral)	2 ea. 3.5"	3 ea. #350 MCM (2 hot, 1 neutral)

1130G/36
06/07/89

CONDUIT SCHEDULE – 3 PHASE 120/208 VOLT (4-WIRE) RETAIL LOCATIONS
(STANDARD ELECTRICAL CONFIGURATION)

ID	SIZE	FUNCTION OF CONDUCTOR:BREAKER POSITION	FROM	TO	WIRE	AMP	VOLT
1	VARIES	MAIN SERVICE HOT MAIN SERVICE HOT MAIN SERVICE HOT MAIN SERVICE NEU	SITE INCOMING ELECT. SERV DROP	I-LINE MAIN INCOMING PANEL @ KIOSK	VARIES	251	208
*2	2.5	CARWASH POWER HOT CARWASH POWER HOT CARWASH POWER HOT CARWASH POWER NEU	I-LINE MAIN INCOMING PANEL @ KIOSK	DP PANEL @ CARWASH	3/0 3/0 3/0 3/0	154	208
*3	1	CARWASH CONTROL HOT CARWASH CONTROL NEU	LIGHTING CONTACT @ KIOSK	DP PANEL & LIGHT CONTACT @ CARWASH	12 18	21	120
*4	1	CARWASH SIGNAL (+) CARWASH SIGNAL (-)			12 18	.2	20
*5	1.25	SUPPORT BUILDING HOT SUPPORT BUILDING HOT SUPPORT BUILDING NEU SUPPORT BUILDING CONTROL	I-LINE MAIN INCOMING PANEL @ KIOSK	PANEL A @ SUPPORT BUILDING	3/0 3/0 3/0 3/0	91	208
*6	.75	WATER/WASTE PUMP HOT:A-5 WATER/WASTE PUMP HOT:A-7 WATER/WASTE PUMP EQUIP. GRND.	PANEL A @ KIOSK	WATER/WASTE PUMP	12 12 12	18	208
7	.75	SUB. "SUPER" PUMP 1.5 HP HOT:B-4 SUB. "SUPER" PUMP 1.5 HP HOT:B-6 SUB. "SUPER" PUMP 1.5 HP EQUP. GRND.	PANEL B @ KIOSK	SUPER PUMP	10 10 10	17	208
8	.75	SUB. "REGULAR" PUMP 1.5 HP HOT:B-3 SUB. "REGULAR" PUMP 1.5 HP HOT:B-5 SUB. "REGULAR" PUMP 1.5 HP EQUIP. GRND.	PANEL B @ KIOSK	REGULAR PUMP	10 10 10	17	208
9	.75	SUB. "PLUS" PUMP 1.5 HP HOT:B-15 SUB. "PLUS" PUMP 1.5 HP HOT:B-17 SUB. "PLUS" PUMP 1.5 HP EQUIP. GRND.	PANEL B @ KIOSK	PLUS PUMP	10 10 10	17	208
*10	.75	SUB. "DIESEL" PUMP 1.5 HP HOT:B-16 SUB. "DIESEL" PUMP 1.5 HP HOT:B-18 SUB. "DIESEL" PUMP 1.5 HP EQUIP. GRND.	PANEL B @ KIOSK	DIESEL PUMP	10 10 10	17	208

ID	SIZE	FUNCTION OF CONDUCTOR:BREAKER POSITION	FROM	TO
11	1	DISPENSER CABLE (6 HOSE MPD) MARK:FUNCTION 1 DISPENSER POWER HOT:B-1 2 DISPENSER POWER NEUTRAL 3 DISPENSER LIGHT HOT:B-26 4 DISPENSER LIGHT NEU 5 A PUMP CONTROL 6 A PUMP CONTROL NEU 7 B PUMP CONTROL 8 B PUMP CONTROL NEU 9 C PUMP CONTROL 10 C PUMP CONTROL NEU 11 REMOTE AUTH. 12 REMOTE AUTH. NEU 13 SIDE A DATA (+) 14 SIDE A DATA (-) 15 SIDE B DATA (+) 16 SIDE B DATA (-) 17 SPARE DATA (+) 18 SPARE DATA (-) 19 EQUIPMENT GROUND	PANEL B @ KIOSK DISTRIBUTION BOX DISTRIBUTION BOX DISTRIBUTION BOX DISTRIBUTION BOX DISTRIBUTION BOX DISTRIBUTION BOX	EACH DISPENSER DISPENSER DISPENSER DISPENSER DISPENSER DISPENSER DISPENSER
12	1	DISPENSER CABLE (6 HOSE MPD) 1 DISPENSER POWER HOT:B-1 SAME AS 11		
13	1	DISPENSER CABLE (6 HOSE MPD) 1 DISPENSER POWER HOT:B-2 SAME AS 11		
14	1	DISPENSER CABLE (6 HOSE MPD) 1 DISPENSER POWER HOT:B-2 SAME AS 11		
15	1	DISPENSER CABLE (3 HOSE MPD) 1 DISPENSER POWER HOT:B-13 3 DISPENSER LIGHT HOT:B-25 SAME AS 11		
16	1	DISPENSER CABLE (3 HOSE MPD) 1 DISPENSER POWER HOT:B-13 3 DISPENSER LIGHT HOT:B-25 SAME AS 11		
*17	1	DISPENSER CABLE (1 OR 2 HOSE) 1 DISPENSER POWER HOT:B-14 SAME AS 11		
*18	1	DISPENSER CABLE (1 OR 2 HOSE) 1 DISPENSER POWER HOT:B-14 SAME AS 11		

WIRE	AMP	VOLT	ID	SIZE	FUNCTION OF CONDUCTOR:BREAKER POSITION	FROM	TO	WIRE	AMP	VOLT
			19A	1	DISPENSER INTERCOM SIGNAL DISPENSER INTERCOM SIGNAL	INTERCOM INTERCONNECTION BOX	DISPENSER INTERCOM	6303 8404	.2	12
14	14	120			(REPEAT FOUR TIMES) (10 WIRES ALTOGETHER)					
14										
14			19B	1	DISPENSER INTERCOM SIGNAL					
14					SAME AS ABOVE (#19A)					
14										
14			20	.75	LEAK DETECTOR SIGNAL:B-23	PANEL B @ KIOSK	LEAK DETECTOR	16	.2	12
14					(REPEAT 15 TIMES)					
14										
14			21	.75	TANK GAUGING SIGNAL +:B-28	TANK GAUGE	TANK GAUGE	16	.2	12
14					TANK GAUGING SIGNAL -:B-28	(FUTURE)	(FUTURE)	18		
14										
14			*22		SPARE					
18		20								
18		20	23	1	CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-5	PANEL C @ KIOSK	DOWN LIGHTS	12	*20	208
18		20			CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-7		@ CANOPY	12		
18		20			CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-9			12		
18		20			CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-11			12		
18		20			CANOPY DOWN LIGHTS (5-400W-SWH) HOT:C-1			12		
12					CANOPY DOWN LIGHTS (5-400W-SWH) HOT:C-3			12		
					CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-2			12		
					CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-4			12		
					CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-6			12		
					CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-8			12		
					CANOPY DOWN LIGHTS (5-400W-SWH) HOT:C-10			12		
					CANOPY DOWN LIGHTS (5-400W-SWH) HOT:C-12			12		
					CANOPY DOWN LIGHTS EQUIPMENT GROUND			12		
			24	1	NEON STRIP (4 BALLASTS):C-19	PANEL C @ KIOSK	NEON STRIPS ON	12	22	120
					NEON STRIP (4 BALLASTS):C-21		CANOPY FASCIA	12	22	
					NEON STRIP (4 BALLASTS):C-23			12	22	
					NEON STRIP (4 BALLASTS):C-17			12	22	
					FASCIA BRANDLETTER:C-24		FASCIA BRANDLETTER	12	21	
					BACKLIT SPREADERS (4 DISPENSERS):C-25		SPREADER LIGHTS	12	21	
					BACKLIT SPREADERS (4 DISPENSERS):C-20		SPREADER LIGHTS	12	21	
			*25	.75	FLAG POLE LIGHTING HOT:C-27	PANEL C @ KIOSK	FLAG POLE LIGHT	12	20	120
					FLAG POLE LIGHTING NEU			12		
			26	.75	YARD LTS (8-400W-SMH) HOT:C-13,15,14,16	PANEL C @ KIOSK	YARD LIGHTS	10	17	208
					YARD LIGHTING (8-400W-SMH) NEU			10		
			27	.75	NORMAL ID/PRICE SIGN LIGHT HOT:C-22	PANEL C @ KIOSK	ID & PRICE SIGNS	12	21	120
					NORMAL ID/PRICE SIGN LIGHT NEU			12		
					NORMAL ID/PRICE SIGN LIGHT EQUIP. GRND.			12		

1130G/39
06/07/89

CONDUIT SCHEDULE – 1 PHASE 120/240 VOLT (3-WIRE) RETAIL LOCATIONS
(USE ONLY IF 3 PHASE IS NOT AVAILABLE)

ID	SIZE	FUNCTION OF CONDUCTOR:BREAKER POSITION	FROM	TO	WIRE	AMP	VOLT
*28	.75	HIGH RISE ID SIGN LIGHTING HOT:C-28 HIGH RISE ID SIGN LIGHTING NEU HIGH RISE ID SIGN LIGHTING HOT:C-30 HIGH RISE ID SIGN LIGHTING NEU HIGH RISE ID SIGN EQUIP. GRND.	PANEL C @ KIOSK	HIGH RISE SIGN	10 10 10 10 10	17	120
29	.75	TELEPHONE INCOMING	PHONE CO. WIRE	PHONE CO. TERMINALS	22	10	50

KEY

* – IF REQUIRED BY STATION LAYOUT

VARIES – SEE DUCTBANK CONFIGURATIONS DRAWING

ID	SIZE	FUNCTION OF CONDUCTOR:BREAKER POSITION	FROM	TO	WIRE	AMP	VOLT
1	VARIES	MAIN SERVICE HOT MAIN SERVICE HOT MAIN SERVICE NEU	SITE INCOMING ELECT. SERV DROP	I-LINE MAIN INCOMING PANEL @ KIOSK	VARIES	269	240
*2	VARIES	MAIN SERVICE HOT MAIN SERVICE HOT MAIN SERVICE NEU	SITE INCOMING ELECT. SERV DROP	I-LINE MAIN INCOMING PANEL @ KIOSK	VARIES	269	240
*3	2.5	CARWASH POWER HOT CARWASH POWER HOT CARWASH POWER NEU	I-LINE MAIN INCOMING PANEL @ KIOSK	DP PANEL @ CARWASH	3/0 3/0 3/0	151	240
*4	1	CARWASH CONTROL HOT CARWASH CONTROL NEU	LIGHTING CONTACT @ KIOSK	DP PANEL & LIGHT CONTACT @ CARWASH	12 18	15	120
*5	1	CARWASH SIGNAL (+) CARWASH SIGNAL (-)			12 18	.2	20
*6	1.25	SUPPORT BUILDING HOT SUPPORT BUILDING HOT SUPPORT BUILDING NEU SUPPORT BUILDING CONTROL	I-LINE MAIN INCOMING PANEL @ KIOSK	PANEL A @ SUPPORTING BUILDING	3/0 3/0 3/0 3/0	117	240
*7	.75	WATER/WASTE PUMP HOT:A-5 WATER/WASTE PUMP HOT:A-7 WATER/WASTE PUMP EQUIP. GRND.	PANEL A @ KIOSK	WATER/WASTE PUMP	12 12 12	17	240
8	.75	SUB. "SUPER" PUMP 1.5 HP HOT:B-4 SUB. "SUPER" PUMP 1.5 HP HOT:B-6 SUB. "SUPER" PUMP 1.5 HP EQUIP. GRND.	PANEL B @ KIOSK	SUPER PUMP	10 10 10	16	240
8	.75	SUB. "REGULAR" PUMP 1.5 HP HOT:B-3 SUB. "REGULAR" PUMP 1.5 HP HOT:B-5 SUB. "REGULAR" PUMP 1.5 HP EQUIP. GRND.	PANEL B @ KIOSK	REGULAR PUMP	10 10 10	16	240
10	.75	SUB. "PLUS" PUMP 1.5 HP HOT:B-15 SUB. "PLUS" PUMP 1.5 HP HOT:B-17 SUB. "PLUS" PUMP 1.5 HP EQUIP. GRND.	PANEL B @ KIOSK	PLUS PUMP	10 10 10	16	240
11	.75	SUB. "DIESEL" PUMP 1.5 HP HOT:B-16 SUB. "DIESEL" PUMP 1.5 HP HOT:B-18 SUB. "DIESEL" PUMP 1.5 HP EQUIP. GRND.	PANEL B @ KIOSK	DIESEL PUMP	10 10 10	16	240

ID	SIZE	FUNCTION OF CONDUCTOR:BREAKER POS
12	1	DISPENSER CABLE (6 HOSE MPD) MARK:FUNCTION 1 DISPENSER POWER HOT:B-1 2 DISPENSER POWER NEUTRAL 3 DISPENSER LIGHT HOT:B-26 4 DISPENSER LIGHT NEU 5 A PUMP CONTROL 6 A PUMP CONTROL NEU 7 B PUMP CONTROL 8 B PUMP CONTROL NEU 9 C PUMP CONTROL 10 C PUMP CONTROL NEU 11 REMOTE AUTH. 12 REMOTE AUTH. NEU 13 SIDE A DATA (+) 14 SIDE A DATA (-) 15 SIDE B DATA (+) 16 SIDE B DATA (-) 17 SPARE DATA (+) 18 SPARE DATA (-) 19 EQUIPMENT GROUND
12	1	DISPENSER CABLE (6 HOSE MPD) 1 DISPENSER POWER HOT:B-1 SAME AS 12
14	1	DISPENSER CABLE (6 HOSE MPD) 1 DISPENSER POWER HOT:B-2 SAME AS 12
15	1	DISPENSER CABLE (6 HOSE MPD) 1 DISPENSER POWER HOT:B-2 3 DISPENSER LIGHT HOT:B-25 SAME AS 12
16	1	DISPENSER CABLE (3 HOSE MPD) 1 DISPENSER POWER HOT:B-13 3 DISPENSER LIGHT HOT:B-25 SAME AS 12
17	1	DISPENSER CABLE (3 HOSE MPD) 1 DISPENSER POWER HOT:B-13 SAME AS 12
*18	1	DISPENSER CABLE (1 OR 2 HOSE) 1 DISPENSER POWER HOT:B-14 SAME AS 12
*19	1	DISPENSER CABLE (1 OR 2 HOSE) 1 DISPENSER POWER HOT:B-14 SAME AS 12

POSITION	FROM	TO	WIRE	AMP	VOLT	ID	SIZE	FUNCTION OF-CONDUCTOR:BREAKER POSITION	FROM	TO
	PANEL B @ KIOSK	EACH DISPENSER				20A	1	DISPENSER INTERCOM SIGNAL DISPENSER INTERCOM SIGNAL (REPEAT FOUR TIMES) (10 WIRES ALTOGETHER)	INTERCOM INTERCONNECTION BOX	DISPENSER INTERCOM
			14	14	120					
			14							
			14			20B	1	DISPENSER INTERCOM SIGNAL SAME AS ABOVE (#20A)		
			14							
			14			21	.75	LEAK DETECTOR SIGNAL:B-30 (REPEAT 15 TIMES)	PANEL B @ KIOSK	LEAK DETECTOR
			14							
			14			22	.75	TANK GAUGING SIGNAL +:B-34 TANK GAUGING SIGNAL -:B-34	TANK GAUGE (FUTURE)	TANK GAUGE (FUTURE)
			14							
			14			*23		SPARE		
	DISTRIBUTION BOX	DISPENSER	18		20					
	DISTRIBUTION BOX	DISPENSER	18		20	24	1	CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-5	PANEL C @ KIOSK	DOWN LIGHTS @ CANOPY
	DISTRIBUTION BOX	DISPENSER	18		20			CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-7		
	DISTRIBUTION BOX	DISPENSER	18		20			CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-9		
	DISTRIBUTION BOX	DISPENSER	18		20			CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-11		
	DISTRIBUTION BOX	DISPENSER	18		20			CANOPY DOWN LIGHTS (5-400W-SWH) HOT:C-1		
	DISTRIBUTION BOX	DISPENSER	12					CANOPY DOWN LIGHTS (5-400W-SWH) HOT:C-3		
								CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-2		
								CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-4		
								CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-6		
								CANOPY DOWN LIGHTS (6-400W-SWH) HOT:C-8		
								CANOPY DOWN LIGHTS (5-400W-SWH) HOT:C-10		
								CANOPY DOWN LIGHTS (5-400W-SWH) HOT:C-12		
								CANOPY DOWN LIGHTS EQUIPMENT GROUND		
						25	1	NEON STRIP (4 BALLASTS):C-19	PANEL C @ KIOSK	NEON STRIPS ON CANOPY FASCIA
								NEON STRIP (4 BALLASTS):C-21		
								NEON STRIP (4 BALLASTS):C-23		
								NEON STRIP (4 BALLASTS):C-17		
								FASCIA BRANDLETTER: C-24		FASCIA BRANDLETTER
								BACKLIT SPREADERS (4 DISPENSERS):C-25		SPREAD LIGHTS
								BACKLIT SPREADERS (4 DISPENSERS):C-20		SPREAD LIGHTS
						*26	.75	FLAG POLE LIGHTING HOT:C-27	PANEL C @ KIOSK	FLAG POLE LIGHT
								FLAG POLE LIGHTING NEU		
						27	.75	YARD LTS (8-400W-SMH) HOT:C-13,15,14,16	PANEL C @ KIOSK	YARD LIGHTS
								YARD LIGHTING (8-400W-SMH) NEU		
						28	.75	NORMAL ID/PRICE SIGN LIGHT HOT:C-22	PANEL C @ KIOSK	ID & PRICE SIGNS
								NORMAL ID/PRICE SIGN LIGHT NEU		
								NORMAL ID/PRICE SIGN LIGHT EQUIP. GRND.		

WIRE	AMP	VOLT	ID	SIZE	FUNCTION OF CONDUCTOR:BREAKER POSITION	FROM	TO	WIRE	AMP	VOLT
6303	.2	12	*29	.75	HIGH RISE ID SIGN LIGHTING HOT:C-28	PANEL C @ KIOSK	HIGH RISE SIGN	10	17	120
8404					HIGH RISE SIGN LIGHTING NEU			10		
					HIGH RISE ID SIGN LIGHTING HOT:C-30			10		
					HIGH RISE ID SIGN LIGHTING NEU			10		
					HIGH RISE ID SIGN EQUIP. GRND.			10		
12	.2	12	30	.75	TELEPHONE INCOMING	PHONE CO. WIRE	PHONE CO. TERMINALS	22	10	50
18	.2	18								
18										

KEY

* - IF REQUIRED BY STATION LAYOUT

VARIES - SEE DUCTBANK CONFIGURATIONS DRAWING

12	20	208
12		
12		
12		
12		
12		
12		
12		
12		
12		
12		
12		
12	22	120
12	22	
12	22	
12	22	
12	21	
12	21	
12	21	
12	20	120
12		
12	17	240
12		
12	21	120
12		
12		

1130G/44
06/07/89

BP OIL COMPANY

RETAIL MARKETING
DESIGN AND ENGINEERING

200 PUBLIC SQUARE
CLEVELAND, OHIO 44114

STANDARD SPECIFICATIONS

DWG. NO. BP-5-3	REV.
SCALE	MADE BY Bill H
DATE 7-27-85	CHECKED BY

REVISIONS:	DATE	DWN	CKD

24X36

118253

1039

LAGOON

MAITLAND DR.

1035

GARDEN RD

1035

ISLAND

801

980

3171 MECARTNEY RD

3183 MECARTNEY RD

1.48 Ac

9.85±Ac

1.92±Ac

240±Ac

5,280 ft²

11,232 ft²

535 ft²

5.88±Ac

CITY

BEDFORD, PETER
10/10/84
84-198636
USE 37
ZONED: C-2 PD

MOBIL SITE

MECARTNEY ROAD

174.98

174.92

L=174.92'

R=267.00'

Δ=37°32'14"

Δ=104°44'01"
R=15.00'
TAN=19.46'
L=27.42'
CL=23.76'
CB=S83°40'11"E

SET 1/2" REBAR
LS 5078

CB=N30°47'47"E

CL=106.15'

S31°50'09"W
78.92'

L=107.09'

PG&E

FH

WM

AC

CB

S.D.M.H.

METAL LID

F/C TO F/C 14.5'

L=54.51

METAL GRATE CB

CONC.

NORTH

Scale: 1" = 10'

0 10' 20'