



**Woodard & Curran**

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PROLIERIZED NEW ENGLAND COMPANY LLC  
69 ROVER STREET  
EVERETT, MA 02149

PE SEAL:



Digitally signed by Ross Tsantoulis  
DN: cn=Ross Tsantoulis, email=ross@woodardcurran.com, ou=Woodard & Curran, c=US  
Ross Tsantoulis  
Date: 2026.02.18 12:10:53 -0500

**60% DESIGN  
NOT FOR CONSTRUCTION**

CLIENT INFO:  
**RADIUS RECYCLING  
CONCORD, NH**

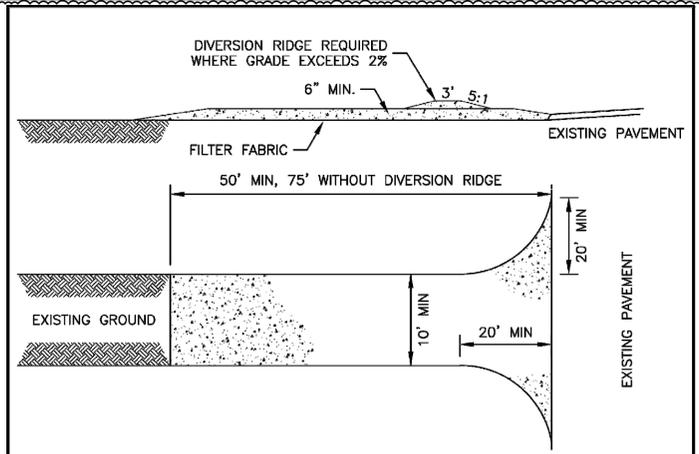
**SANDQUIST FACILITY  
STORMWATER IMPROVEMENTS**

|   |            |                             |
|---|------------|-----------------------------|
| 2 | 02/18/2026 | RESPONSE TO PERMIT COMMENTS |
| 1 | 02/05/2026 | RESPONSE TO PERMIT COMMENTS |

| REV          | MM/DD/YY                 | DESCRIPTION |
|--------------|--------------------------|-------------|
| JOB NO:      | 0224539.48               |             |
| DATE:        | DECEMBER 2025            |             |
| SCALE:       | AS NOTED                 |             |
| DESIGNED BY: | YI                       |             |
| DRAWN BY:    | KC                       |             |
| CHECKED BY:  | RT                       |             |
| FILENAME:    | 0224539.48-C-900-903.dwg |             |

DRAWING TITLE:  
**CIVIL  
DETAILS 1**

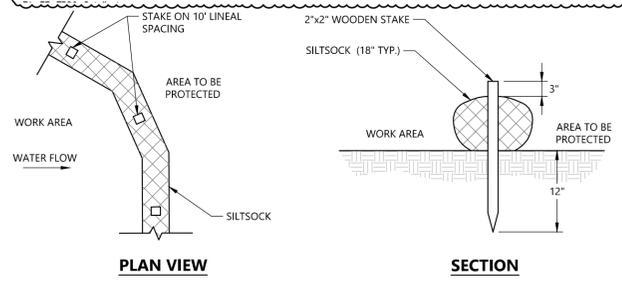
DRAWING NO:  
**C-900**



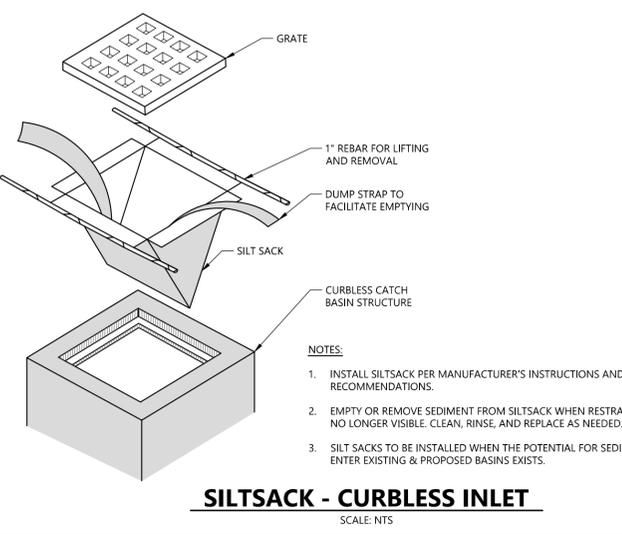
**CONSTRUCTION REQUIREMENTS**

1. STONE SIZE - 3" COARSE AGGREGATE.
2. THICKNESS - 6" MIN
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. LENGTH - NOT LESS THAN 50'. EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MIN LENGTH WOULD APPLY.
7. WIDTH - 10' MIN, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
8. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE.
9. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
10. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
11. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

|   |          |      |   |              |       |
|---|----------|------|---|--------------|-------|
| NO.                                     | REVISION | DATE | City of Concord Engineering Services Division | SECTION:     | EPSC  |
| <b>CONSTRUCTION ENTRANCE<br/>DETAIL</b> |          |      |   | DRAWING NO.: | E-1   |
|   |          |      |   | DATE:        | 01/08 |

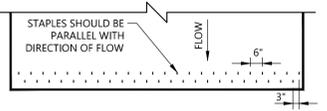


**SILT SOCK**  
SCALE: NTS

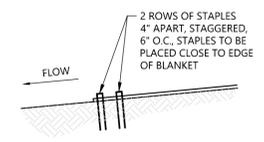


**SILT SACK - CURBLESS INLET**  
SCALE: NTS

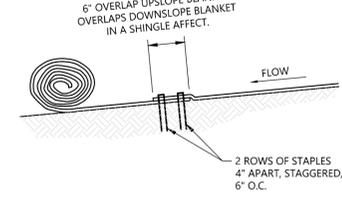
- NOTES:
1. INSTALL SILT SACK PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
  2. EMPTY OR REMOVE SEDIMENT FROM SILT SACK WHEN RESTRAINT CORD IS NO LONGER VISIBLE. CLEAN, RINSE, AND REPLACE AS NEEDED.
  3. SILT SACKS TO BE INSTALLED WHEN THE POTENTIAL FOR SEDIMENT TO ENTER EXISTING & PROPOSED BASINS EXISTS.



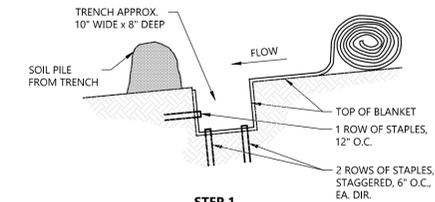
**DETAIL A - PLAN VIEW  
CHANNEL TERMINATION**  
NOT TO SCALE



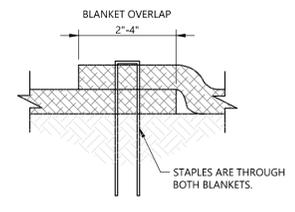
**DETAIL B - SECTION VIEW  
CHANNEL TERMINATION**  
NOT TO SCALE



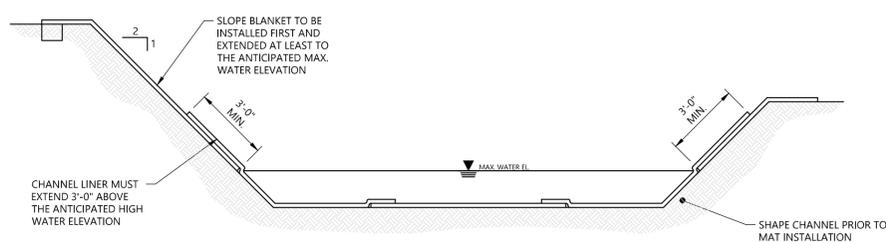
**DETAIL C - CHANNEL BLANKET  
END OF ROLL OVERLAP**  
NOT TO SCALE



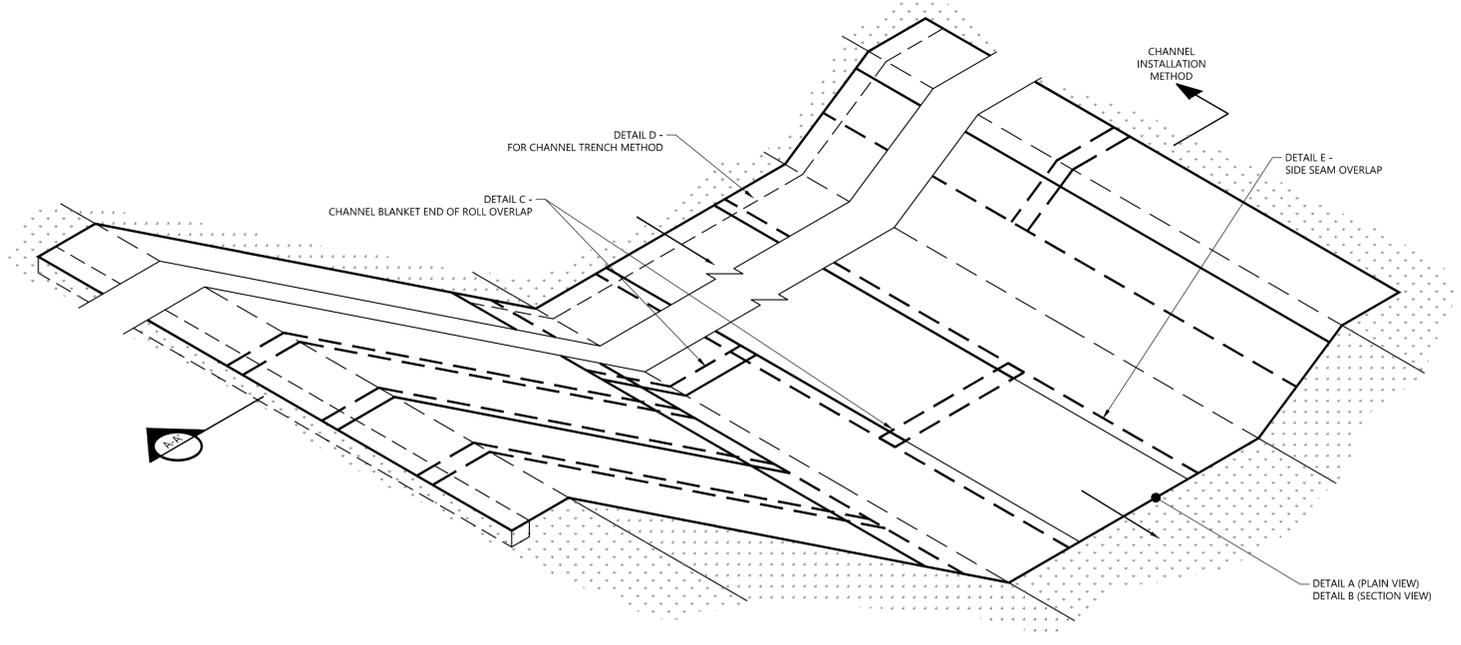
**DETAIL D - CHANNEL  
TRENCHING METHOD**  
NOT TO SCALE



**DETAIL E - SIDE SEAM OVERLAP**  
NOT TO SCALE



**CHANNEL INSTALLATION  
METHOD (SECTION A-A')**  
NOT TO SCALE

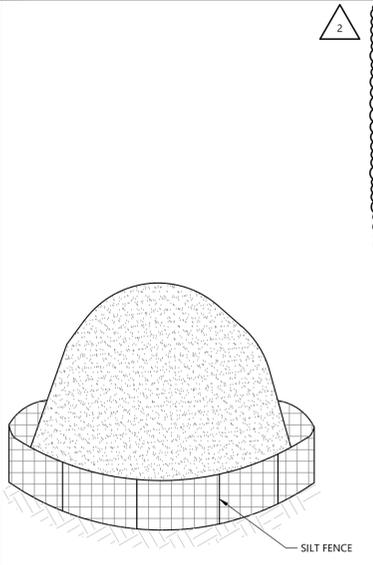


**CHANNEL DETAIL**  
NOT TO SCALE

- NOTES:
1. SEE MANUFACTURER'S RECOMMENDATION FOR PROPER SLOPE INSTALLATION.
  2. STAPLE PATTERNS ARE DEPENDENT ON SITE CONDITIONS. INSTALL PER MANUFACTURER'S RECOMMENDATION.
  3. STAPLES MAY BE USED IN PLACE OF WIRE STAPLES.
  4. THERE SHALL BE NO PLASTIC OR MULTI-FILAMENT OR MONO-FILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES UTILIZED.

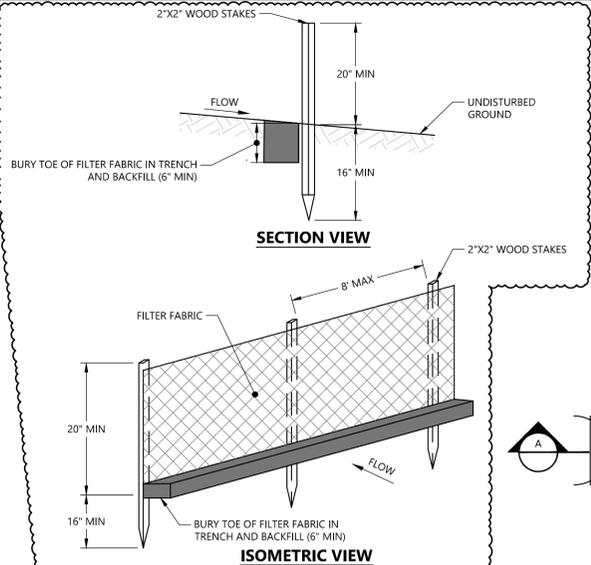
**EROSION CONTROL BLANKET**  
SCALE: NTS

\\woodardcurran.net\shared\Projects\0224539.48\_schmitzer\_concord\_sandquist\preliminary\des\wp\Drawing\Civil\0224539.48-C-900-903.dwg, Feb. 16, 2026 - 2:44pm KCARBENTER



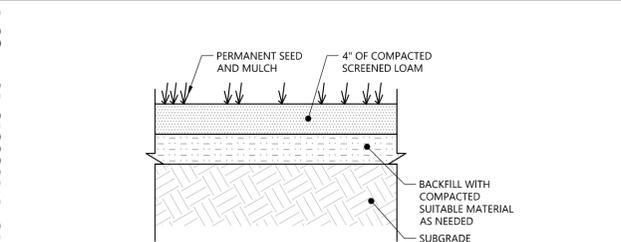
- NOTES:**
- STOCKPILES SHALL BE SURROUNDED BY SILT FENCE.
  - STOCKPILES SHALL HAVE A MAXIMUM 2:1 (H:V) SIDE SLOPE.
  - REPAIR OR REPLACE DAMAGED SILT FENCE DUE TO CONSTRUCTION ACTIVITIES OR STOCKPILE MITIGATION.
  - STOCKPILE SHALL BE LOCATED IN AREAS AS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER.

**TEMPORARY SOIL STOCKPILE**  
SCALE: NTS

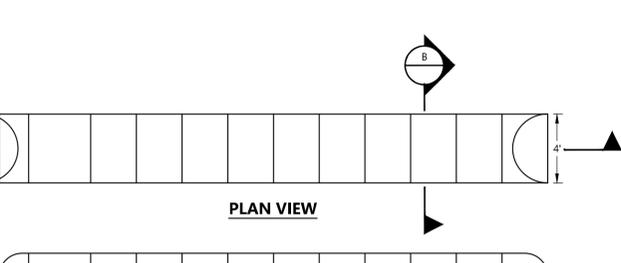


- NOTES:**
- INSTALL FABRIC ON UPHILL SIDE OF WOOD STAKES.
  - SPACING BETWEEN WOOD STAKES PER MANUFACTURER'S RECOMMENDATION.
  - SILT FENCE WILL NOT BE USED IN DRAINAGE WAYS.
  - MAINTENANCE: INSPECT FOR TEARS IN THE FABRIC OR DAMAGE TO SUPPORTS. REPAIR AS NECESSARY. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES A DEPTH OF SIX-INCHES OR MORE.
  - REMOVAL: WHEN UPSLOPE AREAS ARE STABILIZED, THE STRUCTURE AND ANY ACCUMULATED SEDIMENT WILL BE REMOVED.

**SILT FENCE**  
SCALE: NTS

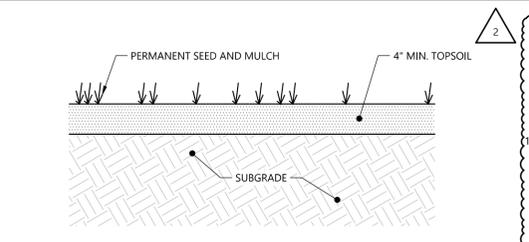


**LOAM AND SEED**  
SCALE: NTS



- NOTES:**
- AVOID COMPACTION, UNLESS OTHERWISE NOTED ON PLANS.
  - TOPSOIL SHALL BE FERTILE, FRIABLE SOIL, TYPICAL OF PRODUCT SOILS IN THE SURROUNDING AREA AND SHALL CONTAIN BETWEEN 5% AND 20% ORGANIC MATTER.
  - TOPSOIL SHALL HAVE A MAXIMUM STONE SIZE OF 1" AND SHALL CONFORM TO THE FOLLOWING GRADATION:
- | SIEVE   | % PASSING |
|---------|-----------|
| 1"      | 100       |
| NO. 4   | 85-100    |
| NO. 40  | 60-85     |
| NO. 100 | 38-60     |
| NO. 200 | 28-40     |
- TOPSOIL SHALL NOT BE DISTRIBUTED OVER PARTLY OR FULLY FROZEN, MUDDY, SNOWY, ICY OR EXCESSIVELY WET SURFACES.
  - SOD AND SEED MIXTURE(S) SHALL BE APPROPRIATE FOR GROWING SEASON, CLIMATE AND SOIL CONDITIONS, AND SURFACE USAGE. REFER TO STATE GUIDELINES.
  - SEED SHALL BE APPLIED AT RATES RECOMMENDED BY STATE GUIDELINES.
  - APPLY MULCH OVER SEEDED AREAS IN ACCORDANCE WITH STATE GUIDELINES.
  - SODDING SHALL BE INSTALLED IN ACCORDANCE WITH SUPPLIER'S GUIDELINES. AT A MINIMUM, LAY SOD IN STAGGERED ROWS OVER DAMPENED AND LOOSENEED/SCARIFIED TOPSOIL. PLACE STRIPS PERPENDICULAR TO THE DIRECTION OF FLOW. ON SLOPES, ANCHOR SOD TO HOLD IN PLACE UNTIL SECURED BY PLANT GROWTH.
  - INSTALL AND/OR REPAIR EROSION AND SEDIMENT CONTROL MEASURES BEFORE LAYING TOPSOIL. MAINTAIN EROSION CONTROL MEASURES DURING TOPSOILING.
  - MAXIMUM SLOPE TOPSOIL CAN BE USED IS 2:1.

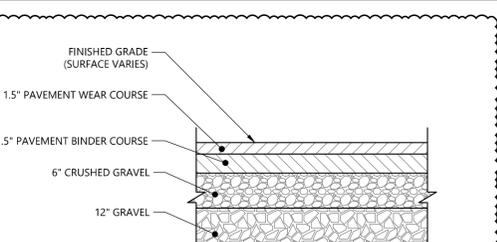
**BERM**  
SCALE: NTS



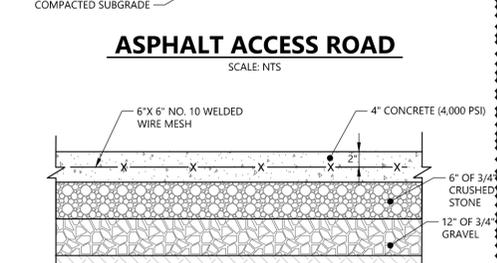
**TOPSOIL RESTORATION**  
SCALE: NTS

- NOTES:**
- AVOID COMPACTION, UNLESS OTHERWISE NOTED ON PLANS.
  - TOPSOIL SHALL BE FERTILE, FRIABLE SOIL, TYPICAL OF PRODUCT SOILS IN THE SURROUNDING AREA AND SHALL CONTAIN BETWEEN 5% AND 20% ORGANIC MATTER.
  - TOPSOIL SHALL HAVE A MAXIMUM STONE SIZE OF 1" AND SHALL CONFORM TO THE FOLLOWING GRADATION:
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|---------|-----------|
| 1"      | 100       |
| NO. 4   | 85-100    |
| NO. 40  | 60-85     |
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| NO. 200 | 28-40     |
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  - SEED SHALL BE APPLIED AT RATES RECOMMENDED BY STATE GUIDELINES.
  - APPLY MULCH OVER SEEDED AREAS IN ACCORDANCE WITH STATE GUIDELINES.
  - SODDING SHALL BE INSTALLED IN ACCORDANCE WITH SUPPLIER'S GUIDELINES. AT A MINIMUM, LAY SOD IN STAGGERED ROWS OVER DAMPENED AND LOOSENEED/SCARIFIED TOPSOIL. PLACE STRIPS PERPENDICULAR TO THE DIRECTION OF FLOW. ON SLOPES, ANCHOR SOD TO HOLD IN PLACE UNTIL SECURED BY PLANT GROWTH.
  - INSTALL AND/OR REPAIR EROSION AND SEDIMENT CONTROL MEASURES BEFORE LAYING TOPSOIL. MAINTAIN EROSION CONTROL MEASURES DURING TOPSOILING.
  - MAXIMUM SLOPE TOPSOIL CAN BE USED IS 2:1.

**TOPSOIL RESTORATION**  
SCALE: NTS

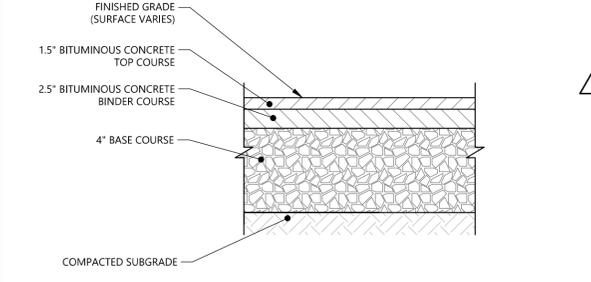


**ASPHALT ACCESS ROAD**  
SCALE: NTS

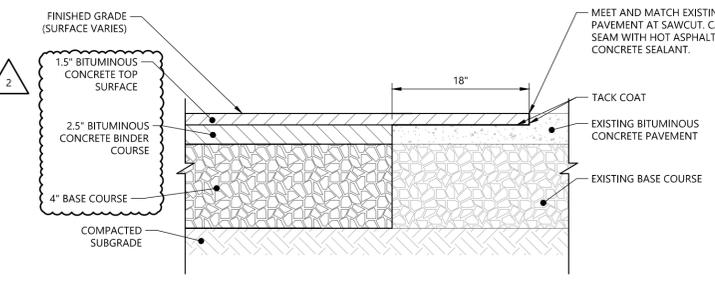


**CONCRETE REPAIR**  
SCALE: NTS

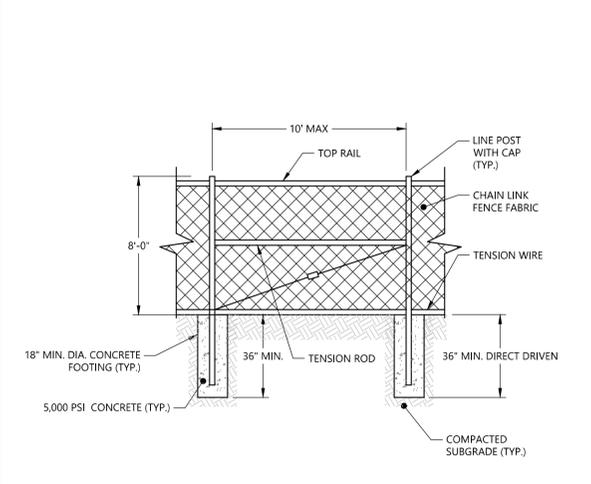
- NOTES:**
- PROVIDE 1.5" PREMOLDED BITUMINOUS EXPANSION JOINTS AT 20 FT. INTERVALS.
  - PROVIDE CONTROL JOINTS AT 5-FEET INTERVALS.
  - PROVIDE LIGHT BROOM FINISH WITH 3-INCH EDGE.



**BITUMINOUS CONCRETE PAVEMENT SECTION**  
SCALE: NTS

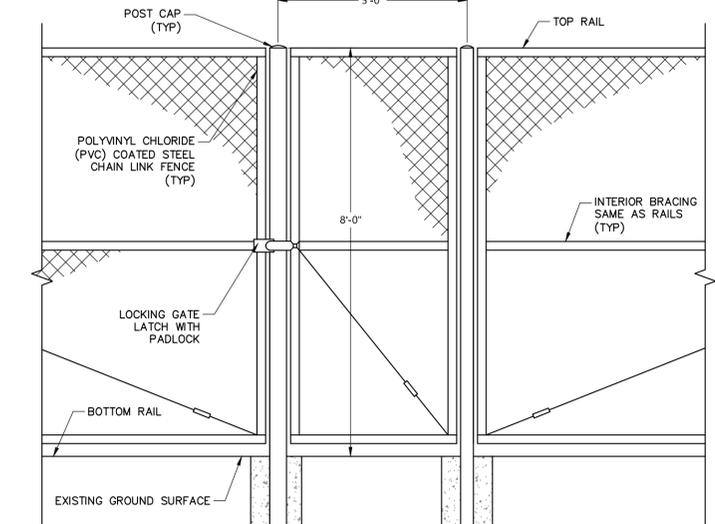


**BITUMINOUS CONCRETE PAVEMENT BUTT JOINT**  
SCALE: NTS



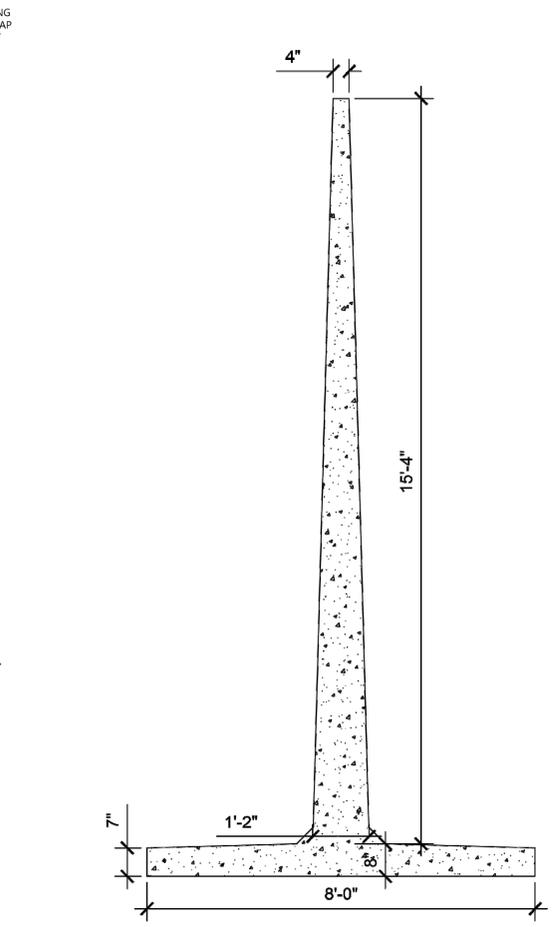
- NOTES:**
- ALL FENCING AND HARDWARE TO BE LIST MATERIAL.
  - INSTALL ALL FENCING AND HARDWARE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

**CHAIN LINK FENCE**  
SCALE: NTS

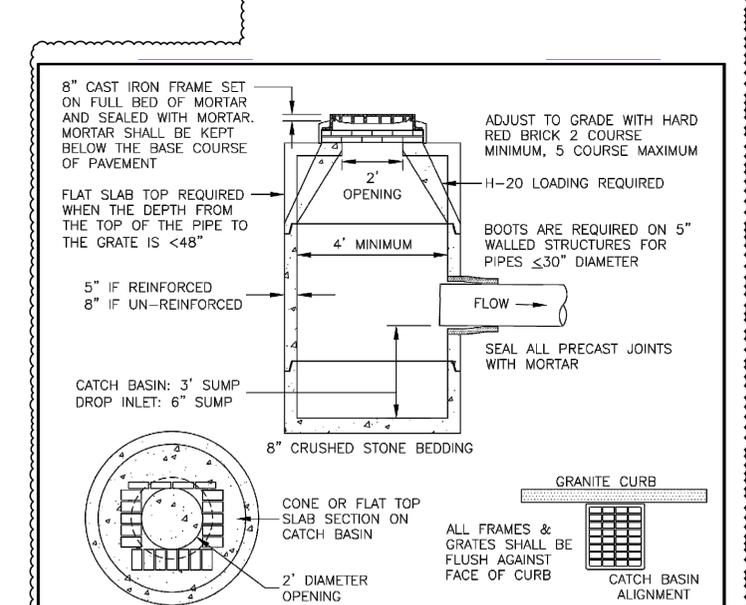


- NOTES:**
- ALL GATE COMPONENTS SHALL MATCH FENCING MATERIAL AS SPECIFIED.

**PEDESTRIAN GATE**  
SCALE: NTS



**PRECAST CONCRETE BARRIER WALL**  
SCALE: NTS



- NOTES:**
- CONCRETE SHALL BE 4,000 PSI AFTER 28 DAYS.
  - SEAL ALL PRECAST JOINTS WITH BITUMASTIC SEAL.
  - LIFT HOLES AND BOOT RECESSES ARE TO BE SEALED WITH MORTAR FLUSH TO THE OUTSIDE STRUCTURE WALL PRIOR TO BACKFILLING.
  - MINIMUM DEPTH FROM RIM TO INVERT OF THE HIGHEST PIPE SHALL BE: 12"φ=3.7', 15"φ=3.9', 18"φ=4.2', 24"φ=4.8', 30"φ=5.3', 36"φ=5.8'
  - ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES. NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.
  - MANHOLES AND TRAFFIC SIGNAL LOOPS SHALL BE SEPARATED BY A MINIMUM OF 2' TO ALLOW FOR MAINTENANCE OF STRUCTURE.
  - THREE FLANGED FRAMES SHALL BE USED FOR INSTALLATIONS ADJACENT TO VERTICAL GRANITE CURB.
  - NHDOT TYPE "F" GRATE REQUIRED FOR ROADWAYS HAVING SLOPES EQUAL TO OR GREATER THAN 3%. TYPE "F" SHALL BE BICYCLE SAFE.
  - BRICK WORK SHALL BE RECTANGULAR AND CONFORM TO THE DIMENSIONS OF THE GRATE BEING USED. TYPE "B" GRATES SHALL BE ALIGNED WITH THE 22" DIMENSION AGAINST THE CURB.

| NO. | REVISION  | DATE  | City of Concord Engineering Services Division | SECTION: STORM DRAIN |
|-----|-----------|-------|---|----------------------|
| 1   | DRAFTING  | 11/11 |   | DRAWING NO. SD-6     |
| 2   | SUMP DIM. | 3/19  |   | DATE: 12/08 PAGE: 1  |
|     |           |       | <b>CATCH BASIN / DROP INLET</b>               |                      |

**Woodard & Curran**  
138 River Road, Suite 212  
Andover, Massachusetts 01810  
800.426.4262 | www.woodardcurran.com

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PROLIER NEW ENGLAND COMPANY LLC  
69 ROVER STREET  
EVERETT, MA 02149

ROSS TSANTOULIS  
No. 14122  
LICENSED PROFESSIONAL ENGINEER

Digitally signed by Ross Tsantoulis  
DN: C=US, E=ross@woodardcurran.com, O=Woodard & Curran, OU=Woodard & Curran (Chilmark), CN=Ross Tsantoulis  
Date: 2026.02.18 12:11:07-0500

**60% DESIGN**  
**NOT FOR CONSTRUCTION**

CLIENT INFO:  
RADIUS RECYCLING  
CONCORD, NH

SANDQUIST FACILITY  
STORMWATER IMPROVEMENTS

| REV | MM/DD/YY   | DESCRIPTION                 |
|-----|------------|-----------------------------|
| 2   | 02/18/2026 | RESPONSE TO PERMIT COMMENTS |

|              |                          |
|--------------|--------------------------|
| JOB NO:      | 0224539.48               |
| DATE:        | DECEMBER 2025            |
| SCALE:       | AS NOTED                 |
| DESIGNED BY: | YI                       |
| DRAWN BY:    | KC                       |
| CHECKED BY:  | RT                       |
| FILENAME:    | 0224539.48-C-900-903.dwg |

DRAWING TITLE:  
**CIVIL**  
**DETAILS 2**

DRAWING NO:  
**C-901**

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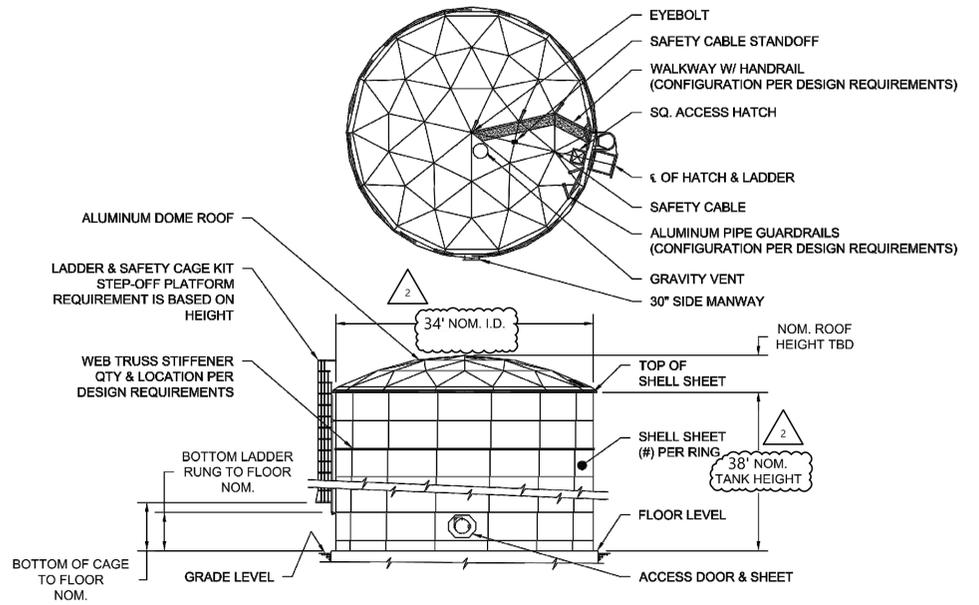
| REVISIONS |                     |            |
|-----------|---------------------|------------|
| REV       | DESCRIPTION         | DATE       |
| A         | INITIAL RELEASE     | 10/17/2019 |
| B         | ADDED PLAN VIEW     | 1/3/2020   |
| C         | REMOVED NOTES       | 8/28/2020  |
| D         | UPDATED TITLE BLOCK | 11/10/2020 |

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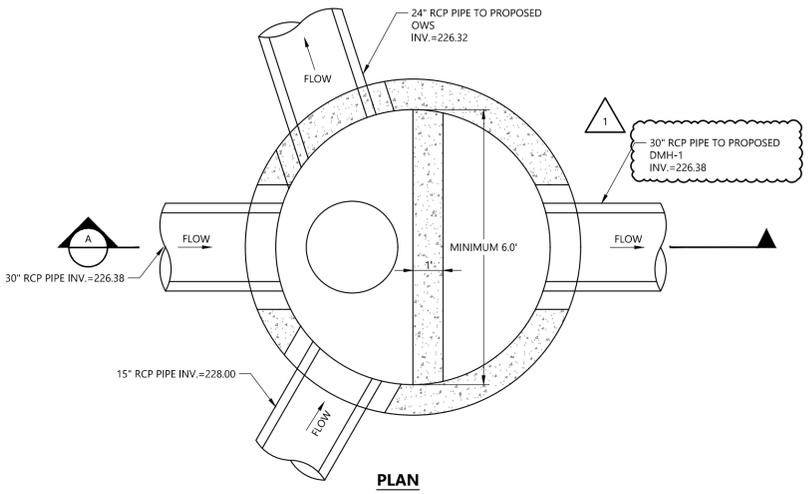
BY: MK  
DATE: 10/17/2019  
REVISION: D

DESCRIPTION: CONSTRUCTION DETAIL WATER TANK W/ CONCRETE FOUNDATION 26" OR LARGER  
DWG #: 261352-TYP  
SHEET #: 1

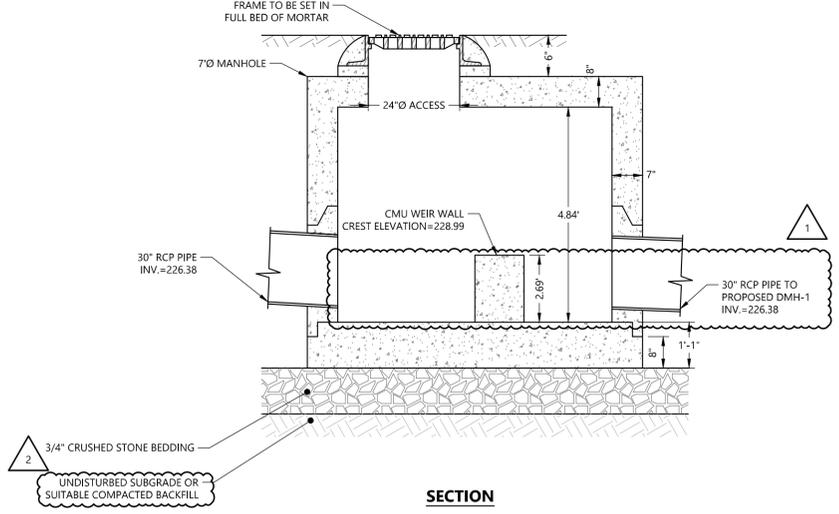
STATEWIDE AQUASTORE, Inc.  
Premium Water and Wastewater Storage Tanks



ABOVE GROUND STORAGE TANK  
SCALE: NTS



PLAN



SECTION

- MANHOLE DIVERSION STRUCTURE GENERAL NOTES:**
- MANUFACTURED TO MEET OR EXCEED: ASTM C-478 & AASHTO M 199 SPECS.
  - CONCRETE = 4,000 PSI, MINIMUM CEMENT PER ASTM C-478 (6.1).
  - REINFORCED STEEL CONFORMS TO LATEST ASTM A 185 SPECIFICATIONS, 0.24 SQ. IN/LINEAR FT. AND 0.24 SQ. IN (BOTH WAYS) BASE BOTTOM.
  - STEEL REINFORCEMENT TO MEET OR EXCEED AASHTO H5-20 LOADING.
  - MANHOLE STEPS MEET LATEST OSHA REGULATION 29 CFR1910.27, SECTION 16 OF ASTM SPECIFICATION C478 AND SECTION 10 OF ASTM SPECIFICATION C497.
  - ONE POUR MONOLITHIC BASE.
  - 5" MINIMUM WALL THICKNESS IF REINFORCED, 8" IF UN-REINFORCED.
  - SEAL ALL PRECAST JOINTS WITH BITUMASTIC SEAL.
  - LIFT HOLES AND BOOT RECESSES ARE TO BE SEALED WITH MORTAR FLUSH TO THE OUTSIDE STRUCTURE WALL PRIOR TO BACKFILLING.
  - ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES. NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

DIVERSION MANHOLE  
SCALE: NTS

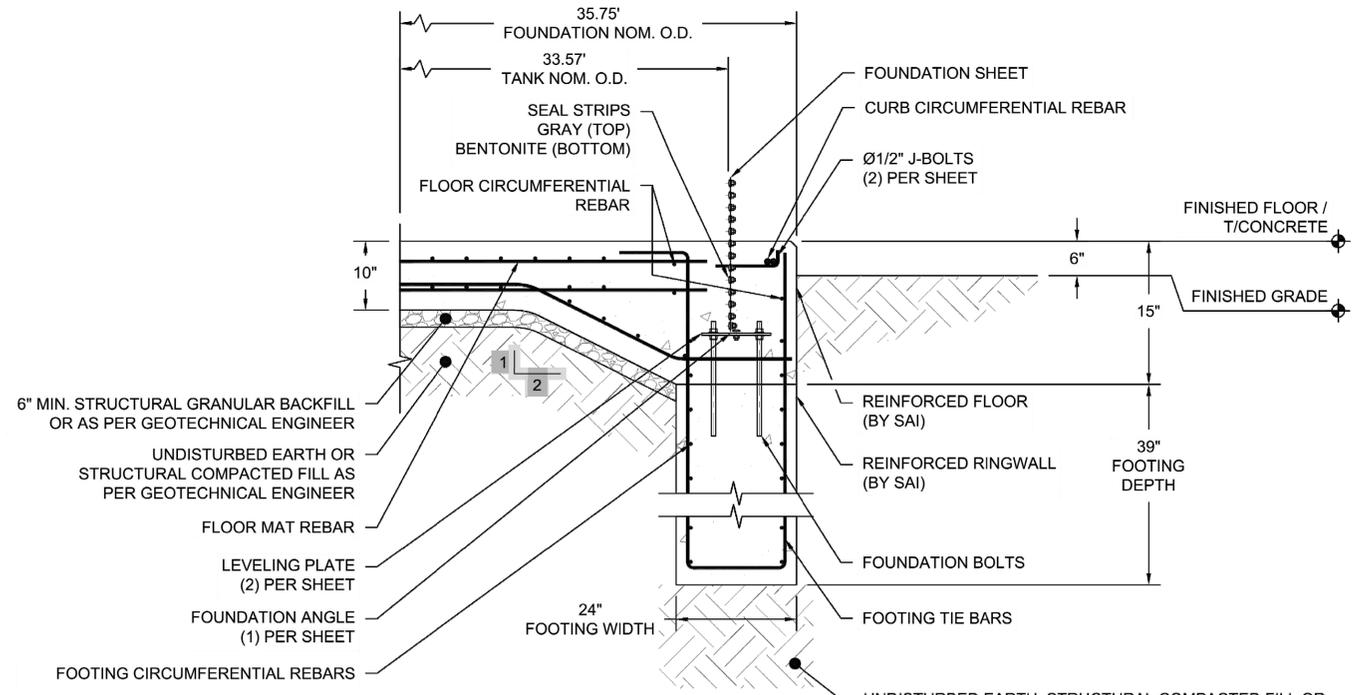
| REVISIONS |             |           |
|-----------|-------------|-----------|
| REV       | DESCRIPTION | DATE      |
| 1         | PRELIMINARY | 7/18/2024 |

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BY: MK  
DATE: 7/18/2024  
REVISION: 1

DESCRIPTION: CONCORD, NH  
MODEL 34-38 - PROJECT#5466  
SECTION THROUGH FOOTING  
DWG#: 5466-34-38-FND  
SHEET #: 1

STATEWIDE AQUASTORE, Inc.  
Premium Water and Wastewater Storage Tanks



ABOVE GROUND STORAGE TANK  
SCALE: NTS

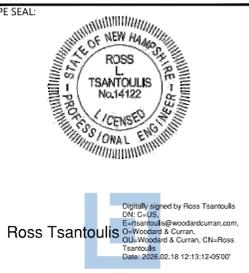
- NOTES:**
- DRAWING IS NOT TO SCALE.

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RADIUS RECYCLING  
CONCORD, NH

SANDQUIST FACILITY  
STORMWATER IMPROVEMENTS

| REV | MM/DD/YY   | DESCRIPTION                 |
|-----|------------|-----------------------------|
| 2   | 02/18/2026 | RESPONSE TO PERMIT COMMENTS |
| 1   | 02/05/2026 | RESPONSE TO PERMIT COMMENTS |

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| JOB NO:      | 0224539-48               |
| DATE:        | DECEMBER 2025            |
| SCALE:       | AS NOTED                 |
| DESIGNED BY: | YI                       |
| DRAWN BY:    | KC                       |
| CHECKED BY:  | RT                       |
| FILENAME:    | 0224539-48-C-900-903.dwg |

DRAWING TITLE:  
**CIVIL  
DETAILS 3**

DRAWING NO:  
**C-902**

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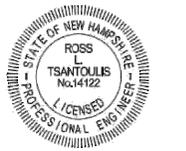


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69 ROVER STREET  
EVERETT, MA 02149

PE SEAL:



Digital signed by Ross Tsantoulis  
ENR - C-145  
E-mail: ross@woodardcurran.com,  
D:\Woodard & Curran, OJ-Woodard  
& Curran, OJ-Ross Tsantoulis  
Date: 2026.02.18 12:13:36-05'00'

**60% DESIGN  
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CLIENT INFO:

RADIUS RECYCLING  
CONCORD, NH

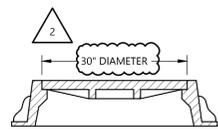
SANDQUIST FACILITY  
STORMWATER IMPROVEMENTS

| REV | MM/DD/YY   | DESCRIPTION                 |
|-----|------------|-----------------------------|
| 2   | 02/18/2026 | RESPONSE TO PERMIT COMMENTS |

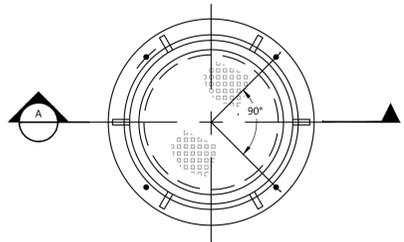
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| JOB NO:      | 0224539-48               |
| DATE:        | DECEMBER 2025            |
| SCALE:       | AS NOTED                 |
| DESIGNED BY: | YI                       |
| DRAWN BY:    | KC                       |
| CHECKED BY:  | RT                       |
| FILENAME:    | 0224539-48-C-900-903.dwg |

DRAWING TITLE:  
**CIVIL  
DETAILS 4**

DRAWING NO.:  
**C-903**



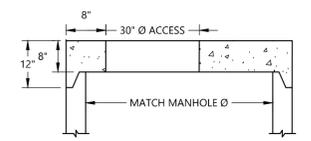
SECTION A-A'



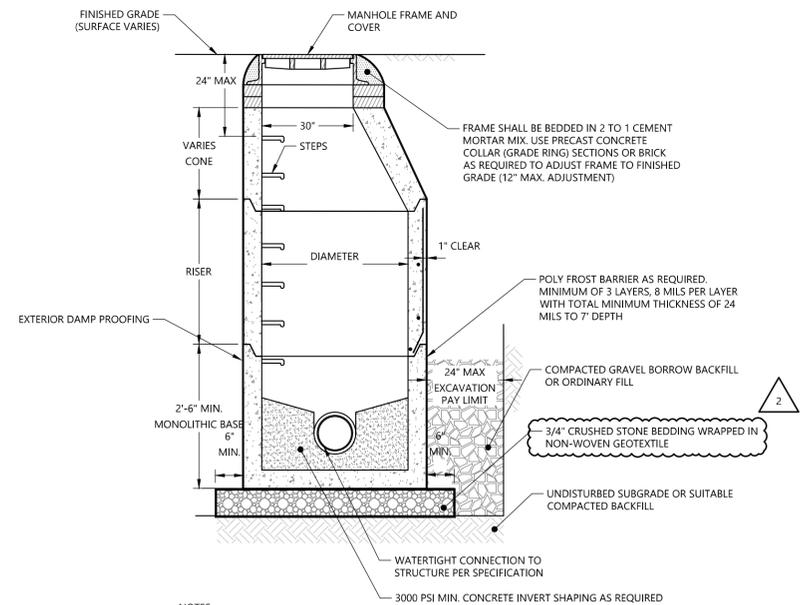
PLAN

**MANHOLE FRAME AND COVER**

SCALE: NTS



SHALLOW ALTERNATE TOP SLAB



- NOTES:**
1. PRECAST CONCRETE STRUCTURES AND CASTINGS SHALL BE SUITABLE FOR HS-20 LOADINGS.
  2. PRECAST CONCRETE STRUCTURES SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478.
  3. ALTERNATE TOP SLAB MAY BE USED AS DICTATED BY DESIGN AND/OR FIELD CONDITIONS.
  4. MANHOLE FRAME AND GRATE(S) SHALL MEET MUNICIPAL AND STATE SPECIFICATIONS WHEN APPLICABLE.
  5. REFER TO PROJECT SPECIFICATIONS FOR MORE DRAINAGE MANHOLE INFORMATION.
  6. JOINT SEALANT BETWEEN SECTIONS SHALL BE BUTYL RUBBER.
  7. PROVIDE ANTIFLOTATION SLAB EXTENSION AS REQUIRED TO SATISFY ANTIFLOTATION REQUIREMENTS.
  8. 5" MINIMUM WALL THICKNESS IF REINFORCED, 8" IF UN-REINFORCED.
  9. SEAL ALL PRECAST JOINTS WITH BITUMASTIC SEAL.
  10. LIFT HOLES AND BOOT RECESSES ARE TO BE SEALED WITH MORTAR FLUSH TO THE OUTSIDE STRUCTURE WALL PRIOR TO BACKFILLING.
  11. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES. NO MORE THAN 75% OF A HORIZONTAL CROSS-SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

**PRECAST CONCRETE DRAINAGE MANHOLE**

SCALE: NTS

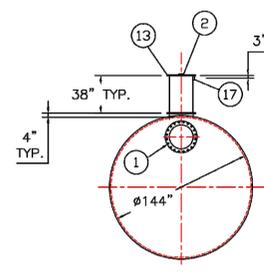
**GENERAL SPECIFICATIONS**

NO. REQ'D: (1)  
CAPACITY: 40000 GALLONS  
TYPE: HTC, HIGHGUARD, SINGLE WALL  
MATERIAL: MILD CARBON STEEL  
FLOW RATE: 4000 GPM  
GAUGE: BASED ON 60" MAX BURIAL  
SHELL- 3/8"  
HEADS- 5/16"

**SURFACE PREP:**  
SSPC NO.6 BLAST ALL EXTERIOR SURFACES  
SSPC NO.10 BLAST ALL INTERIOR SURFACES

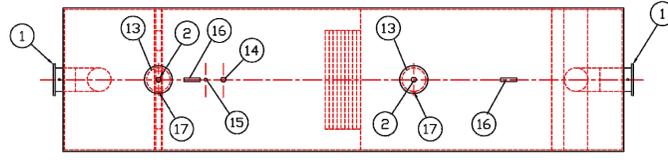
**COATING:** MATERIAL THICKNESS  
EXTERIOR- HIGHGUARD (75 MILS)  
INTERIOR- CHEMLINE 4200 PW (15 MILS)

**CONSTRUCTION:**  
LAP FIT & WELD ALL EXTERIOR SEAMS  
OPERATING PRESSURE : ATMOSPHERIC



END VIEW

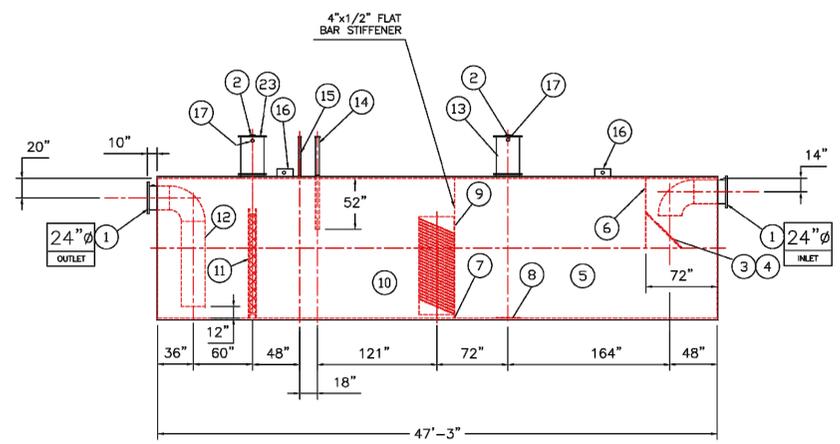
**NOTE:**  
ALL RIGHTS RESERVED. THIS DRAWING OR ANY PART THEREOF MUST NOT BE REPRODUCED IN ANY FORM WITHOUT THE WRITTEN PERMISSION OF HIGHLAND TANK.  
HIGHLAND TANK SHALL BE RESPONSIBLE ONLY FOR ITEMS INDICATED ON THIS FABRICATION DRAWING UNLESS OTHERWISE NOTED. CUSTOMER IS RESPONSIBLE FOR VERIFYING CORRECTNESS OF SIZE / LOCATION OF FITTINGS - ACCESSORIES & COUPLERS SHOWN ON THIS DRAWING



PLAN

- PROVIDED EQUIPMENT**
1. 150# R.F.S.O. FLANGE W/ 2" FNPT FOR VENT
  2. 4" FNPT FOR GAUGE WITH PLUG
  3. VELOCITY HEAD DIFFUSION BAFFLE
  4. WEAR PLATE
  5. SEDIMENT CHAMBER
  6. UNDERFLOW BAFFLE
  7. SLUDGE BAFFLE
  8. STRIKER PLATES
  9. PARALLEL CORRUGATED PLATE COALESCER, CORELLA PVC PLATES (3" PLATE SPACING)
  10. OIL/WATER SEPARATOR CHAMBER
  11. 6" THICK PETROSREEN COALESCER MATERIAL INSTALLED W/ PULL ROD SHIPPED LOOSE
  12. STEEL OUTLET DOWNCOMER
  13. 24" MANWAY WITH BOLT-ON EXTENSION SHIPPED LOOSE
  14. 4" FNPT FOR OIL PUMP-OUT WITH INTERNAL PVC PIPE INSTALLED & RISER PIPE SHIPPED LOOSE
  15. 2" FNPT FOR LEVEL SENSOR WITH RISER PIPE SHIPPED LOOSE
  16. LIFTING LUG
  17. 2" FNPT FOR VENT

- ANCILLARY PROVIDED EQUIPMENT**
- (4) 24" FIBREX MANWAY GASKETS
  - (4) SETS OF NUTS/BOLTS/WASHERS FOR 24" MANWAY
- NOTES**
1. POLYURETHANE HIGHGUARD TANK IS NOT APPROVED FOR THE STORAGE OF HEATED PRODUCTS
  2. ALL VENT PIPING BY INSTALLER
  3. 15000 VOLT SPARK TEST PROVIDED AT FACTORY



ELEVATION

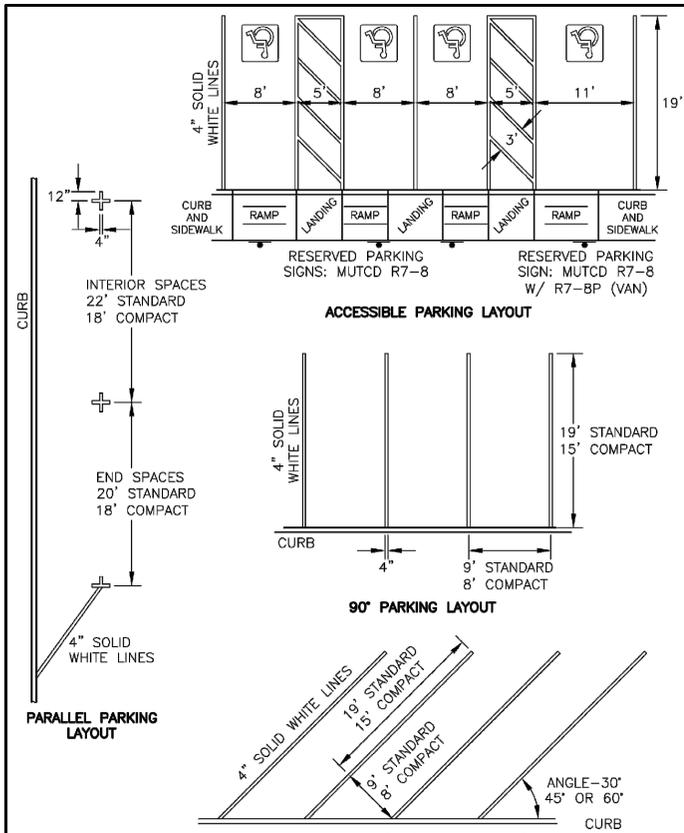
**HIGHLAND TANK OIL WATER SEPERATOR**

SCALE: NTS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES  
TOLERANCES ARE ± .01" OR ± .1"

CHK'D BY: \_\_\_\_\_  
DATE: \_\_\_\_\_  
DWG. BY: 40000HGSWHTCHDS

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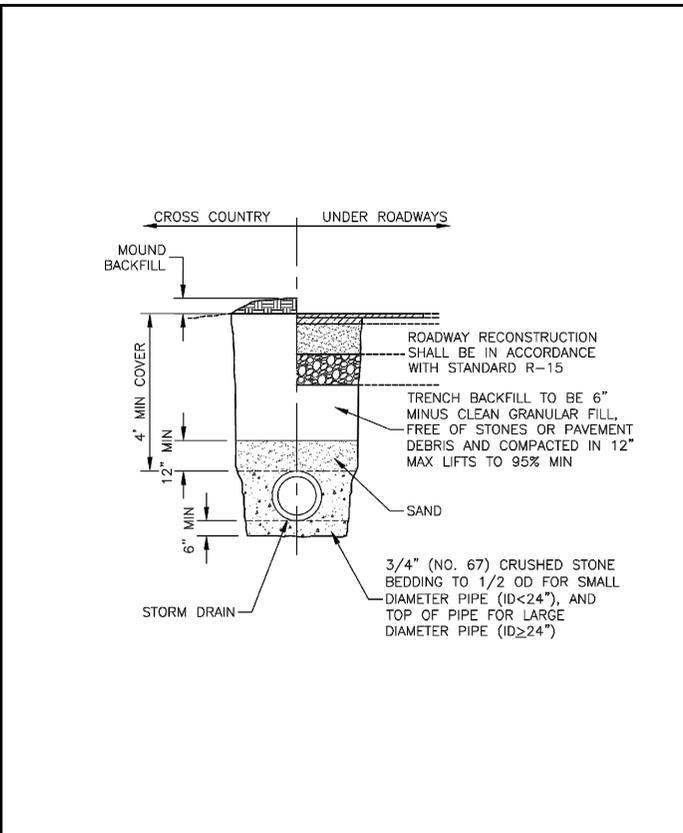


| NO. | REVISION           | DATE  | City of Concord Engineering Services Division | SECTION: SITE/STREET |
|-----|--------------------|-------|---|----------------------|
| 1   | Standard Reference | 01.19 |   |                      |

| NO. | REVISION | DATE | City of Concord Engineering Services Division | SECTION: SITE/STREET |
|-----|----------|------|---|----------------------|
| 1   |          |      |   |                      |

**PARKING SPACE LAYOUT**  
 DRAWING NO. M-4  
 DATE: 12/08 PAGE: 1

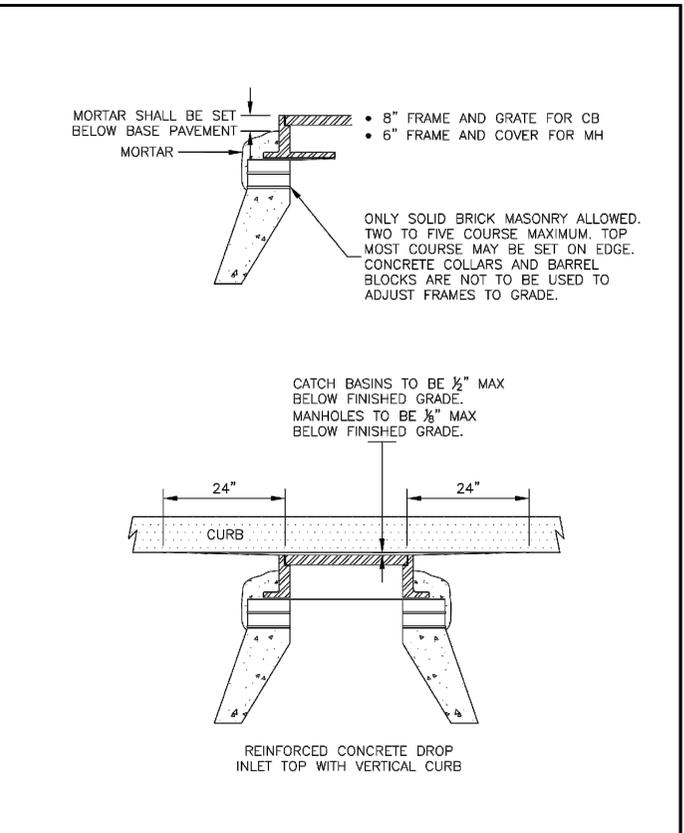


| NO. | REVISION           | DATE  | City of Concord Engineering Services Division | SECTION: STORM |
|-----|--------------------|-------|---|----------------|
| 1   | Standard Reference | 01.19 |   |                |

| NO. | REVISION | DATE | City of Concord Engineering Services Division | SECTION: STORM |
|-----|----------|------|---|----------------|
| 1   |          |      |   |                |

**STORM DRAIN TRENCH**  
 DRAWING NO. SD-1  
 DATE: 04/15 PAGE: 1



| NO. | REVISION | DATE | City of Concord Engineering Services Division | SECTION: SEWER/STORM |
|-----|----------|------|---|----------------------|
| 1   | DRAFTING | 4.15 |   |                      |

| NO. | REVISION | DATE | City of Concord Engineering Services Division | SECTION: SEWER/STORM |
|-----|----------|------|---|----------------------|
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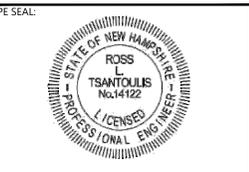
**ADJUSTING FRAMES TO GRADE**  
 DRAWING NO. SD-5  
 DATE: 12/08 PAGE: 1



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Ross Tsantoulis  
 Digitally signed by Ross Tsantoulis  
 DN: cn=ross, o=woodardcurran.com, ou=Woodard & Curran, c=US, email=ross@woodardcurran.com  
 Date: 2025.02.18 12:13:51 -0500

**60% DESIGN NOT FOR CONSTRUCTION**

CLIENT INFO:  
**RADIUS RECYCLING CONCORD, NH**

**SANDQUIST FACILITY STORMWATER IMPROVEMENTS**

| REV | MM/DD/YY   | DESCRIPTION                 |
|-----|------------|-----------------------------|
| 2   | 02/18/2026 | RESPONSE TO PERMIT COMMENTS |

JOB NO: 0224539.48  
 DATE: DECEMBER 2025  
 SCALE: AS NOTED  
 DESIGNED BY: YI  
 DRAWN BY: KCC  
 CHECKED BY: RT  
 FILENAME: 0224539.48-C-900-903.dwg

DRAWING TITLE:  
**CIVIL DETAILS 5**

DRAWING NO:  
**C-904**

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STRUCTURAL ABBREVIATIONS

Table with 4 columns: Abbreviation, Description, Abbreviation, Description. Includes entries like & ANGLE, L CHANNEL, @ NUMBER, # AMERICAN CONCRETE INSTITUTE, etc.

STRUCTURAL GENERAL NOTES

A. GENERAL STRUCTURAL NOTES

- 1. DESIGN IS IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE.
2. THESE NOTES SHALL APPLY TO ALL WORK, EXCEPT AS NOTED OTHERWISE.
3. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS AND SPECIFICATIONS OF ALL DISCIPLINES WHICH SHALL BE REFERRED TO FOR SIZES AND LOCATIONS OF ALL OPENINGS, PENETRATIONS, DRAINS, PADS, CONDUIT, EQUIPMENT, AND PIPE SUPPORTS, ETC.

B. SITE CONDITIONS, EXCAVATION, SHORING, AND DEWATERING

- 1. GENERAL FINDINGS
a. SITE FILLS PRESENT UNKNOWN RISK OF ADVERSE FOUNDATION PERFORMANCE. REMOVE AND REPLACE BELOW TANK FOUNDATION.
b. GROUND WATER ENCOUNTERED 10-12 FEET BELOW GRADE CORRESPONDING WITH MERRIMACK RIVER ELEVATION. FLUCTUATIONS IN GROUND WATER UNKNOWN.
c. EARTHWORK AND FOUNDATION CONSTRUCTION ACTIVITIES SHOULD OCCUR DURING DRIER, NON-FREEZING WEATHER OF SPRING, SUMMER, AND FALL. RUBBER Tired CONSTRUCTION EQUIPMENT SHOULD NOT OPERATE DIRECTLY ON THE NATIVE SOILS, WHEN WET. EXCAVATION OF BEARING SURFACES SHOULD BE COMPLETED WITH A SMOOTH-EDGED BUCKET TO LESSEN SUBGRADE DISTURBANCE.

C. SUBGRADE PREPARATION, BACKFILL, AND COMPACTION

- 1. SOIL UNDER TANK FOUNDATION AND MAT SLAB SHALL BE EXCAVATED TO FROST DEPTH AND BACKFILLED WITH NON-FROST SUSCEPTIBLE STRUCTURAL FILL OR BE INSULATED TO PROTECT FROM ADVERSE FROST ACTION AS RECOMMENDED HEREIN.
2. EXISTING FILLS WHERE ENCOUNTERED TO DEPTHS OF 6-6.5 FT WITHIN THE FOOTPRINT OF THE PROPOSED CONSTRUCTION AREA. EXISTING FILLS, RELIC STRUCTURES, FOUNDATIONS, UTILITIES AND DEBRIS SHALL BE COMPLETELY REMOVED FROM BENEATH THE PROPOSED STRUCTURES AND SLAB AREAS. EXTENT OF REMOVAL TO BE 1 FT PAST EDGE OF FOUNDATION ON ALL SIDES. THE OVER-EXCAVATED AREAS SHALL BE BACKFILLED WITH COMPACTED STRUCTURAL FILL. ALTERNATIVELY THE EXISTING FILLS MAY BE IMPROVED WITH STONE ONE AGGREGATE PIERS.

D. FOUNDATION AND SLAB DESIGN CRITERIA

- 1. ALL EXTERIOR FOOTINGS AND FOOTINGS WITHIN UNHEATED PORTIONS OF STRUCTURES SHALL BE CONSTRUCTED BELOW THE FROST DEPTH OF AT LEAST 4-FEET BELOW THE LOWEST ADJACENT FINAL GRADE
2. ALLOWABLE SOIL BEARING CAPACITY = 3,000 PSF
3. MODULUS OF SUBGRADE REACTION = 75 PCI
4. BASE FRICTION FACTOR = 0.5
5. TOTAL UNIT WEIGHT OF BACKFILL = 125 PCF
6. INTERNAL FRICTION ANGLE = 30 DEGREES
7. AT-REST LATERAL EARTH PRESSURE COEFFICIENT = 0.5

E. EMBEDDED CONDUITS AND PIPES

- 1. REFER TO SHEET S-002

F. GENERAL REINFORCED CONCRETE REQUIREMENTS

- 1. REFER TO SHEET S-002

G. SEQUENCE OF WORK

- 1. REFER TO SHEET S-002 FOR FORM REMOVAL, THERMAL PROTECTION PERIOD AND CURING PERIOD REQUIREMENTS.
2. CONCRETE FOR TANK WALLS SHALL NOT BE PLACED UNTIL CONCRETE BASE SLABS HAVE ACHIEVED 75 PERCENT OF THE SPECIFIED 28-DAY CONCRETE COMPRESSIVE STRENGTH AND NO SOONER THAN 7-DAYS AFTER THE FINAL TANK SLAB PLACEMENT.
3. CONCRETE TANK WALLS SHALL OBTAIN 100 PERCENT OF THE SPECIFIED 28-DAY CONCRETE COMPRESSIVE STRENGTH BEFORE COMMENCEMENT OF FILLING THE STRUCTURE WITH WATER TO COMPLETE TIGHTNESS TESTING. CONTRACTOR'S CONSTRUCTION SCHEDULE MUST INCLUDE TIME TO PERFORM TIGHTNESS TESTING AND TIME TO PERFORM ALL TANK LEAK REPAIRS.
4. TANK WALLS SHALL NOT BE BACKFILLED UNTIL CONCRETE TANKS ARE TIGHTNESS TESTED AND ALL LEAKS IDENTIFIED DURING THE TIGHTNESS TEST ARE REPAIRED TO THE SATISFACTION OF THE ENGINEER, OWNER, AND OWNER'S REPRESENTATIVE AT CONTRACTOR'S OWN EXPENSE.

H. EXISTING CONDITIONS

- 1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AS THEY RELATE TO NEW CONSTRUCTION. REPORT TO THE ENGINEER OF RECORD ALL OBSERVATIONS AND ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.
2. WHERE DETAILS FOR SPECIFIC CONDITIONS ARE NOT SHOWN ON THESE PLANS, USE DETAILS FOR THE MOST NEARLY SIMILAR CONDITIONS SHOWN ON THE STRUCTURAL DRAWINGS AS DETERMINED BY THE STRUCTURAL ENGINEER. REPORT ANY COORDINATION ISSUES IMMEDIATELY TO THE ENGINEER.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE FOR A SAFE AND EFFICIENT METHOD OF SHORING AND/OR BRACING THE STRUCTURE DURING ALL CONSTRUCTION PHASES. SUBMIT AN OUTLINE OF PROPOSED PROCEDURES BEFORE CONSTRUCTION COMMENCES.
4. STRUCTURAL MEMBERS SHALL NOT BE MODIFIED IN THE FIELD WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER. IN THE EVENT OF A CONSTRUCTION OR FABRICATION ERROR, THE CONTRACTOR SHALL PREPARE A SKETCH WITH A PROPOSED REPAIR, AND SUBMIT IT TO THE ENGINEER FOR APPROVAL PRIOR TO PERFORMING ANY CORRECTIVE WORK.
5. VERIFY ALL FIELD DIMENSIONS, LOCATIONS, AND GEOMETRY OF EXISTING STRUCTURES PRIOR TO CONSTRUCTION. ALL EXISTING DIMENSIONS ARE APPROXIMATE. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCY BETWEEN THE FIELD CONDITIONS AND THE CONTRACT DRAWINGS.
6. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PROTECT THE EXISTING BUILDING ELEMENTS TO REMAIN DURING DEMOLITION. DO NOT CUT OR ALTER ANY OF THE EXISTING STRUCTURAL OR ARCHITECTURAL ELEMENTS TO REMAIN WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. PROVIDE PROTECTION FOR EXISTING WALLS, COLUMNS, BRACES, AND OTHER BUILDING ELEMENTS TO REMAIN FROM FALLING DEBRIS. ANY DAMAGE TO EXISTING ELEMENTS TO REMAIN SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.
I. DESIGN LOADS AND BUILDING CODES:
1. DESIGN LOADS ARE PER THE 2021 INTERNATIONAL BUILDING CODE AS AMENDED BY THE NEW HAMPSHIRE STATE BUILDING CODE.
2. RISK CATEGORY OF BUILDING: II
TERRAIN CATEGORY: C
WIND-BORNE DEBRIS REGION: NO
3. SOIL LOADS PER ASCE 7-16: REFER TO FOUNDATION AND SLAB DESIGN CRITERIA, THIS SHEET.
4. ROOF LIVE LOADS PER ASCE 7-16: 20 PSF NON-REDUCIBLE
5. SNOW LOADS PER ASCE 7-16: GROUND SNOW LOAD Pg= 60 PSF
EXPOSURE FACTOR Ce= 1.0
THERMAL FACTOR Ct= 1.0
IMPORTANCE FACTOR Is= 1.0
6. WIND LOADS PER ASCE 7-16: DESIGN WIND SPEED (V)= 112 MPH
EXPOSURE CATEGORY C
HURRICANE PRONE REGION= NO
EXPOSURE COEFFICIENT Kz= 1.0
TOPOGRAPHIC FACTOR Kzt= 1.0
DIRECTIONALITY FACTOR Kd= 0.85
VELOCITY PRESSURE qz= 17.03 PSF
7. FLOOD LOADS PER ASCE 7-16: FEMA ZONE X
DESIGN FLOOD STILLWATER EL = <1.0 FT NOT IN MAPPED TSUNAMI ZONE
8. SEISMIC LOAD PER ASCE 7-16: SHORT SPECTRAL RESP ACC (Ss)= 0.417
1-SEC SPECTRAL RESP ACC (S1)= 0.085
SITE CLASS E
SEISMIC IMPORTANCE FACTOR (Ie)= 1.0
SPECTRAL RESP COEF (Sds)= 0.537
SPECTRAL RESP COEF (Sd1)= 0.238
SEISMIC DESIGN CATEGORY (SDC)= D
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE (BY ACI 350.3)
RESPONSE MODIFICATION FACTOR R= 3.25 (BURIED)
9. FLOOR LIVE LOADS PER ASCE 7-16: SLABS ON GRADE, STAIRS, PLATFORMS AND WALKWAYS = 100 PSF UNO
REFER TO INDIVIDUAL AREA STRUCTURAL DRAWING NOTES. NON-REDUCIBLE, UNO.



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PE SEAL:



Digitally signed by Scott Michael Hawk
DN: cn=Scott Michael Hawk, o=Woodard & Curran, ou=Woodard & Curran, cn=Scott Michael Hawk
Date: 2025.02.18 08:04:17 -0500

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CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

REV MM/DD/YY DESCRIPTION

JOB NO: 0224539.48

DATE: DECEMBER 2025

SCALE: NO SCALE

DESIGNED BY: JBH

DRAWN BY: TPK

CHECKED BY: SJT

FILENAME:

DRAWING TITLE:

STRUCTURAL ABBREVIATIONS, NOTES, AND DESIGN LOADS

DRAWING NO:

S-001

NOTE: THIS IS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS. NOT ALL ITEMS SHOWN HERE APPEAR ON THE CONTRACT DOCUMENTS

GENERAL CONCRETE NOTES

A. GENERAL REQUIREMENTS

- 1. DESIGN AND CONSTRUCTION SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE (ACI) 'BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY' (ACI 318-19), AND 'SPECIFICATIONS FOR STRUCTURAL CONCRETE' (ACI 301), LATEST EDITION.
2. GROUT SHALL BE A NON-SHRINK, NON-CORROSIVE, NON-STAINING, NATURAL AGGREGATE (NONMETALLIC) GROUT AND SHALL BE A PREMIXED, PACKAGED TYPE, INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS. GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 7 DAYS.
3. REBAR SHALL BE INSTALLED WITHIN THE TOLERANCES SET FORTH IN ACI 117 STANDARD SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION.
4. PROVIDE 3/4-INCH, 45 DEGREE CHAMFER ON ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE.
5. UNLESS A GREATER COVER IS INDICATED, COVER FOR REINFORCEMENT SHALL NOT BE LESS THAN THE FOLLOWING (IN INCHES):
a. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3
b. CONCRETE EXPOSED TO EARTH OR WEATHER
NO 6 THROUGH NO 18 BARS: 2
NO 5 BAR, W31 OR D31 WIRE, AND SMALLER: 2
c. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS, WALLS, JOISTS
NO 14 AND NO 18 BARS: 2
NO 11 BAR AND SMALLER: 2
6. REFERENCE APPROVED CONTRACT DRAWINGS FOR FOUNDATION LOCATIONS AND ORIENTATIONS ON THE SITE.
7. ALL CAST-IN-PLACE ANCHOR BOLTS AND EMBEDDED STRUCTURAL ANCHORAGES AND SUPPORTS SHALL BE SUPPLIED BY THE STEEL CONTRACTOR AND INSTALLED BY THE CONCRETE CONTRACTOR, UNLESS OTHERWISE SPECIFIED.
8. PERMANENTLY EXPOSED EMBEDDED PLATES AND ANGLES SHALL BE HOT-DIPPED, GALVANIZED PER ASTM A153 AFTER FABRICATION, UNO. NO LOADS OR WELDS SHALL BE PLACED ON EMBEDDED PLATES OR ANGLES FOR A MINIMUM OF 7 DAYS AFTER CASTING.
9. COORDINATE OPENINGS AND EMBEDS IN CONCRETE WITH ALL OTHER TRADES.
10. NOTIFY ENGINEER OF ANY DISCREPANCIES DISCOVERED WITH OTHER TRADES.
11. ALL PLAN DIMENSIONS ARE INDICATED ON A HORIZONTAL PLANE.
12. TESTS SHALL BE PERFORMED FOR ALL CONCRETE WORK WITH A COMPRESSIVE STRENGTH GREATER THAN 2000 PSI.
13. ALL CONCRETE SHALL BE FIELD TESTED BY AN INDEPENDENT TESTING LABORATORY AS PER ASTM SPECIFICATIONS (PAID FOR BY CONTRACTOR). ONE SET OF 5 STANDARD 4" DIAMETER x 8" TALL CURED CYLINDERS SHALL BE PREPARED, PER ASTM C31, FOR EACH 100 CUBIC YARDS OF CONCRETE PLACED EACH DAY. CYLINDERS SHALL BE TRANSPORTED TO THE TESTING LAB WITHIN 48 HOURS OF FORMING, BUT NOT SOONER THAN 8 HOURS AFTER FINAL SET. CYLINDERS SHALL BE CURED IN A TEMPERATURE CONTROLLED COOLER, SUPPLIED BY THE TESTING SERVICE. CYLINDERS SHALL BE TESTED FOR COMPRESSIVE STRENGTH IN ACCORDANCE WITH ASTM C39. ONE CYLINDER SHALL BE TESTED AT 7 DAYS, THREE AT 28 DAYS, AND ONE HELD IN RESERVE. TESTS FOR AIR CONTENT, PER ASTM C173 OR ASTM C231, AND TESTS FOR SLUMP, PER ASTM C143, SHALL BE COMPLETED FOR THE FIRST TRUCK LOAD OF CONCRETE DELIVERED DURING EACH DAY OF CONCRETE PLACEMENT. ADDITIONAL TESTS FOR AIR CONTENT SHALL BE TAKEN FOR EACH 100 CUBIC YARDS OF CONCRETE PLACED AND WHENEVER ANY SLUMP ADJUSTMENTS ARE MADE.

B. CONCRETE ANCHORS

- 1. ANCHOR BOLTS SHALL BE SET AND PLUMBED WITH TEMPLATES. ALL EMBEDDED ITEMS SHALL BE ACCURATELY SECURED IN PLACE. FOR ANCHOR BOLT DETAILS.
2. ADHESIVE ANCHOR BOLTS SHALL NOT BE INSTALLED PRIOR TO A MINIMUM OF 21 DAYS AFTER CONCRETE IS POURED.

C. REINFORCED CONCRETE TANKS, PUMP STATIONS, TIGHTNESS TESTING, AND CONCRETE REPAIRS

- 1. TANKS AND CONTAINMENT AREAS: COMPRESSIVE STRENGTH OF CONCRETE AT 28-DAYS = 4,500 PSI.
2. REINFORCEMENT: ASTM A615, GRADE 60.
3. CONCRETE DESIGN IS PER AMERICAN CONCRETE INSTITUTE "350-20 CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES."
4. WATERSTOPS SHALL BE CONTINUOUS THROUGHOUT, AND INTERSECTIONS SHALL BE FACTORY FABRICATED. WATERSTOPS AT VERTICAL JOINTS SHALL EXTEND TO WITHIN 6-INCHES OF THE TOP OF THE STRUCTURE, UNLESS NOTED OTHERWISE.
5. ALL PROPOSED CONCRETE TANKS, PUMP STATIONS, ETC, SHALL BE TIGHTNESS TESTED, AND REPAIRED AT CONTRACTOR'S OWN EXPENSE.
6. TIGHTNESS TESTING SHALL BE IN ACCORDANCE WITH ACI 350.1-10 "SPECIFICATION FOR TIGHTNESS TESTING OF ENVIRONMENTAL ENGINEERING CONCRETE CONTAINMENT STRUCTURES" CHAPTER 2, PART 1 QUALITATIVE CRITERIA AND PART 2 QUANTITATIVE CRITERIA. WOODARD&CURRAN WILL PROVIDE FIELD TESTING FORMS FOR EACH TANK TO BE COMPLETED BY CONTRACTOR AND SUBMITTED TO ENGINEER FOR RECORD OF TESTING PROGRAM AND COMPLETION OF TANK REPAIRS. PART 2 ACCEPTANCE CRITERIA = 0.0125% OF VOLUME PER DAY.
7. CONTRACTOR IS RESPONSIBLE FOR ALL CONCRETE TANK LEAK REPAIRS AT NO ADDITIONAL COST TO THE OWNER.

D. CONCRETE CURE & SEAL COMPOUND

- 1. PROVIDE THE FOLLOWING FOR HORIZONTAL AND VERTICAL EXPOSED TO VIEW CONCRETE SURFACES OF ALL EXTERIOR CONCRETE: CLEAR SILANE COATING EQUAL TO "CERTI-VEK GUARD CLEAR" BY VEXCON CHEMICALS, A ONE-STEP CURE AND PENETRATING WATER REPELLANT SEALER MEETING ASTM C1315, TYPE 1, CLASS B, NCHRP-244. APPLY (2) COATS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

E. NATIONAL SPECIFICATIONS INCORPORATED THROUGH REFERENCE

- DESIGN, MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS CONTAINED THEREIN, UNLESS OTHERWISE NOTED ON THE DRAWINGS:
ACI 117 SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS AND COMMENTARY.
ACI 304 GUIDE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE
ACI 305R GUIDE TO HOT WEATHER CONCRETING
ACI 306R GUIDE TO COLD WEATHER CONCRETING
ACI 347R GUIDE TO FORMWORK FOR CONCRETE
ACI 211.1 STANDARD PRACTICE FOR SELECTING PROPORTIONS FOR NORMAL, HEAVYWEIGHT, AND MASS CONCRETE
ACI 302.1R GUIDE TO CONCRETE FLOOR AND SLAB CONSTRUCTION
ACI 308.1 SPECIFICATION FOR CURING CONCRETE
ACI SP-4 FORMWORK FOR CONCRETE
ACI SP-66 DETAILING MANUAL
AWS D1.4 STRUCTURAL WELDING CODE-REINFORCING STEEL
CRSI MSP MANUAL OF STANDARD PRACTICE
CRSI 10-PLACE CRSI RECOMMENDED PRACTICE FOR "PLACING REINFORCING BARS"

F. CONCRETE MIX

- 1. MATERIALS FOR CONCRETE AND PROPORTIONING SHALL CONFORM TO THE REQUIREMENTS OF ACI 211.1, ACI 301, AND ACI 318.
2. PORTLAND CEMENT SHALL CONFORM TO ASTM C150, TYPE I, (ASSUMED, PENDING GEOTECHNICAL REPORT)
3. CONCRETE COMPRESSIVE STRENGTH @ 28 DAYS
a. REINFORCED CONCRETE FOUNDATIONS, PADS, AND WALLS: 4500 PSI
b. LEAN CONCRETE (MUD MAT, STRUCTURAL FILL, DUCT BANKS): 500 PSI
4. EXTERIOR CONCRETE AND CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL BE AIR-ENTRAINED. REFER TO SPECIFICATIONS FOR AIR CONTENT.
5. REFERENCE ASTM C33 FOR GRADATION, PROPORTIONS OF AGGREGATE TO CEMENT FOR ANY CONCRETE MIX SHALL BE SUCH AS TO PRODUCE A MIXTURE WHICH, CONSISTENT WITH THE METHOD OF PLACING, WILL WORK READILY INTO CORNERS AND ANGLES OF THE FORMS AND AROUND REINFORCEMENT WITHOUT PERMITTING THE MATERIALS TO SEGREGATE OR EXCESS WATER TO COLLECT ON THE SURFACE.
6. ADMIXTURES TO BE USED IN CONCRETE SHALL BE SUBJECT TO PRIOR APPROVAL BY THE ENGINEER.

G. REINFORCEMENT

- 1. REINFORCEMENT SHALL BE ASTM 615 GRADE 60 DEFORMED BAR. WELDED WIRE FABRIC AND SPIRAL REINFORCEMENT SHALL CONFORM TO ASTM A1064.
2. CONTINUOUS REINFORCING #11 AND SMALLER SHALL BE LAPPED AT SPLICES. LAP LENGTH OF SPLICES SHALL NOT BE LESS THAN CLASS B SPLICE. MINIMUM SPLICE LENGTHS SHALL BE AS SPECIFIED ON SHEET S-932.
3. DO NOT SPLICE MORE THAN 50% OF BARS AT ONE LOCATION.
4. REBAR SHALL BE INSTALLED WITHIN THE TOLERANCES SET FORTH IN ACI 117 STANDARD SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS. EXCEPT THAT FOR FOOTINGS, SLABS, MATS, AND WALLS SHOWN ON THESE DRAWINGS THE FOLLOWING TOLERANCES AND PROVISIONS MAY BE USED WHERE PENETRATIONS FROM NON-STRUCTURAL ITEMS SUCH AS ELECTRICAL DUCTS, PIPES OR OTHER ITEMS EMBEDDED INTO THE CONCRETE OCCUR:
a. IN A LAYER OF REGULARLY SPACED BARS, AN INDIVIDUAL REBAR MAY BE RELOCATED WITHIN THE SAME PLANE AS THE LAYER, UP TO 3 INCHES FROM THE LOCATION SPECIFIED ON THE DRAWINGS.
b. WHERE A REBAR IS INTERRUPTED BY A NON-STRUCTURAL EMBEDDED ITEM, THE REBAR SHALL BE CUT 2 INCHES CLEAR FROM THE ITEM. FOR EACH REBAR THAT IS INTERRUPTED BY A NON-STRUCTURAL EMBEDDED ITEM, AN ADDITIONAL REBAR SHALL BE ADDED ADJACENT TO THE NON-STRUCTURAL ITEM AND IN THE SAME LAYER AS THE INTERRUPTED REBAR, AND SHALL EXTEND BEYOND THE ITEM A DISTANCE EQUAL TO THE CLASS A SPLICE SHOWN IN ONI SHEET S-932. WHERE THIS LENGTH CANNOT BE ACHIEVED DUE TO EDGE OF CONCRETE, TERMINATE REBAR WITH A STANDARD HOOK. WHERE THE ADDED REBAR RESULTS IN ON CENTER SPACING LESS THAN 3 INCHES WITHIN THE LAYER, THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR REVIEW AND REVISION PRIOR TO FINAL INSTALLATION OF REBAR.
5. ALL REINFORCING STEEL THAT IS TO BE WELDED, WHERE INDICATED ON THE CONTRACT DRAWINGS, SHALL BE DEFORMED BARS CONFORMING TO ASTM A706 AND WELDED IN ACCORDANCE WITH AWS D1.4.
6. FIELD BENDING OF REINFORCING STEEL SHALL NOT BE DONE WITHOUT PRIOR AUTHORIZATION OF THE STRUCTURAL ENGINEER. ALL REINFORCEMENT SHALL BE BENT COLD, UNLESS OTHERWISE PERMITTED BY THE ENGINEER. REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT, UNLESS PERMITTED BY THE ENGINEER IN ACCORDANCE WITH ACI 318.
7. REINFORCING STEEL SHALL NOT BE BENT OR DISPLACED FOR THE CONVENIENCE OF OTHER TRADES UNLESS APPROVED BY THE STRUCTURAL ENGINEER.
8. THE PROPER TYPE AND QUANTITIES OF ACCESSORIES SHALL BE FURNISHED TO HOLD THE REINFORCING STEEL IN PLACE WHILE THE CONCRETE IS BEING PLACED. REINFORCEMENT SHALL BE TIED OFF AT A MINIMUM OF 50% OF THE INTERSECTIONS.
9. PRIOR TO SHIPPING OF REINFORCING STEEL TO THE FIELD, SHOP DRAWINGS SHALL BE SUPPLIED TO THE ENGINEER FOR REVIEW.
10. FOR MINIMUM REINFORCING REQUIREMENTS AT CONCRETE OPENINGS AND RE-ENTRANT CORNERS, SEE TYPICAL CONCRETE DETAIL DRAWINGS.
11. ADHESIVE FOR REBAR DOWELS SHALL BE HILTI-HIT RE 500 V3 ADHESIVE.

H. CONCRETE SPECIALTIES AND ACCESSORIES

- 1. ISOLATION JOINT MATERIAL SHALL BE 1/2" ASPHALT IMPREGNATED FIBERBOARD, OR AN OPEN CELL FOAM MATERIAL APPROVED FOR CONCRETE EXPANSION JOINT.
I. FORMWORK
1. FORMWORK SHALL BE IN ACCORDANCE WITH ACI 301 AND ACI 347R.
2. ACI SPECIAL PUBLICATION 4 SHALL BE USED AS A GUIDE.
3. WHERE WOOD FORMS ARE USED, THEY SHALL BE PLY FORM OR GRADED EXTERIOR TYPE PLYWOOD, GRADE BB OR BETTER.
4. FORMS OR SHORES SHALL NOT BE REMOVED WITHOUT THE APPROVAL OF THE CONSTRUCTION MANAGER. ALL REMOVAL SHALL BE ACCOMPLISHED IN A MANNER TO PREVENT DAMAGE TO THE CONCRETE. FORMS SHALL GENERALLY NOT BE REMOVED PRIOR TO THE MINIMUM NUMBER OF DAYS INDICATED BELOW:
SLABS AND BEAM BOTTOMS: 14 DAYS
WALLS AND FOOTINGS: 3 DAYS
COLUMNS: 3 DAYS
5. STRUCTURES SHALL NOT BE LOADED UNTIL CONCRETE HAS CURED TO A MINIMUM COMPRESSIVE STRENGTH OF 75 PERCENT OF THE DESIGN COMPRESSIVE STRENGTH AT 28 DAYS.

J. EMBEDDED CONDUITS AND PIPES

- 1. ALL ELECTRICAL AND INSTRUMENTATION CONDUIT EMBEDDED IN CONCRETE SHALL BE INSTALLED, ARRANGED, AND SPACED AS FOLLOWS:
2. OUTSIDE DIAMETER OF CONDUIT SHALL NOT EXCEED 1/3 OF CONCRETE THICKNESS.
3. CONDUITS SHALL NOT BE PLACED CLOSER THAN 3 OUTSIDE DIAMETERS ON CENTER.
4. CONDUITS SHALL NOT BE EMBEDDED IN CONCRETE SLABS LESS THAN 4 INCHES THICK.
5. ONLY 2 CONDUITS MAY CROSS AT ANY POINT AND THE SUM OF THE OUTSIDE DIAMETER OF THE CROSSING CONDUITS SHALL NOT EXCEED 1/3 OF THE CONCRETE THICKNESS.
6. PROVIDE A MINIMUM 1-1/2 INCH CONCRETE COVER OVER CONDUITS.
7. CONDUITS SHALL NOT BE LOCATED BETWEEN BOTTOM OF REINFORCING STEEL AND BOTTOM OF SLAB.
8. ALUMINUM CONDUIT SHALL NOT BE EMBEDDED IN CONCRETE AND NO CONDUIT IS PERMITTED IN BEAMS, COLUMNS OR GIRDERS.

K. CONSTRUCTION

- 1. PLACING OF CONCRETE SHALL BE IN ACCORDANCE WITH ACI 301 AND ACI 304.
2. PUMPING OR PNEUMATIC CONVEYING EQUIPMENT SHALL BE OF SUITABLE KIND WITH ADEQUATE PUMPING CAPACITY. PNEUMATIC PLACEMENT SHALL BE CONTROLLED SO THAT SEGREGATION IS NOT APPARENT IN THE DISCHARGED CONCRETE. THE LOSS OF SLUMP IN PUMPING OR PNEUMATIC CONVEYING EQUIPMENT SHALL NOT EXCEED 2". CONCRETE SHALL NOT BE CONVEYED THROUGH PIPE MADE OF ALUMINUM OR ALUMINUM ALLOY. SLUMP SPECIFIED IN CONCRETE MIX NOTES SHALL BE AT CONVEYING DISCHARGE.
3. REFER TO MECHANICAL, PIPING, ELECTRICAL & VENDOR DRAWINGS FOR NON-STRUCTURAL EMBEDDED ITEMS.
4. ALL CONCRETE PLACED IN COLD WEATHER SHALL CONFORM TO REQUIREMENTS OF ACI 306R.
5. ALL CONCRETE PLACED IN HOT WEATHER SHALL CONFORM TO REQUIREMENTS OF ACI 305R.
6. CONCRETE CURING IS REQUIRED FOR ALL EXPOSED SURFACES. CONCRETE SURFACES SHALL BE KEPT AT MOIST CONDITION FOR AT LEAST 7 DAYS. ALTERNATIVELY, MEMBRANE TYPE OF CURING COMPOUND MAY BE USED. MASS CONCRETE SHALL BE CURED IN ACCORDANCE WITH ACI 301.
7. APPLY BONDING AGENT AT ALL CONSTRUCTION JOINT SURFACES. BONDING AGENT SHALL BE EPOXY RESIN AS MANUFACTURED BY SIKADUR OR ARMATEC.

L. CONCRETE FINISH

- 1. FLOOR FINISH
a. EXTERIOR FOUNDATIONS, SLABS, SIDEWALKS, FLOORS AND RAMPS SUBJECT TO VEHICULAR TRAFFIC, SHALL RECEIVE A BROOM FINISH. FLOOR SURFACE TOLERANCE SHALL COMPLY WITH ACI 117 REQUIREMENTS FOR A MODERATELY FLAT FLOOR SURFACE CLASSIFICATION.
2. FORMED SURFACES
a. AFTER THE REMOVAL OF FORMS, SURFACES OF CONCRETE SHALL BE FINISHED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 301, UNO. NO SURFACE MOCK-UPS ARE REQUIRED UNO.
b. SURFACE DEFECTS AND TIE HOLES SHALL BE REPAIRED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 301.
c. UNLESS STAINLESS STEEL, NONCORROSIVE, OR COATED TIES ARE USED, TIE HOLES IN SURFACES NOT TO BE EXPOSED IN THE FINISHED WORK SHALL BE CLEANED, THOROUGHLY DAMPENED, AND FILLED SOLID WITH PATCHING MORTAR.

M. CONCRETE MIX DESIGN SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:

MINIMUM 28 DAY COMPRESSIVE STRENGTH = 4,500 PSI
MAXIMUM WATER/CEMENTITIOUS MATERIALS = 0.42
MAXIMUM AGGREGATE SIZE = 3/4
AIR ENTRAINMENT= 6% +/- 1.5% (UNO)
SLUMP, AT POINT OF DELIVERY = 3 - 5 INCHES, 8" MAXIMUM W/ HIGH-RANGE WATER REDUCER

N. CONCRETE MATERIALS SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:

CEMENT = ASTM C150, TYPE 2
FLY ASH (OPTIONAL) = ASTM C618, CLASS F, 3 PERCENT MAXIMUM LOSS OF IGNITION
BLAST FURNACE SLAG (OPTIONAL) = ASTM C989, SLAG ACTIVITY CLASS (GRADE 100 OR 120)
AGGREGATE = ASTM C33
WATER = ASTM C1602
AIR-ENTRAINING ADMIXTURES = ASTM C260 AND SHALL BE FREE OF CHLORIDES
MID-RANGE WATER REDUCING AGENT = ASTM C494, TYPE A
SUPERPLASTICERS = ASTM C494, TYPE F OR G
WATER REDUCING-RETARDING AGENTS = ASTM C494, TYPE D.

- SUBMITTALS:
1. CONCRETE MIX DESIGNS WITH ADMIXTURE PRODUCT DATA
2. CURE AND SEAL PRODUCT DATA
3. REBAR SHOP DRAWINGS
4. CONCRETE TESTING RESULTS



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PE SEAL:



Digitally signed by Scott Michael Hawk
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Date: 2025.02.18 08:04:34-0500

60% DESIGN
NOT FOR CONSTRUCTION

CLIENT INFO:

RADIUS RECYCLING
CONCORD, NH

SANDQUIST FACILITY
STORMWATER IMPROVEMENTS

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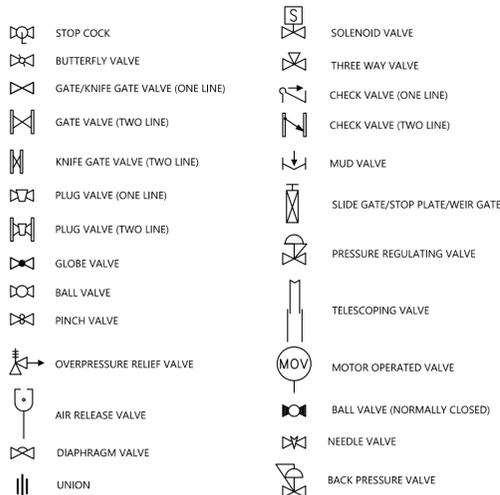




GENERAL NOTES

- 1. THIS SHEET REPRESENTS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS. NOT ALL ITEMS SHOWN WILL APPEAR ON THE CONTRACT DRAWINGS. ADDITIONAL ABBREVIATIONS, NOTES, OR LEGENDS MAY APPEAR TO INDICATE SPECIFIC CONDITIONS.
2. EQUIPMENT, PIPING, APPURTENANCES, ETC. SHOWN IN A "LIGHTER" LINE TYPE INDICATE THE ASSOCIATED ITEM IS "EXISTING"...
3. ALL EQUIPMENT, DIMENSIONS, PIPING, SYSTEM LAYOUTS, APPURTENANCES, ETC., HAVE BEEN LAID OUT AND SELECTED BY THE ENGINEER...

VALVE SYMBOLS



FLUID DESIGNATIONS

- AE - AERATION TANK EFFLUENT
AS - ALUMINUM SULFATE
BIS - SODIUM BISULFITE
BYP - BYPASS LINE
CCS - CHEMICAL CLEANING SOLUTION
CN - CENTRATE
CA - COMPRESSED AIR
CW - CITY WATER
DRN - DRAIN
DS - DEWATERED SLUDGE (CAKE)
EF - FINAL EFFLUENT
FCL - FERRIC CHLORIDE
FES - FINAL EFFLUENT SAMPLE
GRT - GRIT SLURRY
HVE - HEADWORKS EFFLUENT
HYP - SODIUM HYPOCHLORITE
IR - INTERNAL RECYCLE
IS - INFLUENT SAMPLE
LPA - LOW PRESSURE AIR
MLSS- MIXED LIQUOR SUSPENDED SOLIDS
MRC - MEMBRANE RECYCLE
NPW - PLANT WATER (TREATED EFFLUENT)
OD - ODOROUS AIR "FOUL"
OV - OVERFLOW
P - PROTECTED WATER
PE - PRIMARY EFFLUENT
PL - POLYMER SOLUTION
POLY - BLENDED POLYMER
PRM - MEMBRANE PERMEATE
PSC - PRIMARY SCUM
PSL - PRIMARY SLUDGE
RCW - RECYCLED WATER
RAS - RETURN ACTIVATED SLUDGE
RWW - RAW WASTE WATER
SA - SULFURIC ACID
SC - SCUM
SCR - SCREENINGS
SD - STORM DRAIN
SE - SECONDARY EFFLUENT
SEP - SEPTAGE
SH - SODIUM HYDROXIDE (CAUSTIC)
SN - SUPERNATANT
SPD - SUMP PUMP DISCHARGE
SS - SANITARY SEWER
SC - SECONDARY SCUM
SSL - SECONDARY SLUDGE
SW - SEAL WATER
TE - TERTIARY EFFLUENT
TWAS - THICKENED WASTE ACTIVATED SLUDGE
TW - POTABLE TOWN WATER (COLD)
UD - UNDERDRAIN
LVE - UV SYSTEM EFFLUENT
V - VENT
WAS- WASTE ACTIVATED SLUDGE

EQUIPMENT DESIGNATIONS

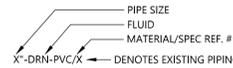
- AC - AIR COMPRESSOR
AG - AGITATOR
B - BLOWER
CBA - COARSE BUBBLE AERATION SYSTEM
CC - CROSS COLLECTOR
CF - CENTRIFUGE
CV - CONVEYOR
CY - GRIT CYCLONE
D - DECANTER
DC - DAVIT CRANE
FA - FAN
FB - FLOATING AERATOR
FBA - FINE BUBBLE AERATION SYSTEM
FM - FLOATING MIXER
G - GRINDER
GC - GRIT CLASSIFIER
H - HEATER
HT - HEAT TRACE
ICM - INDUCTION CHEMICAL MIXER
M - MOTOR
MC - MACERATOR
MG - MOTOR-OPERATED GATE
MV - MOTOR-OPERATED VALVE
MX - MIXER (VERTICAL SHAFT)
O - ODOR CONTROL SYSTEM
P - PUMP
PC - PRIMARY CLARIFIER
PDC - POWER DISTRIBUTION CENTER
PL - POLYMER FEED SYSTEM
RT - RECEIVER TANK (COMPRESSED AIR)
S - SCREEN
SC - SECONDARY CLARIFIER
SCL - SCUM COLLECTOR
SG - SLUDGE GATE
SLG - SLUDGE GATE
SM - SUBMERSIBLE MIXER
SMP - SAMPLER
SMU - SUBMERSIBLE MEMBRANE UNIT
SP - STOP PLATE
SRP - SEPTAGE RECEIVING STATION
T - TANK
TF - TERTIARY FILTER
UV - ULTRAVIOLET DISINFECTION SYSTEM
WG - WEIR GATE
WP - WASH PRESS

GENERAL ABBREVIATIONS

- ACFM - ACTUAL CUBIC FEET PER MINUTE
AFF - ABOVE FINISHED FLOOR
ALGNMT - ALIGNMENT
BF - BLIND FLANGE
ECC - ECCENTRIC
EL - ELEVATION
FF - FINISHED FLOOR
FLG - FLANGE
FL - FLOOR
FS - FLOW SWITCH
GPD - GALLONS PER DAY
GPH - GALLONS PER HOUR
GPM - GALLONS PER MINUTE
HB - HOSE BIB
HWL - HIGH WATER LEVEL
ICFM - INLET CUBIC FEET PER MINUTE
INCL - INCLUDED WITH PURCHASED EQUIPMENT
INV - INVERT
LWL - LOW WATER LEVEL
ML - MILLIAMP
MGD - MILLION GALLONS PER DAY
MGL - MILLIGRAMS PER LITER
MHW - MEAN HIGH WATER
MJ - MECHANICAL JOINT
MLW - MEAN LOW WATER
MSL - MEAN SEA LEVEL
NTS - NOT TO SCALE
OL - OVERLOAD
ON - ON CENTER
PE - PLAIN END
PLC - PROGRAMMABLE LOGIC CONTROLLER
PPD - POUND PER DAY
PSJA - POUNDS PER SQUARE INCH ABSOLUTE
PSIG - GAUGE POUNDS PER SQUARE INCH
RED - REDUCER
SCFM - CUBIC FEET PER MINUTE (STANDARD CONDITIONS)
SCH - SCHEDULE
SP - SET POINT (TYPICAL)
STDBY - STANDBY
TDH - TOTAL DYNAMIC HEAD
TYP - TYPICAL
UNO - UNLESS NOTED OTHERWISE
VCP - VENDOR SUPPLIED CONTROL PANEL
WV - WATER SURFACE

PIPE MATERIALS

- CI/X - CAST IRON PIPE
CU/1 - COPPER PIPE & TUBING
DI/1 - DUCTILE IRON PIPE (FLANGED)
DI/2 - DUCTILE IRON PIPE (MECHANICAL JOINT)
DI/3 - DUCTILE IRON (PUSH-ON JOINT)
DI/4 - DUCTILE IRON (RIGID GROOVED END)
PVC/1 - PVC PIPE (SOCKET WELDED - SCH. 80)
PVC/2 - PVC TUBING
PVC/3 - PVC DOUBLE CONTAINMENT PIPE
PVC/4 - PVC PIPE (CPVC)
PVC/5 - PVC PIPE (BURIED SDR 35)
PVC/6 - PVC PIPE (BURIED SDR 18)
PVC/7 - PVC PIPE (SOCKET WELDED - SCH. 40)
SS/1 - STAINLESS STEEL PIPE (SCH. 10S)
SS/2 - STAINLESS STEEL PIPE (SCH. 40)
SS/3 - STAINLESS STEEL TUBING
SS/4 - STAINLESS STEEL HOSE
CS/1 - CARBON STEEL PIPE
CS/2 - TEFLON LINED STEEL PIPE (FLANGED)
PE/1 - POLYETHYLENE PIPING (SOCKET WELDED)
PE/2 - POLYETHYLENE TUBING (HIGH DENSITY)
PE/3 - POLYETHYLENE TUBING (LOW DENSITY)
PE/4 - POLYETHYLENE PIPING (BURIED) - DR-11
PE/5 - POLYETHYLENE PIPING (BURIED STORM DRAIN)



PROCESS PIPE INSULATION TYPE LISTING

- I/1 - FIBROUS GLASS PIPE INSULATION
I/2 - ELASTOMERIC FOAM PIPE INSULATION
I/3 - MINERAL WOOL PIPE INSULATION
I/4 - POLYISOCYANURATE PIPE INSULATION

INSULATION JACKET TYPE LISTING

- J/1 - PVC INSULATION JACKET
J/2 - ALUMINUM INSULATION JACKET
J/3 - STAINLESS STEEL JACKET
J/4 - SHEET MEMBRANE JACKET

NOTES

- 1. REFER TO SPECIFICATION 40 42 13 "PROCESS PIPE INSULATION" FOR ADDITIONAL DETAILS AND REQUIREMENTS.

VALVE, STRAINER & COUPLING TYPE LISTING

SPECIALTY VALVES (TYPE V0#)

- V00 - BACK PRESSURE VALVE
V01 - METALLIC PRESSURE REGULATING VALVE
V02 - PVC PRESSURE REGULATING VALVE
V03 - BACK FLOW PREVENTER (RPZ)
V04 - METALLIC PRESSURE RELIEF VALVE
V05 - PVC PRESSURE RELIEF VALVE
V06 - WASTEWATER AIR RELEASE VALVE
V07 - WASTEWATER AIR & VACUUM VALVE
V08 - WASTEWATER COMBINATION AIR VALVE
V09 - TELESCOPING VALVE

PLUG VALVES (TYPE V4#)

- V40 - METALLIC PLUG VALVE (FLANGED)
V41 - BURIED PLUG VALVE (MECHANICAL JOINT)
V42 - MUD VALVE (PLUG TYPE DRAIN VALVE)
V43 - NOT USED
V44 - NOT USED
V45 - NOT USED
V46 - NOT USED
V47 - NOT USED
V48 - NOT USED
V49 - NOT USED

PINCH & DIAPHRAGM VALVES (TYPE V8#)

- V80 - PVC DIAPHRAGM VALVE
V81 - METALLIC PINCH VALVE (CLOSED BODY)
V82 - NOT USED
V83 - NOT USED
V84 - NOT USED
V85 - NOT USED
V86 - NOT USED
V87 - NOT USED
V88 - NOT USED
V89 - NOT USED

GATE VALVES (TYPE V1#)

- V10 - KNIFE GATE VALVE (RESILIENT SEATED)
V11 - KNIFE GATE VALVE (METAL SEATED)
V12 - GATE VALVE (RESILIENT SEATED)
V13 - GATE VALVE (METAL SEATED)
V14 - BURIED GATE VALVE (RESILIENT SEATED)
V15 - BURIED GATE VALVE (DOUBLE METAL DISK)
V16 - PVC GATE VALVE
V17 - BURIED INSERTION GATE VALVE (RESILIENT SEATED)
V18 - NOT USED
V19 - NOT USED

GLOBE & NEEDLE VALVES (TYPE V5#)

- V50 - METALLIC GLOBE VALVE
V51 - PVC GLOBE VALVE
V52 - METALLIC NEEDLE VALVE
V53 - NOT USED
V54 - NOT USED
V55 - NOT USED
V56 - NOT USED
V57 - NOT USED
V58 - NOT USED
V59 - NOT USED

STRAINERS (TYPE S0#)

- S01 - PVC Y-STRAINER (CLEAR)
S02 - METALLIC Y-STRAINER
S03 - PVC SIMPLEX BASKET STRAINER
S04 - METALLIC SIMPLEX BASKET STRAINER
S05 - PVC DUPLEX BASKET STRAINER
S06 - METALLIC DUPLEX BASKET STRAINER
S07 - WATER FILTER
S08 - NOT USED
S09 - NOT USED
S10 - NOT USED

BALL VALVES (TYPE V2#)

- V20 - PVC BALL VALVE (TRUE UNION SOCKET)
V21 - PVC BALL VALVE (FLANGED)
V22 - PVC BALL VALVE (THREADED)
V23 - METALLIC BALL VALVE (FLANGED)
V24 - METALLIC BALL VALVE (THREADED)
V25 - STAINLESS STEEL BALL VALVE (FLANGED)
V26 - STAINLESS STEEL BALL VALVE (THREADED)
V27 - NOT USED
V28 - NOT USED
V29 - NOT USED

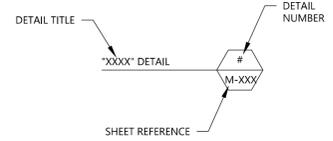
CHECK VALVES (TYPE V6#)

- V60 - PVC BALL CHECK VALVE
V61 - PVC SWING CHECK VALVE
V62 - METALLIC SWING CHECK VALVE
V63 - METALLIC FLAP CHECK VALVE
V64 - DOUBLE DISK SWING CHECK VALVE
V65 - SLANTING DISK SWING CHECK VALVE
V66 - WAFER STYLE SILENT CHECK VALVE
V67 - GLOBE STYLE SILENT CHECK VALVE
V68 - METALLIC BALL CHECK VALVE
V69 - DUCK BILL CHECK VALVE

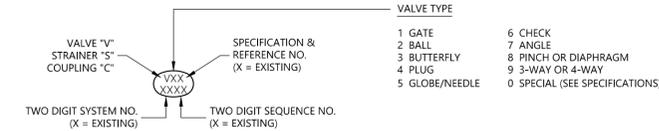
COUPLINGS (TYPE C#)

- C01 - SLEEVE TYPE COUPLINGS
C02 - FLEXIBLE SLEEVE TYPE COUPLINGS
C03 - FLEXIBLE SPLIT RING GROOVED END COUPLINGS
C04 - FLEXIBLE SPLIT RING SHOULDERED END COUPLINGS
C05 - RIGID SPLIT RING GROOVED END COUPLINGS
C06 - RIGID SPLIT RING SHOULDERED END COUPLINGS
C07 - SLEEVE TYPE FLANGED ADAPTORS
C08 - STAINLESS STEEL SLEEVE TYPE FLANGED ADAPTORS
C09 - SHORT BODY FLANGED ADAPTORS
C10 - SPLIT TYPE FLANGED ADAPTORS
C11 - LIQUID SERVICE EXPANSION JOINTS (FILLED ARCH)
C12 - AIR SERVICE EXPANSION JOINTS (BELLOW STYLE)
C13 - QUICK CONNECT COUPLINGS
C14 - RESTRAINED MECHANICAL JOINT COUPLINGS
C15 - DUCTILE IRON EXPANSION JOINT
C16 - EXPANSION JOINT

MECHANICAL DETAIL REFERENCE



VALVE, STRAINER & COUPLING TAG SYMBOL KEY



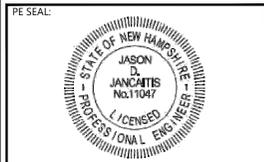
NOTES

- 1. REFER TO SPECIFICATION 40 05 23 "PROCESS VALVES AND STRAINERS FOR ADDITIONAL DETAILS AND REQUIREMENTS.
2. REFER TO SPECIFICATION 40 05 14 "PROCESS PIPE COUPLINGS & CONNECTORS FOR ADDITIONAL DETAILS AND REQUIREMENTS.



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SANDQUIST FACILITY STORMWATER IMPROVEMENTS

Table with 2 columns: REV, MM/DD/YY, DESCRIPTION. Contains revision history entries.

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DATE: DECEMBER 2025
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY: EY
CHECKED BY: ----
FILENAME: 0224539.48 M-9XX.dwg

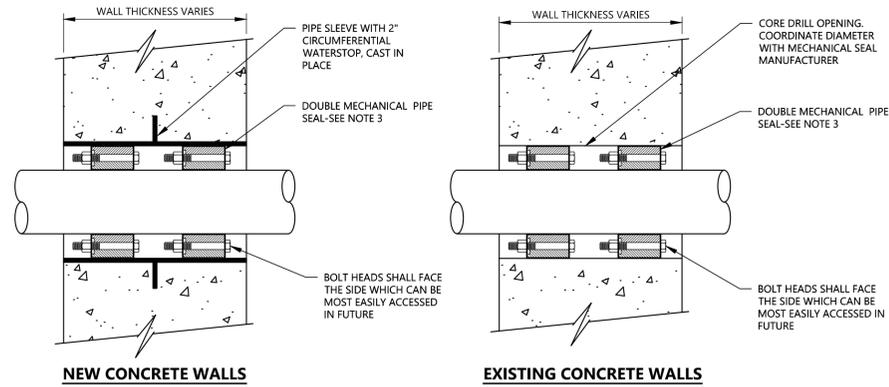
DRAWING TITLE: MECHANICAL MECHANICAL LEGEND

DRAWING NO: M-001

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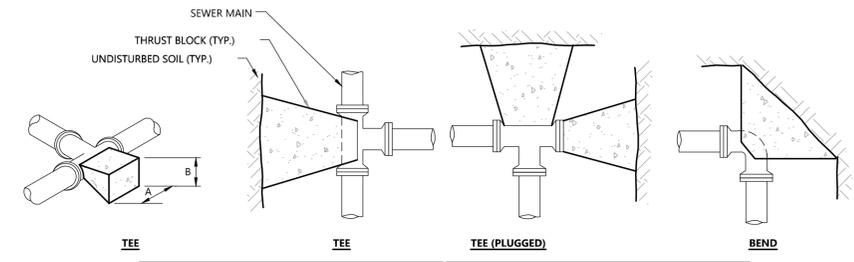




**NOTES:**

1. REFER TO MECHANICAL, HVAC AND PLUMBING DRAWINGS FOR PIPE PENETRATION LOCATIONS, TYPES, SIZES AND MATERIALS.
2. MECHANICAL SEAL AND WALL SLEEVE SIZE SHALL BE SIZED AS RECOMMENDED BY MANUFACTURER FOR EACH APPLICATION.
3. SINGLE MECHANICAL SEAL MAY BE USED FOR PENETRATIONS WHERE BOTH SIDES OF WALL ARE DRY.
4. MECHANICAL SEAL SHALL BE FIRE-RATED TO MATCH FIRE-RATING OF WALLS. SEE DRAWINGS FOR LOCATIONS OF FIRE-RATED WALLS.
5. FOR INSULATED PIPING, INSTALL INSULATION CONTINUOUS THROUGH PENETRATIONS AND PROVIDE 304 S.S. PROTECTION SHIELDS WITH 360° COVERAGE BETWEEN SEALS AND INSULATION.
6. REFER TO SPECIFICATION SECTION 40 05 17 "PROCESS PIPE SLEEVES AND SEALS" FOR ADDITIONAL DETAILS AND REQUIREMENTS.

**1 CONCRETE WALL DETAIL**  
SCALE: NTS



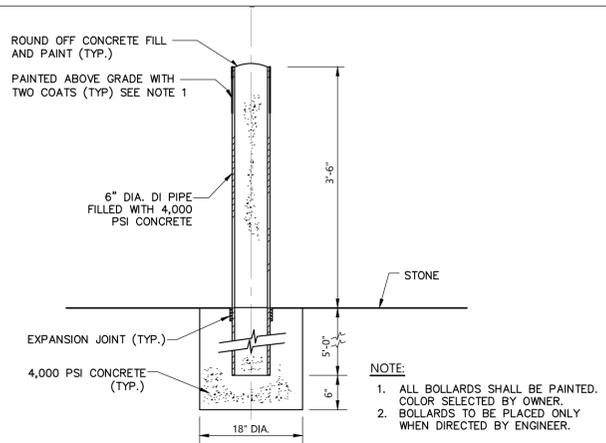
| SOIL TYPE | TEES |     | BENDS |     |
|-----------|------|-----|-------|-----|
|           | A    | B   | A     | B   |
| SOFT CLAY | 48"  | 24" | 48"   | 24" |
| SAND      | 24"  | 24" | 24"   | 24" |
| GRAVEL    | 24"  | 18" | 24"   | 18" |

| SOIL TYPE | TEES |     | BENDS |     |
|-----------|------|-----|-------|-----|
|           | A    | B   | A     | B   |
| SOFT CLAY | 60"  | 36" | 72"   | 36" |
| SAND      | 36"  | 30" | 48"   | 30" |
| GRAVEL    | 30"  | 24" | 40"   | 24" |

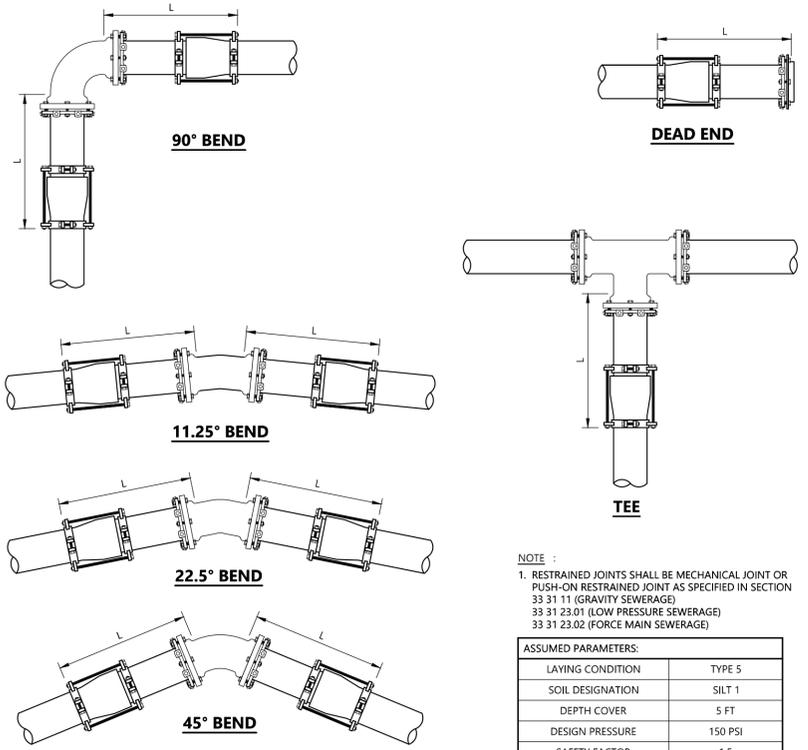
- NOTES:**
1. CONCRETE FOR ALL THRUST BLOCKS TO BE MINIMUM 3,000 PSI, 28 DAY STRENGTH, TYPE I CEMENT, 3/4" STONE.
  2. WHERE POSSIBLE, CONSTRUCT THRUST BLOCKS AGAINST UNDISTURBED SOIL. WHERE NOT POSSIBLE, PLACE FILL BETWEEN THE THRUST BLOCK AND THE UNDISTURBED SOIL COMPACTED TO 90% STANDARD PROCTOR DENSITY.
  3. WRAP FITTINGS WITH POLYETHYLENE PRIOR TO CONSTRUCTING THRUST BLOCKS. NO JOINTS SHALL BE COVERED WITH CONCRETE.
  4. THRUST BLOCK DIMENSIONS ARE BASED ON A MAXIMUM WATER MAIN PRESSURE OF 150 PSI.

**4 TYPICAL THRUST BLOCK DETAIL**  
SCALE: NTS



- NOTE:**
1. ALL BOLLARDS SHALL BE PAINTED. COLOR SELECTED BY OWNER.
  2. BOLLARDS TO BE PLACED ONLY WHEN DIRECTED BY ENGINEER.

**5 TYPICAL BOLLARD DETAIL**  
SCALE: NTS



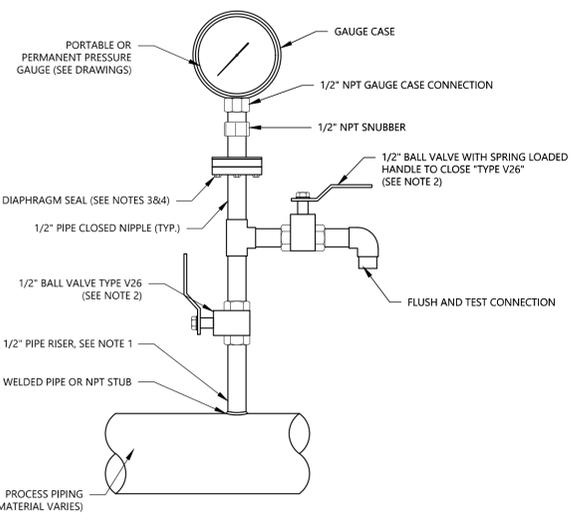
- NOTE :**
1. RESTRAINED JOINTS SHALL BE MECHANICAL JOINT OR PUSH-ON RESTRAINED JOINT AS SPECIFIED IN SECTION 33 31 11 (GRAVITY SEWERAGE), 33 31 23.01 (LOW PRESSURE SEWERAGE), 33 31 23.02 (FORCE MAIN SEWERAGE)

**ASSUMED PARAMETERS:**

|                  |         |
|------------------|---------|
| LAYING CONDITION | TYPE 5  |
| SOIL DESIGNATION | SILT 1  |
| DEPTH COVER      | 5 FT    |
| DESIGN PRESSURE  | 150 PSI |
| SAFETY FACTOR    | 1.5     |

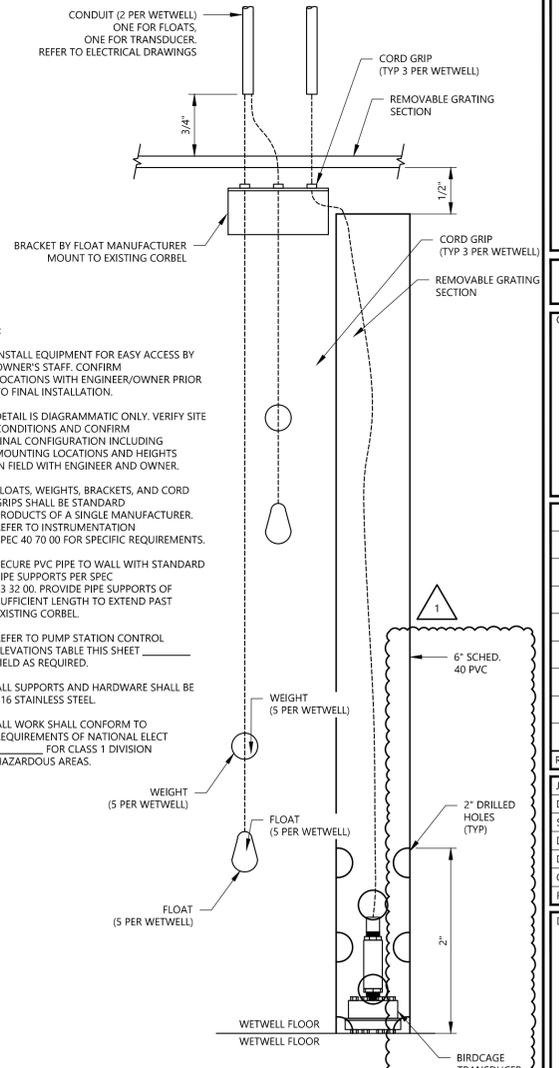
| DIAMETER | REQUIRED LENGTH RESTRAINED JOINT PIPE ON BOTH SIDES OF FITTING |       |     |         |          | REQUIRED LENGTH OF RESTRAINED JOINT PIPE |
|----------|--|-------|-----|---------|----------|--|
|          | HORIZONTAL BEND  |       |     |         |          |  |
|          | 11.25°   | 22.5° | 45° | TEE/90° | DEAD END |  |
| 6"       | 2'   | 3'    | 7'  | 16'     | 39'      |  |
| 8"       | 2'   | 4'    | 9'  | 20'     | 51'      |  |
| 10"      | 3'   | 5'    | 10' | 24'     | 61'      |  |
| 12"      | 3'   | 6'    | 12' | 28'     | 72'      |  |
| 16"      | 4'   | 8'    | 15' | 36'     | 93'      |  |

**2 THRUST RESTRAINT DETAIL**  
SCALE: NTS



- NOTES:**
1. PROVIDE 1/2"-PVC/1 RISER PIPES FOR ALL PVC PROCESS PIPES UNLESS NOTED OTHERWISE.
  2. PROVIDE DIAPHRAGM VALVES (TYPE V80) OR BALL VALVES (TYPE V20) FOR CHEMICAL SERVICE APPLICATIONS.
  3. PROVIDE PTFE DIAPHRAGM FOR CHEMICAL SERVICE APPLICATIONS.
  4. PROVIDE GLYCERIN FILLED DIAPHRAGM SEAL FOR PRESSURE APPLICATIONS. PROVIDE SILICONE FILLED DIAPHRAGM SEAL FOR VACUUM APPLICATIONS.
  5. REFER TO INSTRUMENT DATA SHEETS INCLUDED IN SPECIFICATION SECTION 40 70 00 "INSTRUMENTATION FOR PROCESS SYSTEMS" FOR ADDITIONAL DETAILS AND REQUIREMENTS.

**6 PRESSURE GAUGE DETAIL**  
SCALE: NTS



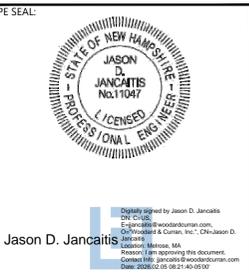
- NOTE:**
1. INSTALL EQUIPMENT FOR EASY ACCESS BY OWNER'S STAFF. CONFIRM LOCATIONS WITH ENGINEER/OWNER PRIOR TO FINAL INSTALLATION.
  2. DETAIL IS DIAGRAMMATIC ONLY. VERIFY SITE CONDITIONS AND CONFIRM FINAL CONFIGURATION INCLUDING MOUNTING LOCATIONS AND HEIGHTS IN FIELD WITH ENGINEER AND OWNER.
  3. FLOATS, WEIGHTS, BRACKETS, AND CORD GRIPS SHALL BE STANDARD PRODUCTS OF A SINGLE MANUFACTURER. REFER TO INSTRUMENTATION SPEC 40 70 00 FOR SPECIFIC REQUIREMENTS.
  4. SECURE PVC PIPE TO WALL WITH STANDARD PIPE SUPPORTS PER SPEC 33 32 00. PROVIDE PIPE SUPPORTS OF SUFFICIENT LENGTH TO EXTEND PAST EXISTING CORBEL.
  5. REFER TO PUMP STATION CONTROL ELEVATIONS TABLE THIS SHEET FIELD AS REQUIRED.
  6. ALL SUPPORTS AND HARDWARE SHALL BE 316 STAINLESS STEEL.
  7. ALL WORK SHALL CONFORM TO REQUIREMENTS OF NATIONAL ELECTRIC CODE FOR CLASS 1 DIVISION HAZARDOUS AREAS.

**7 WETWELL LEVEL CONTROL EQUIPMENT INSTALLATION DETAIL**  
SCALE: NTS



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**DRAWING TITLE: MECHANICAL PUMP STATION DETAILS**

DRAWING NO: **M-901**

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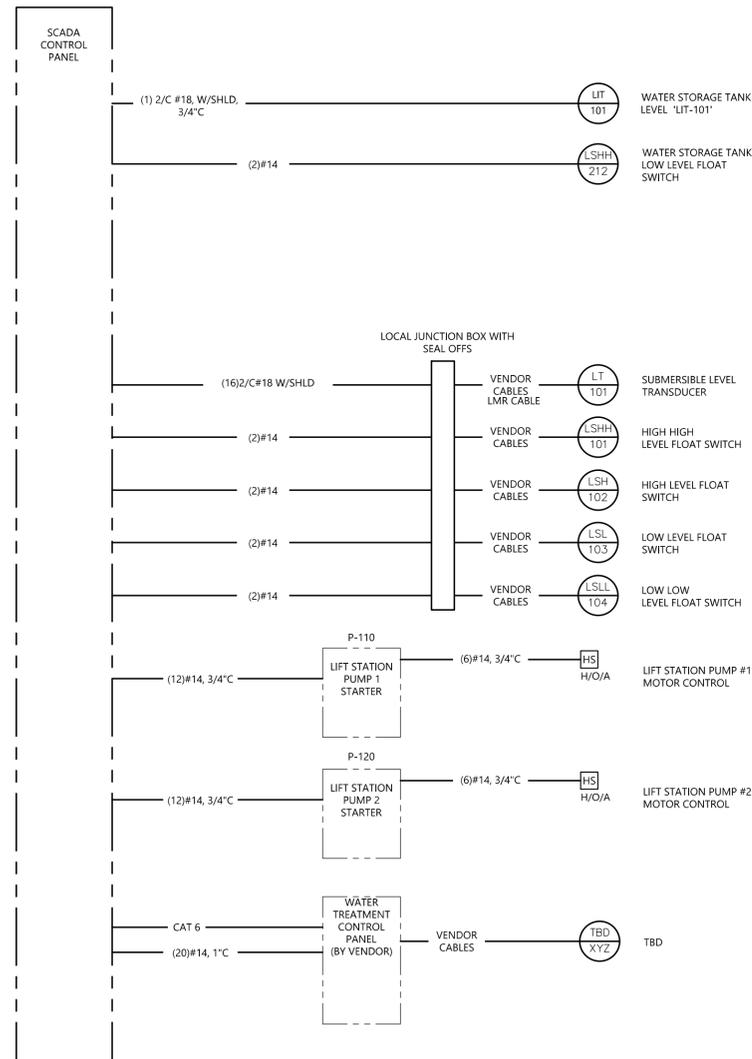
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| DRAWN BY:    | SAA           |
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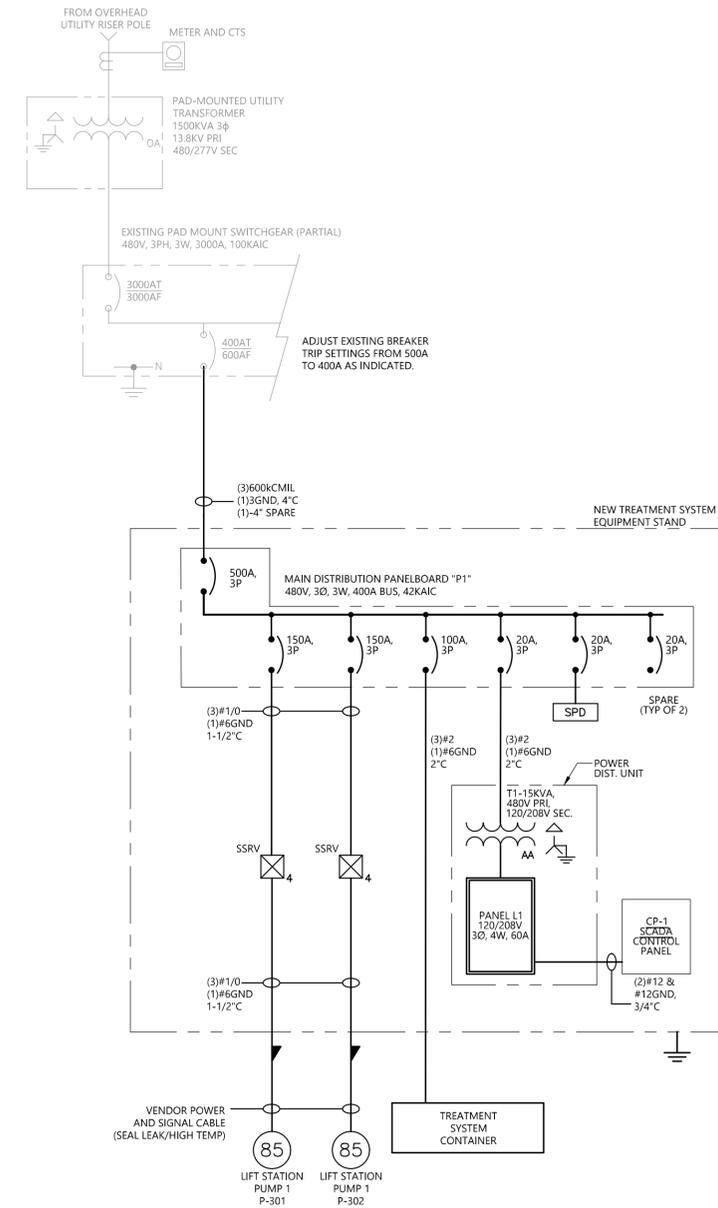
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| DIRECTORY          | BRKR | POLE | CKT # | KVA             | KVA LOADS |      |      | KVA | CKT # | POLE | BRKR | DIRECTORY |
|--------------------|------|------|-------|-----------------|-----------|------|------|-----|-------|------|------|-----------|
|                    |      |      |       |                 | A         | B    | C    |     |       |      |      |           |
| EXTERIOR LTG/RCPTS | 20   | 1    | 1     | 0.36            | 0.36      |      | 0.00 | 2   |       |      |      |           |
| SCADA CP           | 20   | 1    | 3     | 0.36            | 0.36      |      | 0.00 | 4   | 3     |      | 30   | SPD       |
| SPARE              | 20   | 1    | 5     |                 |           | 0.00 | 0.00 | 6   |       |      | 20   | SPARE     |
| SPARE              | 20   | 1    | 7     |                 | 0.00      |      |      | 14  |       |      | 20   | SPARE     |
| SPARE              | 20   | 1    | 9     |                 |           | 0.00 |      | 16  |       |      | 20   | SPARE     |
| SPARE              | 20   | 1    | 11    |                 |           | 0.00 |      | 18  |       |      | 20   | SPARE     |
| SPARE              | 20   | 1    | 13    |                 | 0.00      |      |      | 14  |       |      | 20   | SPARE     |
| SPARE              | 20   | 1    | 15    |                 |           | 0.00 |      | 16  |       |      | 20   | SPARE     |
| SPARE              | 20   | 1    | 17    |                 |           |      | 0.00 | 18  |       |      | 20   | SPARE     |
| SPARE              | 20   | 1    | 19    |                 | 0.00      |      |      | 20  |       |      | 20   | SPARE     |
| SPARE              | 20   | 1    | 21    |                 |           | 0.00 |      | 22  |       |      | 20   | SPARE     |
| SPARE              | 20   | 1    | 23    |                 |           |      | 0.00 | 24  |       |      | 20   | SPARE     |
| SUBTOTAL           |      |      |       | 0.36            | 0.36      | 0.00 |      |     |       |      |      |           |
| TOTAL KVA          |      |      |       | 0.72            |           |      |      |     |       |      |      |           |
| TOTAL AMPS         |      |      |       | 2               |           |      |      |     |       |      |      |           |
| PANEL NAME:        |      |      |       | L1              |           |      |      |     |       |      |      |           |
| LOCATION:          |      |      |       | EQUIPMENT STAND |           |      |      |     |       |      |      |           |
| MOUNTING:          |      |      |       | SURFACE         |           |      |      |     |       |      |      |           |
| AIC RATING:        |      |      |       | 10 kAIC         |           |      |      |     |       |      |      |           |
| VOLTAGE:           |      |      |       | 120/208         |           |      |      |     |       |      |      |           |
| MAIN BREAKER:      |      |      |       | 60              |           |      |      |     |       |      |      |           |
| BUSES:             |      |      |       | 100             |           |      |      |     |       |      |      |           |
| PH & WIRES:        |      |      |       | 3PH 4W          |           |      |      |     |       |      |      |           |
| NOTES: NEMA-4X     |      |      |       |                 |           |      |      |     |       |      |      |           |



**ELECTRICAL RISER DIAGRAM**

SCALE: N.T.S.



**ELECTRICAL ONE-LINE DIAGRAM**

SCALE: N.T.S.











| NAMEPLATE SCHEDULE |            |                      |   |
|--------------------|------------|----------------------|---|
| ITEM               | DIMENSION  | DESCRIPTION          | FABRICATION COMMENTS  |
| A                  | 5" x 1"    | SCADA PANEL          | NAMEPLATE TO BE BLACK WITH WHITE LETTERS WITH ADHESIVE BACK. TEXT SIZE TO BE .375 |
| B                  | 2.5" x .5" | FOR PROGRAMMING ONLY | NAMEPLATE TO BE RED WITH WHITE LETTERS WITH ADHESIVE BACK. TEXT SIZE TO BE .12    |

**SHEET GENERAL NOTES**

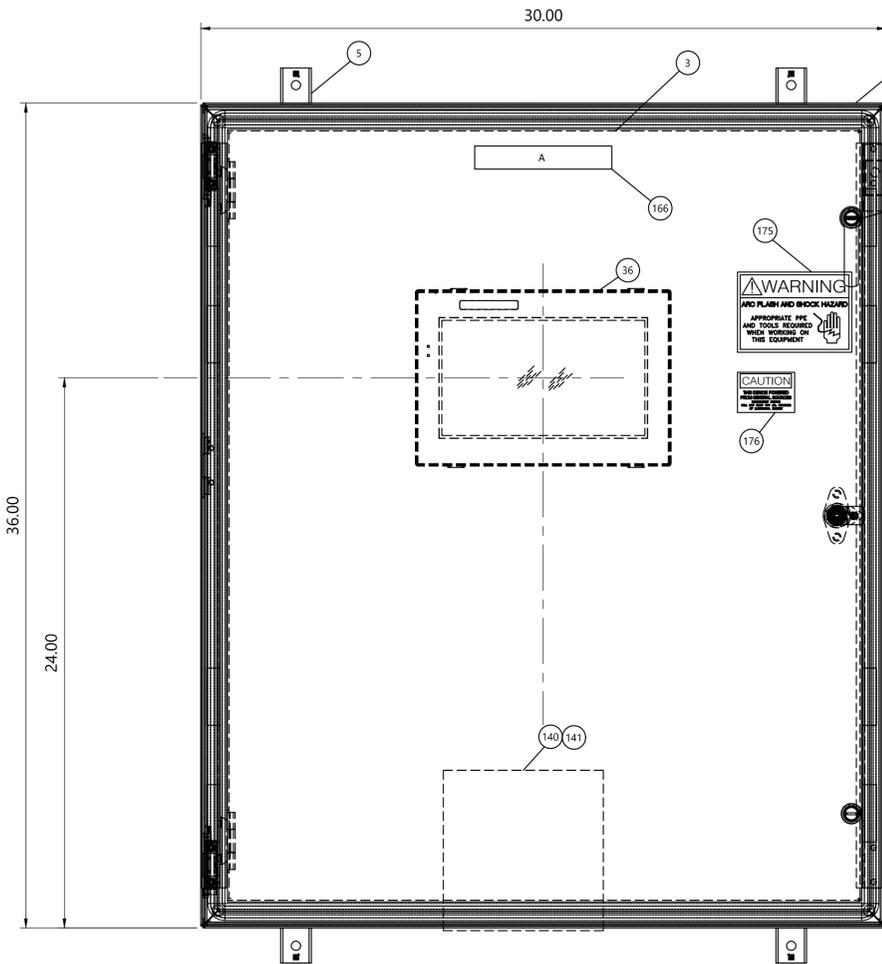
- CONTRACTOR SHALL USE CAUTION WHEN LANDING CONDUITS IN THE BOTTOM OF ENCLOSURES TO AVOID INTERFERING WITH BATTERY PLACEMENT. (ITEM 140).
- PANEL FABRICATOR SHALL MAKE NECESSARY MODIFICATIONS TO SWING OUT PANEL (ITEM 3) TO ACCOMMODATE INTRUSION SWITCH (ITEM 4).
- CONTRACTOR SHALL INSTALL ENCLOSURE SO THAT THE BOTTOM OF THE PANEL IS APPROXIMATELY 36" FROM GROUND LEVEL AND POSITIONING THE OPERATOR INTERFACE TERMINAL (ITEM 36) AT APPROXIMATELY 60" AT EYE LEVEL.



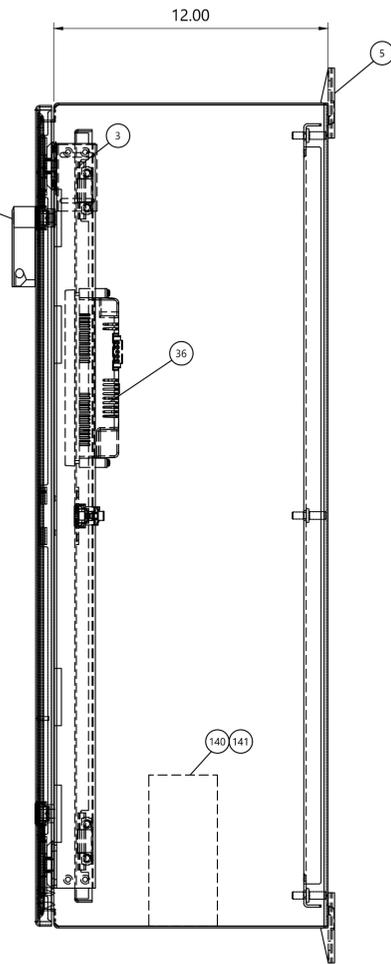
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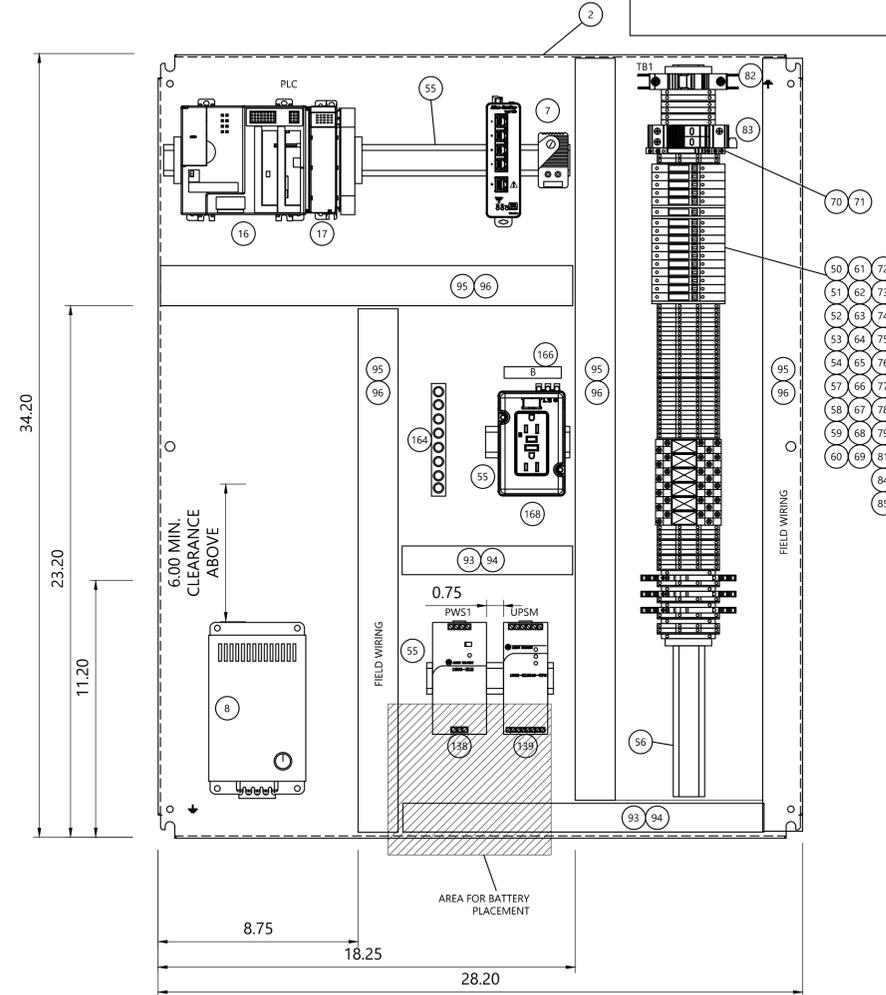
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ENCLOSURE FRONT VIEW



ENCLOSURE RIGHT SIDE VIEW



SUB PANEL

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 SCADA PANEL EQUIPMENT  
 LAYOUT

DRAWING NO:  
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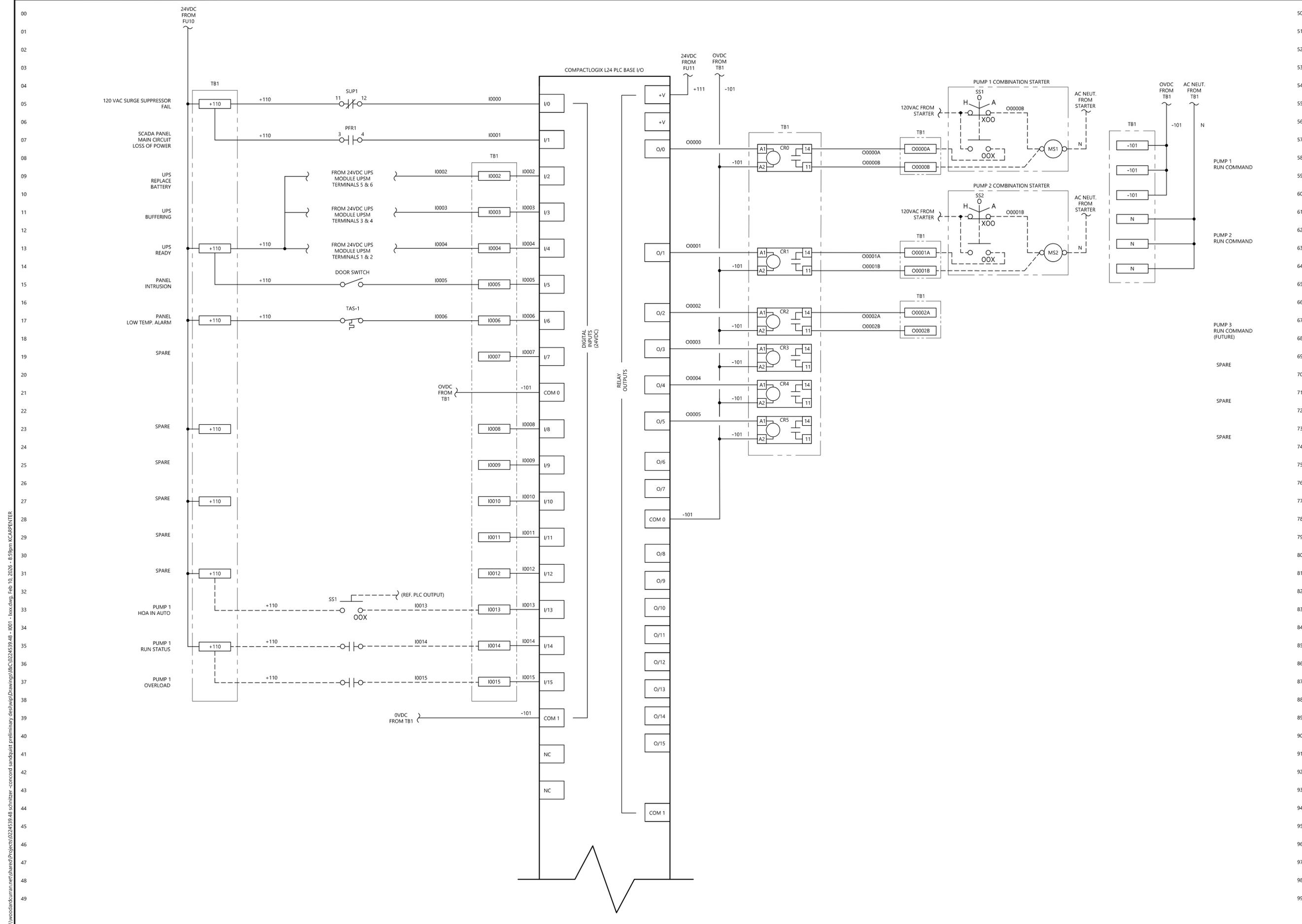
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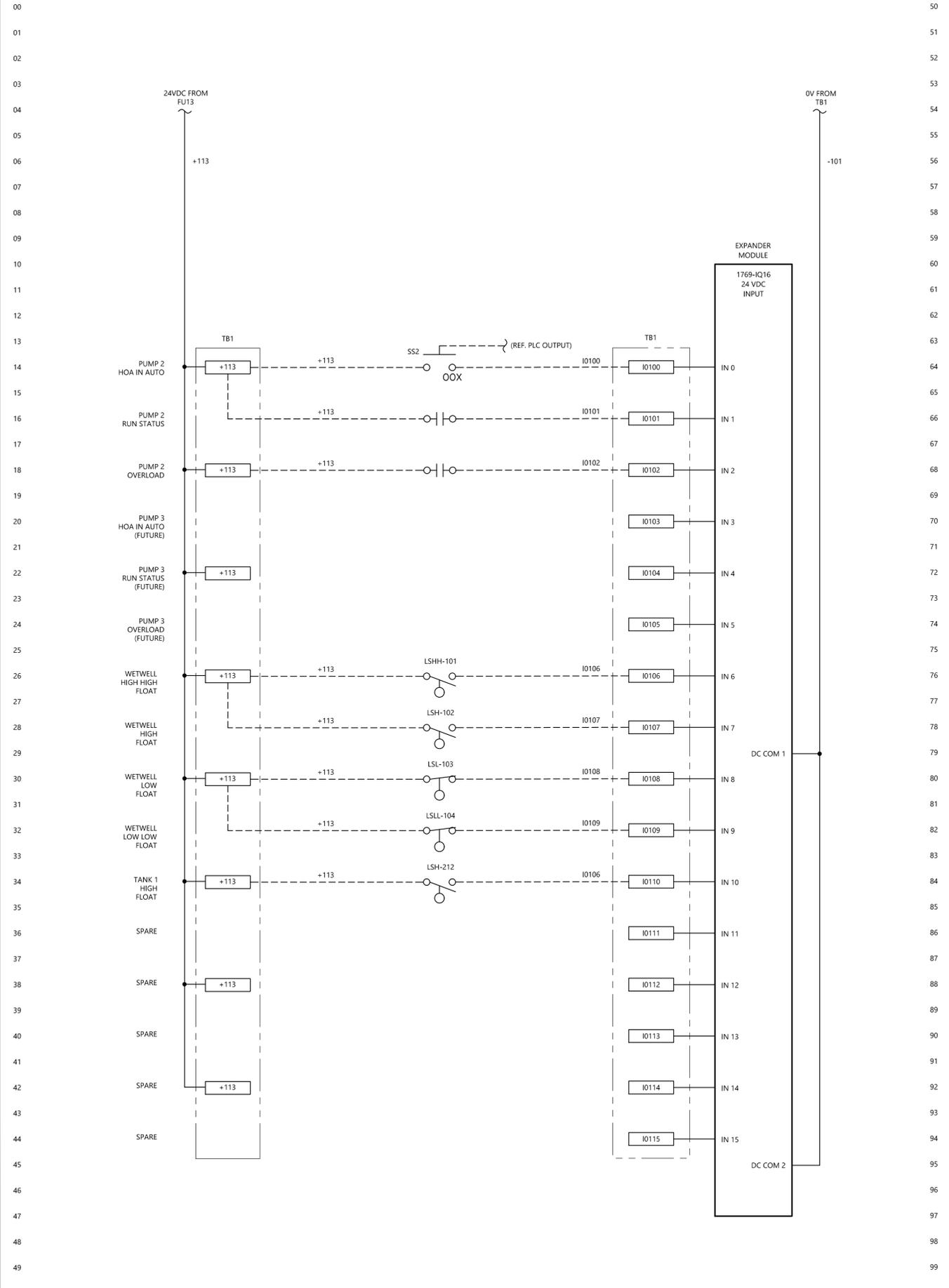
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**INSTRUMENTATION  
SCADA PANEL PLC BASE I/O:  
DIGITAL INPUTS AND OUTPUTS**

DRAWING NO:  
**I-107**



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RADIUS RECYCLING  
CONCORD, NH

SANDQUIST FACILITY  
STORMWATER IMPROVEMENTS

REV MM/DD/YY DESCRIPTION

|              |                              |
|--------------|------------------------------|
| JOB NO:      | 0224539.48                   |
| DATE:        | DECEMBER 2025                |
| SCALE:       | AS NOTED                     |
| DESIGNED BY: | VC                           |
| DRAWN BY:    | VC                           |
| CHECKED BY:  | RPM                          |
| FILENAME:    | 0224539.48 - I001 - IXX*.dwg |

DRAWING TITLE:  
INSTRUMENTATION  
SCADA PANEL EXPANSION I/O:  
DIGITAL INPUTS

DRAWING NO:  
**I-109**

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