CHAPTER V

REFERENCE DRAWINGS

for

LIQUID AND GAS STORAGE TANKS

January 2001
# REFERENCE DRAWINGS FOR LIQUID AND GAS STORAGE TANKS

## INDEX OF DRAWINGS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>DRAWING NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Civil Layout Sheet</td>
<td>B-C-L1</td>
</tr>
<tr>
<td>2. Mechanical Layout Sheet</td>
<td>B-M-L2</td>
</tr>
<tr>
<td>3. Mechanical Layout Sheet</td>
<td>B-M-L3</td>
</tr>
<tr>
<td>4. Pipe Bollard Detail</td>
<td>B-C-1</td>
</tr>
<tr>
<td>5. Fuel Dispenser Island Detail</td>
<td>B-C-2</td>
</tr>
<tr>
<td>6. Tank Installation with Concrete Pad</td>
<td>B-C-4</td>
</tr>
<tr>
<td>7. Twin Tank Installation with Concrete Pad</td>
<td>B-C-5</td>
</tr>
<tr>
<td>8. Tank Installation with Concrete Pad</td>
<td>B-C-6</td>
</tr>
<tr>
<td>9. AST Detail 1 Above Ground Dike Tank Installation On Concrete Pad</td>
<td>B-C-7</td>
</tr>
<tr>
<td>10. Anchorage Detail</td>
<td>B-C-8</td>
</tr>
<tr>
<td>11. AST Detail 2 Side View-Above Ground Dike Tank Installation on Concrete Pad</td>
<td>B-C-9</td>
</tr>
<tr>
<td>12. Fuel Tank Concrete Ballast Pad Schedule</td>
<td>B-C-10</td>
</tr>
<tr>
<td>13. Fill Connection Gravity Delivery</td>
<td>B-M-1</td>
</tr>
<tr>
<td>14. Fill Connection Pumped Delivery</td>
<td>B-M-2</td>
</tr>
<tr>
<td>15. Vapor Recovery Connection Detail</td>
<td>B-M-3</td>
</tr>
<tr>
<td>16. Vapor Recovery Connection Detail</td>
<td>B-M-4</td>
</tr>
<tr>
<td>17. Vapor Recovery Piping Phase 2 Detail</td>
<td>B-M-5</td>
</tr>
<tr>
<td>18. Vapor Recovery Piping Phase 2 Detail</td>
<td>B-M-5A</td>
</tr>
<tr>
<td>19. Vent Piping Detail</td>
<td>B-M-7</td>
</tr>
<tr>
<td>20. Suction Piping Detail</td>
<td>B-M-8</td>
</tr>
<tr>
<td>21. Suction Piping Connection At Tank Detail</td>
<td>B-M-9</td>
</tr>
<tr>
<td>22. Suction Piping Connection At Tank Detail</td>
<td>B-M-11</td>
</tr>
<tr>
<td>23. Electronic Leak Detector Well Detail</td>
<td>B-M-12</td>
</tr>
<tr>
<td>25. Emergency Shut-Off Valve Detail</td>
<td>B-M-14</td>
</tr>
<tr>
<td>26. Emergency Shut-Off Valve Detail</td>
<td>B-M-14A</td>
</tr>
<tr>
<td>27. Island Dual Vent Penetration</td>
<td>B-M-15</td>
</tr>
<tr>
<td>28. Island Dual Vent Penetration</td>
<td>B-M-15A</td>
</tr>
<tr>
<td>29. Remote Fuel Dispenser Assembly Detail</td>
<td>B-M-16</td>
</tr>
<tr>
<td>30. Piping Entrance At Building Detail</td>
<td>B-M-17</td>
</tr>
<tr>
<td>31. Air &amp; Water At Fuel Dispenser Island</td>
<td>B-M-18</td>
</tr>
<tr>
<td>32. FOS &amp; FOR Piping At U/G Tank</td>
<td>B-M-19</td>
</tr>
<tr>
<td>33. Piping to Underground Detail</td>
<td>B-M-20</td>
</tr>
<tr>
<td>34. Typical Strap Anchor Detail</td>
<td>B-M-21</td>
</tr>
<tr>
<td>35. Monitoring Pipe</td>
<td>B-M-22</td>
</tr>
<tr>
<td>36. Vent Connection with Whistle</td>
<td>B-M-23</td>
</tr>
<tr>
<td>37. Piping Termination Assembly Detail</td>
<td>B-M-24</td>
</tr>
</tbody>
</table>
FUEL DISPENSER ISLAND
DETAIL
NOT TO SCALE
SINGLE TANK INSTALLATION WITH CONCRETE PAD

NOTE:
SEE FUEL TANK CONCRETE BALLAST PAD SCHEDULE FOR CONCRETE PAD AND TANK ANCHOR SIZES

UNDISTURBED EARTH
6" MIN. CONCRETE SLAB
6x6 - W4xW4 WWF

PATCH TO MATCH EXISTING PAVING SURFACE & THICKNESS
GRADE

SIDEWALLS OF EXCAVATION SHALL BE LINED WITH FILTER FABRIC

PEA GRAVEL BACKFILL, TYP.

ANCHOR STRAP, ANCHOR BOLTS WITH TURNBUCLE, COATED WITH A DIELECTRIC COATING SIMILAR TO EPOXY COAL TAR THICKNESS, MIN. SEE CONCRETE PAD SCHEDULE

UNDISTURBED EARTH, TYP.

TYP. 1

WIDTH = 1 *D* + 3'-0"
TWIN TANK INSTALLATION WITH CONCRETE PAD
NOT TO SCALE
SIDEWALLS OF EXCAVATION SHALL BE LINED WITH FILTER FABRIC

6'x6' - W4xW4 WWF

6' MIN. CONCRETE SLAB

MONITOR PIPE, SEE PLAN FOR LOCATIONS

PATCH TO MATCH EXISTING SURFACE & THICKNESS

3'-0"

NOTE:
SEE FUEL TANK CONCRETE BALLAST PAD SCHEDULE FOR CONCRETE PAD AND TANK ANCHOR SIZES

TANK INSTALLATION WITH CONCRETE PAD - SIDE VIEW
NOT TO SCALE

Published: 01/01 Revised:
AST DETAIL 1
ABOVE GROUND DIKE TANK
INSTALLATION ON CONCRETE PAD
NOT TO SCALE
ANCHORAGE DETAIL
NOT TO SCALE
AST DETAIL 2
SIDE VIEW - ABOVE GROUND DIKE TANK
INSTALLATION ON CONCRETE PAD

NOT TO SCALE
# Fuel Tank Concrete Ballast Pad Schedule

<table>
<thead>
<tr>
<th>Tank Location</th>
<th>Tank Size (Gallons)</th>
<th>Nominal Dia x Length</th>
<th>Concrete Pad</th>
<th>Strap Anchor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS**

- **Approved by:**
  - Chief Engineer
  - Design Engineer

**Liquid and Gas Storage Tank Reference Drawing**

**Fuel Tank Concrete Ballast Pad Schedule**

**Date:**

**B-C-10**

Published: 01/01  Revised:
FILL CONNECTION WITH SPILL CONTAINER AND OVERFLOW PREVENTION VALVE—GRAVITY DELIVERY DETAIL
NOT TO SCALE

CONCRETE PAD
4" CAP
FILL CONNECTION
15 GALLON CAPACITY
SPILL CONTAINER WITH COVER
NAMEPLATE HOLDER
WITH IDENTIFICATION
PLATE
GRAVEL GUARD
PEA GRAVEL BACKFILL

FLEXIBLE POLYETHYLENE BELLows

DRAIN VALVE
4" RISER PIPE

STORAGE TANK

DROP TUBE
OVERFILL PREVENTION VALVE,
VALVE SHALL CLOSE AT 95% CAPACITY OF STORAGE TANK

DROP TUBE

ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS

APPROVED

CHIEF ENGINEER

DATE:

DESIGN ENGINEER

LIQUID AND GAS STORAGE TANK REFERENCE DRAWING
FILL CONNECTION GRAVITY DELIVERY

B-M-1
FILL CONNECTION WITH SPILL CONTAINER AND OVERFLOW PREVENTION VALVE—PUMPED DELIVERY DETAIL
NOT TO SCALE

OVERFILL PREVENTION VALVE, VALVE SHALL CLOSE AT 95% CAPACITY OF STORAGE TANK

USE THIS DEVICE TOGETHER WITH VENT WHISTLE ASSEMBLY, SEE DETAIL B-M-23

FILL CONNECTION AND SPILL CONTAINER
VAPOR RECOVERY CONNECTION
DETAIL

NOT TO SCALE
VAPOR RECOVERY CONNECTION
DETAIL
NOT TO SCALE
VAPOR RECOVERY PIPING PHASE 2
DETAIL
NOT TO SCALE
VENT CAP
2" GALV. STEEL PIPE
FILL WITH NON-SHRINK GROUT
CONCRETE PAD 12"x12"x12" DEEP
1' MIN.
GRADE
3'-0" (MIN) ABOVE ROOF, SUPPORT FROM STRUCTURE AT 36" INTERVALS.
2½" FLEXIBLE VENT PIPING, SLOPE 1/8"/FT TOWARD TANK
ADAPTER
PEA GRAVEL BACKFILL
ALL BURIED METAL PIPING SHALL BE EPOXY COATED AND TAPE
6" MIN. PEA GRAVEL ALL AROUND

VENT PIPING DETAIL
NOT TO SCALE

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DEPARTMENT OF PUBLIC WORKS

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CHIEF ENGINEER
DATE: DESIGN ENGINEER

LIQUID AND GAS STORAGE TANK REFERENCE DRAWING
VENT PIPING DETAIL

B-M-7

Published: 01/01   Revised:
SUCTION PIPING DETAIL

NOT TO SCALE
SUCTION PIPING CONNECTION AT TANK DETAIL (GASOLINE ONLY)

NOT TO SCALE
SUCTION PIPING CONNECTION AT TANK DETAIL
NOT TO SCALE
TANK LEVEL SENSOR, VEEDEE-ROOT MODEL NUMBER TO BE PROVIDED BY THE COUNTY, MANHOLE, RISER PIPE, SENSOR COMPARTMENT, AND CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH CONTRACT DOCUMENTS.

18" MANHOLE WITH COVER
CONCRETE PAD

5" MIN.

12" MIN.

PEA GRAVEL BACKFILL

3/4" CONDUIT

BACKFILL

SENSOR COMPARTMENT

STORAGE TANK

PROBE TO TANK BOTTOM

ELECTRONIC LEAK DETECTOR WELL

DETAIL

NOT TO SCALE
REMOTE SUBMERSIBLE PUMP
DETAIL
NOT TO SCALE
EMERGENCY SHUT-OFF VALVE
DETAIL

REMOTE FUEL DISPENSER

1/2" PIPING, GALV. STEEL

CONCRETE PAD

EMERGENCY SHUT-OFF VALVE AND STABILIZER BAR ASSEMBLY

FUEL DISPENSER ISLAND

DIELECTRIC FITTING

2" x 30" LONG (MIN) FLEXIBLE CONNECTOR, STAINLESS STEEL

PEA GRAVEL BACKFILL

SLOPE 1/2" PER/FT TOWARD TANK

2" FIBERGLASS PIPING FROM SUBMERSIBLE PUMP

ADAPTER

DISTURB SUMP. SEAL ALL PENETRATIONS THRU THE SUMP AS DIRECTED BY SUMP MANUFACTURER.

PEA GRAVEL BACKFILL
EMERGENCY SHUT-OFF VALVE DETAIL

NOT TO SCALE

REMOTE FUEL DISPENSER
2" PIPING, STEEL
CONCRETE PAD
PEA GRAVEL BACKFILL
SLOPE 1/8" PER/FT TOWARD TANK
CONTAINMENT PIPE
2½" PRESSURE PIPE
DIELECTRIC FITTING
REDUCER

PRODUCT LINE SHEAR VALVE
FUEL DISPENSER ISLAND
2" PIPING, STEEL
DISPENSER SUMP, SEAL ALL PENETRATIONS THRU THE SUMP AS DIRECTED BY SUMP MANUFACTURER.
PEA GRAVEL BACKFILL

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LIQUID AND GAS STORAGE TANK REFERENCE DRAWING

EMERGENCY SHUT-OFF VALVE DETAIL

B-M-14A

Published: 01/01 Revised:
VENT CAP
PIPE U-BOLTS
WITH NUTS,
GALV. STEEL, TYP.
2" VENT PIPING,
GALV. STEEL, TYP.
3/4" 3"x3"x 1/4"
GALV., TYP.
FILL WITH NON-SHRINK
GROUT, TYP.
DISPENSER ISLAND TO BE
12" DEEP MIN. AT VENT
PENETRATIONS x 2 SQ.FT.
ADAPTER, TYP.
DIELECTRIC FITTING, TYP.

12" MAX.
6'-0"
12'-0" MIN.
ABOVE GRADE
3'-0"

2" FIBERGLASS
VENT PIPING, TYP.

2" # M LONG (MIN)
FLEXIBLE CONNECTOR,
STAINLESS STEEL
(COATED & TAPE), TYP.

ISLAND DUAL VENT PENETRATION
DETAIL

NOT TO SCALE

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DATE:
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LIQUID AND GAS STORAGE TANK
REFERENCE DRAWING
ISLAND DUAL VENT
PENETRATION

B-M-15

Published: 01/01 Revised:
ISLAND DUAL VENT PENETRATION DETAIL

NOT TO SCALE

VENT CAP
PIPE U-BOLTS WITH NUTS, GALV. STEEL, TYP.
2" VENT PIPING, GALV. STEEL, TYP.
3' x 3' x 1/4"
GALV., TYP.
UNION, TYP.
FILL WITH NON-SHRINK GROUT, TYP.
DISPENSER ISLAND TO BE 12" DEEP MIN. AT VENT PENETRATIONS x 2 SQ.FT.
COUPLING, TYP.
METALLIC PIPING AND FITTINGS BELOW GRADE SHALL BE COATED AND TAPE, TYP.
2 1/2' FLEXIBLE VENT PIPING SLOPE 1/8" PER/FT TOWARD TANK, TYP.

Published: 01/01  Revised:
NOTES:
DIESEL FUEL DISPENSER SHOWN. GASOLINE DISPENSER SHALL HAVE ALL NECESSARY EQUIPMENT FOR STAGE II VAPOR RECOVERY OPERATION.

REMOTE FUEL DISPENSER WITH HOSE RETRACTOR ASSEMBLY
DETAIL
NOT TO SCALE
Provide expanded metal enclosure around piping assembly. Anchor securely to building and concrete pad with \( \frac{3}{8}'' \times 2'' \) expansion bolts. Fill with non-shrink grout. Concrete pad, 18'' x 18'', 6'' thick (min) with 1'' chamfer all around.

Piping Entrance at Building Detail

Not to Scale

Primary piping from storage tank.

Pea gravel backfill, 6'' min all around.

\( \frac{\frac{1}{8}}{} \) ft

Liquid and Gas Storage Tank Reference Drawing

PIPING ENTERANCE AT BUILDING DETAIL

B-M-17

Published: 01/01 Revised:
\( \frac{3}{4} \) BALL VALVE WITH COMPRESSED AIR QUICK CONNECT FITTING

\( \frac{3}{4} \) NON-FREEZE POST HYDRANT, J.R. SMITH FIG. No. 5910 WITH VACUUM BREAKER

FILL WITH NON-SHRINK GROUT, TYP.

FUEL DISPENSER ISLAND

2'-0"
CONCRETE PAD

PEA GRAVEL BACKFILL

3'-0"

\( \frac{3}{4} \) WATER

\( \frac{3}{4} \) WATER

\( \frac{3}{4} \) COMPRESSED AIR

NOTE:
\( \frac{3}{4} \) COPPER PIPE, TYPE M WITH FITTINGS.

AIR & WATER AT FUEL DISPENSER ISLAND

DETAIL

NOT TO SCALE

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LIQUID AND GAS STORAGE TANK
REFERENCE DRAWING

AIR & WATER AT FUEL DISPENSER ISLAND

B-M-18

Published: 01/01 Revised:
CONCRETE PAD, 6" THICK, WITH 1" CHAMFER ALL AROUND.

24" MANHOLE WITH COVER

GRADE

1'

20"Ø TANK SUMP
BALL VALVE, TYP
BULKHEAD FITTING

SLOPE 3/6 FT

PEA GRAVEL BACKFILL

1/4" FOR, &
2" FOS SHOWN BEHIND

TANK ADAPTOR ASSEMBLY

STORAGE TANK

FOS & FOR PIPING AT U/G TANK

DETAIL

NOT TO SCALE

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LIQUID AND GAS STORAGE TANK REFERENCE DRAWING
FOS & FOR PIPING AT U/G TANK

B-M-19

Published: 01/01 Revised:
PIPING TO UNDERGROUND

DETAIL

NOT TO SCALE

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DATE: DESIGN ENGINEER

LIQUID AND GAS STORAGE TANK REFERENCE DRAWING

PIPING TO UNDERGROUND DETAIL

B-M-20

Published: 01/01 Revised:
TYPICAL STRAP ANCHOR DETAIL

NOT TO SCALE
12° ROUND MONITOR MANHOLE ASSEMBLY

CONCRETE PAD, 2'-4"x2'-4"x6" THICK, PAD SHALL BE FLUSH WITH AND AT THE SAME HEIGHT AS ADJACENT CONCRETE PAD.

CONCRETE PAD

4" LOCKABLE CAP

4" MIN

PEA GRAVEL BACKFILL

BENTONITE SEAL BETWEEN MANHOLE SKIRT AND MONITOR PIPE

4' MONITOR PIPE, SCHEDULE 40 PVC-SLOTTED, WRAPPED IN FILTER FABRIC.

TERMINE MONITOR PIPE 2'-0" (MIN) BELOW BOTTOM OF TANK

MONITORING PIPE DETAIL

NOT TO SCALE

B-M-22

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LIQUID AND GAS STORAGE TANK
REFERENCE DRAWING
MONITORING PIPE

Published: 01/01
Revised:
VENT CONNECTION WITH WHISTLE DETAIL

NOT TO SCALE
PIPING TERMINATION ASSEMBLY
DETAIL
NOT TO SCALE