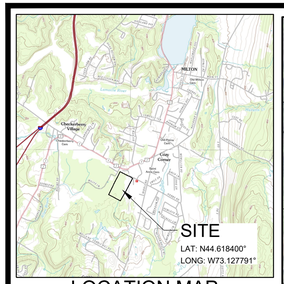

LOCATION MAP

SCALE: 1" = 5,000 FT

LEGEND

- Existing Utility Pole
- Existing Sign
- Existing Property Corner
- Property Line
- Existing Setback
- Existing Easement
- Existing Pavement
- Existing Gravel
- Existing Water Line/Hydrant/Valve
- Existing Sewer Line/Manhole
- Existing Overhead Electric Line
- Existing Wetland
- Existing Class II Wetland Buffer
- Existing Treeline
- Existing Major Contour (5' interval)
- Existing Minor Contour (1' interval)
- Finish Grade Major Contour
- Finish Grade Minor Contour
- New Sewer Line/Manhole
- New Sewer Forcemain
- New Storm Line/Manhole/Basin
- New Water Line/Hydrant/Valve/Shutoff
- New Buried Natural Gas
- New Underground Electrical Duct Bank
- New Chain Link Fence
- New Building
- New Asphalt & Subbase
- New Concrete Walk
- New Concrete Apron
- New Stable Vegetated Path

Willy's Lane
ex. Class II wetland
LOT 1
LOT 3
New Berm
Route 7
Johnsons Court
60' Wide Right of Way
New Chain link fence
Salt & Sand Shed 14,300 s.f. FF = 332.5
Cold Storage
New Pavement LOT 2
New Stormwater Bioretention Pond
New Berm
New stormwater forebay
10 Parking Spaces
Visitor Parking
New Public Works Facility 30,000 s.f. FF = 332.5
New Stormwater Gravel Wetland
New Stormwater Forebay
Concrete apron
New Transformer
Concrete apron New Pump Station and Valve Pit
60' Right of Way
New Stormwater Treatment Chambers
New 26' Wide Road with 8' Wide Recreation Path & 5' Wide Sidewalk
New Hydrant
New Generator
New Hydrant
New Stormwater Infiltration Trench
Provide 2 Rows of Arbor Vitae for screening
New 8" DI waterline
New 8" PVC Gravity Sewer
24' Wide Paved Drive
New 8' Wide Recreation Path
Bombardier Road
Park Place
ex. trail
ex. dog park
ex. ball field
ex. gravel drive
ex. hydrant
ex. sign
ex. path
ex. building
150' Right of Way Easement

NOTES

1. This plan is not a boundary survey. Property lines are based on a Subdivision Plat prepared by Summit Engineering Inc. for the Brault Family Revocable Trust
2. The horizontal coordinate system is based on the Boundary Survey referenced above.
3. Existing conditions are based on mapping provided by Summit Engineering, Inc. Water and sewer utilities are based on the Village Core Sewer Expansion project mapping provided by the Town of Milton. Utilities are not warranted to be exact or complete. Contractor shall contact Dig Safe and other non-member utilities prior to beginning any excavation.
4. Wetlands shown on this plan are based on a delineation by S. McIntyre on 5/12/2020 and field verified by B. Freyer from the VT DEC Wetlands Program on 06/09/2020.

TOWN OF MILTON CHARTERED 1763 VERMONT

CIVIL ENGINEER:

KREBS & LANSING CONSULTING ENGINEERS

164 Main Street, Suite 201
Colchester, Vermont 05446

P: (802) 878-0375
www.krebsandlansing.com

STAMP:

Vermont State Plane Grid North (NAD83)

0' 80' 160' 240'

Bar Scale 1" = 80'

Project:

TOWN OF MILTON
Public Works Facility

Bombardier Road

Project No.	21282
Scale	1" = 80'
Drawn by	TJB
Checked by	DMR
Date	11/11/21

Revisions

No.	Date	Description

Drawing Title

Overall Site Plan

Drawing No.

C1.00

21282\DWGS\MPW Base.dwg

New CB#3
Rim 330.2
Inv out 327.2

New underground stormwater pre-treatment chambers
Bottom Chamber 327.2
Bottom Stone 326.7
See details.

New underground stormwater infiltration chambers (SC310)
Bottom Chamber 328.5
Bottom Stone 328.0
See details.

New underground stormwater infiltration chambers (SC740)
Bottom Chamber 325.5
Bottom Stone 325.0
See details.

New underground stormwater pre-treatment chambers
Bottom Chamber 325.5
Bottom Stone 325.0
See details.

New CB#2
Rim 329.1
Inv. in 325.70
Inv out 325.60

New 26' Wide Road with
8' Wide Recreation Path
& 5' Wide Sidewalk

New SMH#1
Rim 329.4
Inv. in 323.8
Inv out 323.7

Inv out 328.5

Inv in 328.5

12" PVC

3" PVC FM

8" PVC

Cut in new 8"x8" tee with 3 new valves

New 8" CL 52 DI waterline

New buried natural gas

New SMH#3
Rim 332.4
Inv. in 321.90
Inv out 321.80

New SMH#2
Rim 330.2
Inv. in 323.25
Inv out 323.15

New CB#1
Rim 329.1
Inv. in 326.10
Inv out 326.00

New 3" PVC force main

Core and boot new penetration for 3" PVC forcemain

New 5' Wide Concrete Sidewalk

New 8' Wide Recreation Path

New underground electric (3-Phase)

Extend power to electric vault behind building

0' 30' 60' 120' 180'

Bar Scale 1" = 30'

TOWN OF MILTON
CHARTERED
1763
VERMONT

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164 Main Street, Suite 201
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STAMP:

Vermont State Plane
(feet, NAD 83)
N

Project:

TOWN OF MILTON
Public Works Facility

Bombardier Road

Project No.	21282
Scale	1" = 30'
Drawn by	TJB/SLM
Checked by	
Date	11/11/21

Revisions

No.	Date	Description

Drawing Title

Site Plan

Drawing No.

C1.02

21282\DWGS\KL_BASE_2021.dwg

Road Construction Notes

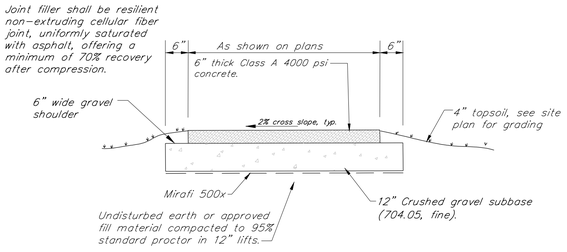
1. New road shall be constructed to the line and grade shown on the drawings. The road and utility locations shall be as typically detailed unless otherwise shown.
2. All road and parking construction shall be completed in accordance with the Vermont Agency of Transportation "Standard Specifications for Construction" 2011, hereafter called Vermont Highway Specifications, specifications found on these plans, and project specifications. In case of conflict, the more stringent specification shall apply as determined by the Engineer.
3. The Contractor shall follow Vermont Highway Specifications (2011) Section 203.11 for placing and spreading embankments.
4. Fill material for road embankment shall meet Note #13 below and be approved by the Engineer. Fill shall be placed in 12" lifts, wetted and compacted with satisfactory compaction equipment to 95% of maximum density (Standard Proctor).
5. Road in fill sections shall be placed and compacted a minimum of 3 feet above top of any utility to be installed before trench is excavated for pipe placement. In trenches and cut sections, the Contractor shall provide all necessary sheeting, shoring and bracing to maintain compliance with all OSHA/VOSHA regulations.
6. Methods for construction of subgrade shall conform to Vermont Highway Specificotions (2011) 203.12 or as determined by the Engineer.
7. Any subgrade or subbase disturbed by Contractor, or rendered unsuitable by construction machinery, shall be removed and replaced with approved granular backfill at the Contractor's expense. The subgrade shall be compacted to attain at least 95% of the maximum density (Standard Proctor) before placing road or embankment materials.
8. The Owner will pay for on site soils testing (compaction, sieve, and proctor). The Contractor shall pay for failing tests.
9. Sand borrow and cushion shall conform to Vermont Highway Specifications (2011) 703.03. Granular borrow shall conform to the Vermont Highway Specifications 703.04.
10. Gravel subbase for pavement shall conform to Vermont Highway Specifications (2011) 704.06, Dense Graded Crushed Stone. Substitute materials identified in VAOT Specifications Section 301 – Subbase are not allowed.
11. Leveling course shall conform to Vermont Highway Specifications (2011) 704.05, fine grading. Shoulders shall conform to Section 704.12, Aggregate for Shoulders. Substitute materials identified in VAOT Specifications Section 301 – Subbase are not allowed.
12. Bituminous concrete pavement shall conform to Vermont Highway Specifications (2011) Section 404 and 406. Binder course shall be Type I + II, and finish wearing course shall be Type III, IV, or as detailed.
13. Embankment fill for all impervious areas, EXCLUDING BUILDINGS, shall be a sieve specification as follows:

Sieve	% Finer
4"	100
2"	85–100
#4	60–100
#200	30 maximum

14. Dense graded crushed stone, crushed gravel and sand borrow shall not be contaminated by work. Construction traffic shall not travel over exposed areas of this material.
15. Contractor is responsible for all pavement markings (ie. parking striping, handicap markings, stop bars, etc.) shown or implied on the Plans. This includes both new and replacement of existing.
    - Paint for pavement markings shall be Hydrophast Waterborne Traffic Paint by Franklin Paint Company. It shall be reflective, VOC compliant, fast drying, 100% acrylic waterborne traffic paint. Paint for parking line striping shall be white.
    - Traffic paint shall be applied with a uniform thickness and at a rate such that no pavement is visible after drying. Additional paint application will be required if underlying pavement is visible.

All concrete used in the construction of concrete sidewalk shall be air entrained and made with Portland cement. The concrete shall meet section 541 of the State of Vermont Standard Specification for Construction for Class A concrete and have 28 day compressive strength of 4,000 psi.

Joint filler shall be resilient non–extruding cellular fiber joint, uniformly saturated with asphalt, offering a minimum of 70% recovery after compression.

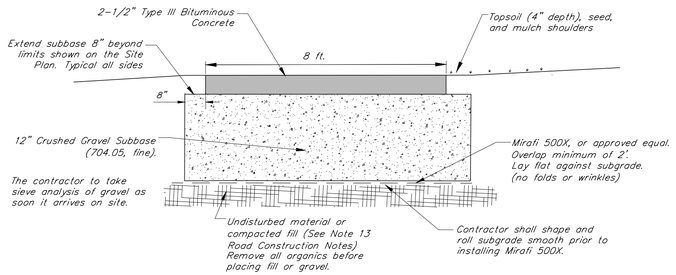


Concrete Notes

- Broom finish concrete
- Construction joints shall be spaced max. 24' in all directions. See Concrete Construction Joint Detail.
- Score control joints 1–1/2" depth at intervals equal to width of sidewalk. Contractor is responsible for providing appropriately sized tooling trowel.
- Apply SpecChem Cure Shield cure/seal compound to all concrete surfaces, per the manufacturer's specifications.
- Concrete construction and curing shall conform to section 618.03 of the current VAOT Standard Specifications for Construction

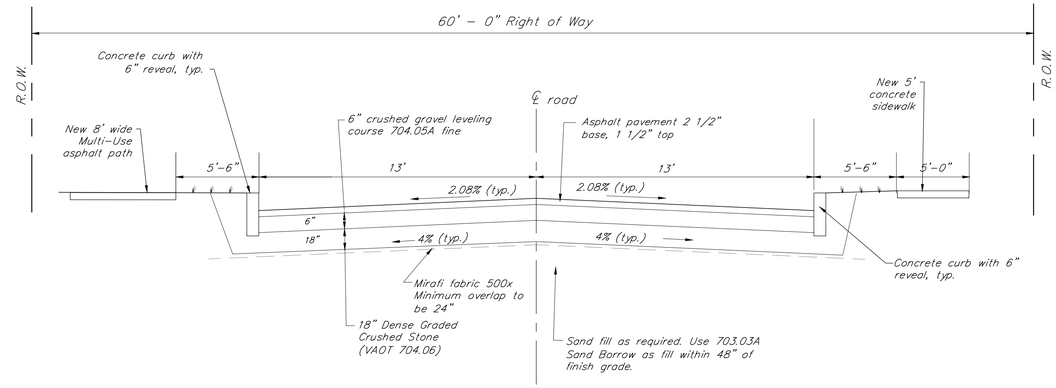
New Concrete Sidewalk Detail

N.T.S.



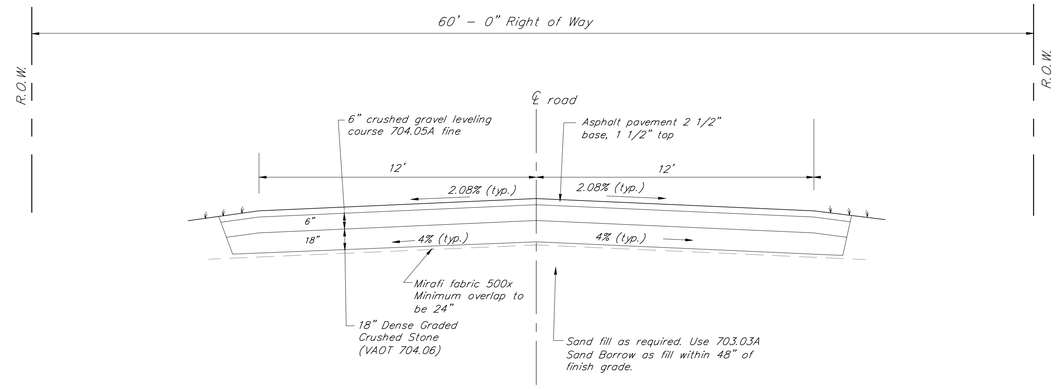
New Asphalt Multi–Use Path Detail

N.T.S.



Typical 26' Wide Road Cross–Section

N.T.S.



Typical 24' Wide Driveway Cross–Section

N.T.S.

Concrete Curb

- Broom finish concrete
- All joints to be tool finished
- Expansion/contraction joints every 20' with 1/2" joint filler.
- Score 1/3 total depth at 10' intervals
- Apply SpecChem Cure Shield EX cure and seal product to all concrete surfaces, per the manufacturer's specifications.
- Concrete may not be poured if frost is present or thawing in the subgrade, if the temperature is 40° F or less, or during unseasonable weather conditions.
- Concrete curb radii less than 200 ft shall be formed with flexible forms

All concrete used in the construction of concrete curb shall be air entrained and made with Portland cement. The concrete shall meet section 541 of the State of Vermont Standard Specification for Class A concrete and have 28 day compressive strength of 4,000 psi.

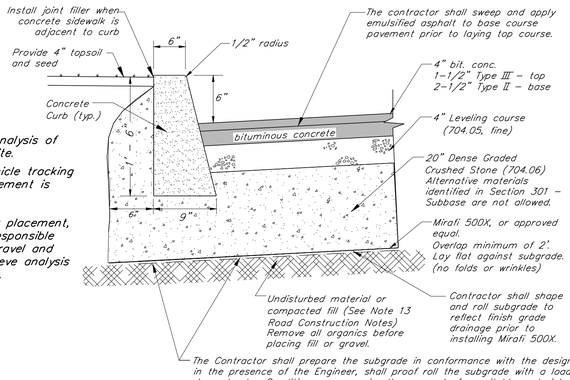
Joint filler shall be resilient non–extruding cellular fiber joint, uniformly saturated with asphalt, offering a minimum of 70% recovery after compression.

The Engineer shall be contacted at least 24 hours prior to forming concrete curb to review layout.

The contractor to take sieve analysis of gravel as soon it arrives on site.

Travel over gravel with any vehicle tracking soil prior to placement of pavement is prohibited.

If gravel is contaminated after placement, the Site Contractor shall be responsible removal of all contaminated gravel and paying for all recommended sieve analysis as determined by the Engineer.



Subbase material shall be placed and compacted in 12" maximum lifts.

Typical Road Cross Section Detail

N.T.S.

CIVIL ENGINEER:

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www.krebsandlansing.com

STAMP:

Project:

TOWN OF MILTON
Public Works Facility

Bombardier Road

Project No.	21282
Scale	N.T.S.
Drawn by	DMR
Checked by	
Date	11/11/2021

Revisions

No.	Date	Description

Drawing Title

Civil Details

Drawing No.

C3.00

21282\DWGS\MPW–Details.dwg

Construction Material Specifications

1. Unless otherwise indicated all civil site materials shall comply with the Vermont Agency of Transportation "Standard Specifications for Construction" 2018.

2. The Contractor shall follow Vermont Highway Specifications (2018) Section 203.11 for placing and spreading embankments.

3. Fill material for Embankment shall be clean, shall contain no stones greater than 3" in diameter, no frozen lumps, clay, organics, roots or contaminated material, shall meet the sieve indicated below, and shall be approved by the Engineer. Fill shall be placed in 12" lifts, wetted and compacted with satisfactory compaction equipment to 90% of maximum density (Standard Proctor).

Sieve	% Finer
4"	100
2"	85–100
#4	60–100
#200	30 maximum

4. Crushed Gravel for Subbase shall conform to Vermont Highway Specifications (2018) 704.05 and shall meet the following gradation requirements:

COARSE GRADED

Sieve	% Finer
4"	95–100
#4	30–60
No. 100	0–12
No. 200	0–6

FINE GRADED

Sieve	% Finer
2"	100
1 1/2"	90–100
#4	30–60
No. 100	0–12
No. 200	0–6

5. Dense Graded Crushed Stone for Subbase shall conform to Vermont Highway Specifications (2018) 704.06 and shall meet the following gradation requirements:.

Sieve	% Finer
3-1/2"	100
3"	90–100
2"	75–100
1"	50–80
1/2"	30–60
No. 4	15–40
No. 200	0–6

6 Drainage Aggregate, Drainage Rock, and Clean Crushed Stone for Drainage shall conform to Vermont Highway Specifications (2018) 704.16 and shall meet the following gradation requirements:.

Sieve	% Finer
1"	100
3/4"	90–100
3/8"	20–55
No. 4	0–10
No. 8	0–5

7. Sand Borrow and Cushion shall conform to Vermont Highway Specifications (2018) 703.03 and shall meet the following gradation requirements:.

Sieve	% Finer
2"	100
1–1/2"	90–100
1/2"	70–100
No. 4	60–100
No. 100	0–20
No. 200	0–8

7. Portland Cement Concrete shall conform to the current edition of the Vermont AOT Standard Specifications for Construction Section 541 and shall meet the properties of the Concrete Class identified on the plans. Concrete specified with a 5,000 psi, 28-Day Compressive Strength shall meet the following mix design:

Max. water–cement ratio (lb./lb.)	0.44
Min. cement factor (lbs/C.Y.)	705
Entrained air content (%)	5 – 7
Slump (inches, before adding HRWR)	2 – 4

Use air entrained agent conforming to ASTM C260 with 5–7% total air. Use high range water reducing agent conforming to ASTM C494 in all concrete.

6. The Owner will pay for on site soils testing (compaction, sieve, and proctor). The Contractor shall pay for failing tests.

Note:
Owner or Contractor is not allowed to place deicing materials on newly poured concrete sidewalk for a period of 6 months.

All concrete used in the construction of Multi-Use Concrete shall be made with Portland cement. The concrete shall meet section 541 of the State of Vermont Standard Specifications for Construction, have 28 day compressive strength of 5,000 psi, and meet the following mix design.

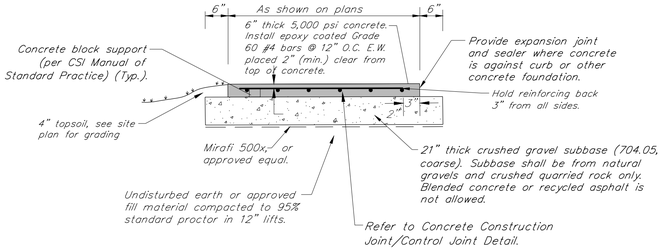
Max. water–cement ratio (lb./lb.)	0.44
Min. cement factor (lbs/C.Y.)	705
Entrained air content (%)	5 – 7
Slump (inches, before adding HRWR)	2 – 4

Use air entrained agent conforming to ASTM C260 with 5–7% total air. Use high range water reducing agent conforming to ASTM C494 in all concrete.

Concrete shall be installed in alternating pours at construction joints. Continuous pours through construction joints is not allowed. Refer to Concrete Construction Joint/Control Joint Detail.

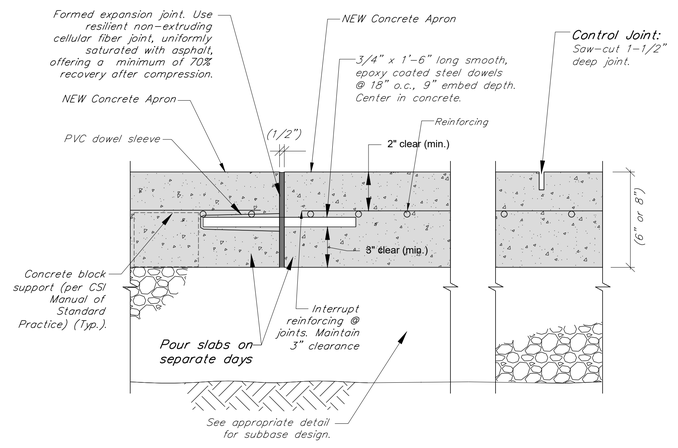
Concrete Slab

- Broom finish concrete
- Construction joints shall be spaced max. 24' in all directions. See New Concrete Construction Joint Detail.
- See Site Plan for construction joint layout.
- Sawcut control joints 1–1/2" depth at intervals equal to width of sidewalk or as shown on the Site Plans.
- Apply SpecChem Cure Shield cure and seal product to all concrete surfaces, per the manufacturer's specifications.
- Concrete may not be poured if frost is present or thawing in the subgrade, if the temperature is 40° F or less, or during unseasonable weather conditions.
- Concrete construction and curing shall conform to section 618.03 of the current VAOT Standard Specifications for Construction



New Concrete Apron Detail

(To be used for concrete along west side of building)
N.T.S.



New Concrete Construction Joint/Control Joint Detail

Contractor to use this pinning detail to pin NEW concrete to NEW concrete
N.T.S.

Construction Notes

1. The methods and materials of construction shall conform to the latest standards of the Municipality and the State of Vermont. All work shall be in conformance with all permits and approvals issued for the project. In case of conflict, the more stringent specification shall apply as directed by Engineer. All work shall be done in a workmanlike manner and completed in the time specified by Owner.

2. The Contractor shall be responsible for all work and materials shown and required to make the job complete. These drawings do not show every fitting or appurtenance. Materials shall be as specified on the drawings. Manufacturer's product specifications shall be submitted for all materials to the Engineer for approval prior to installation.

3. The location and size of existing underground utilities is not warranted to be exact or complete. The Contractor shall field locate all utilities and shall contact the affected utility company, the Engineer and the Municipality prior to making any hook ups. The Contractor shall be solely responsible for all existing utilities and their uninterrupted services. The Contractor shall contact Dig Safe and other non-member utilities prior to any excavation.

4. All off-site backfill, sheeting and shoring, dewatering, clearing and grubbing, erosion control, dust control, traffic control, grading, and all incidentals shall be included as part of the required work.

5. Repair of all disturbed areas, grading, seeding, mulching, repair of roads and curbs, paving, and other incidentals are included as part of the required work. All disturbed areas shall be loamed and mulched until permanent ground cover is established.

6. The Contractor shall be responsible for all construction layout and shall verify all horizontal control and temporary bench marks before use.

7. The workers and public shall be protected by the Contractor from any and all hazards connected with the construction work. Open trenches, materials, or equipment within the working limits are to be guarded by the use of adequate barricades or flaggers. All barricades left in position overnight are to be properly lighted. Kerosene pots are not acceptable. When work narrows the usable pavement, flaggers shall be employed to aid the flow of traffic so that there will be no undue delays. The Contractor shall be held responsible for the safety of all workers and the general public and all damages to property occurring from or upon the work occasioned by negligence or shall be held responsible for the safety of all workers and the general public and all damages to property occurring from or upon the work occasioned by negligence or day or night within the working area. All work shall be in conformance to OSHA regulations, Title 19, Parts 1926.651 and 1926.652, and applicable to VOSHA regulations.

8. The Contractor shall sawcut all existing pavement to be removed. The Contractor shall minimize the pavement area disturbance. Contractor shall be responsible for all pavement repair and restoration necessary to complete the work.

9. Existing plantings are located in general areas as shown on the plans. Contractor shall protect plantings scheduled to remain so as not to damage these or their root systems.

10. Contractor shall comply with all permits and approvals issued for this project.

11. Contractor shall sign on as the Co-Permittee for the State of Vermont Erosion Prevention and Sediment Control permit for the project.

12. Slope stability upon unsaturated soil conditions. If during construction saturated soils are encountered, contact the Engineer immediately.

SIGN POST NOTES

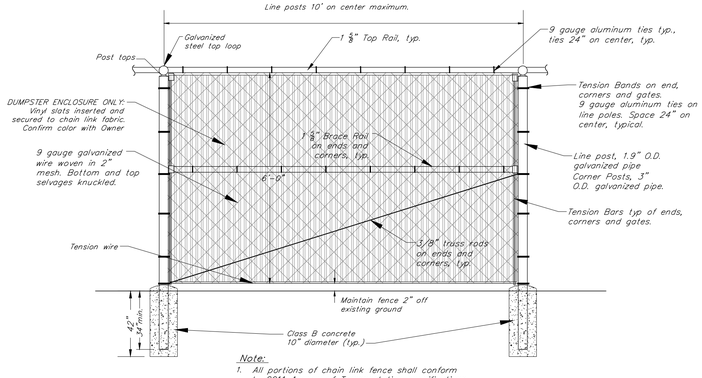
1. All sign posts shall be 2" square galvanized steel posts with anchors. Bottom of all signs to be 7 feet above nearest adjacent curb or pavement elevation.

2. All square tube steel posts and anchors shall be formed into a size and shape in such a manner that neither flash nor weld shall interfere with the telescoping properties, nor damage the galvanizing.

3. Anchors may be driven or set into a dug hole and backfilled. If driven, a driving cap shall be used. the dug hole installation method shall be utilized in areas with poor soil conditions or as directed by the engineer. Backfill shall be compacted as directed by the engineer.

4. The tops of sign posts shall be at or near the top of sign. The post shall not extend above the top of sign.

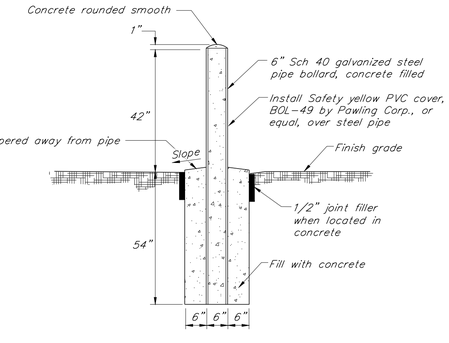
5. Sign posts shall be installed a minimum of one foot below ground, inside the anchor. The length of anchor exposed above ground shall not exceed four inches.



Note:
1. All portions of chain link fence shall conform to 2011 Agency of Transportation specifications, including but not limited to Section 727.02.
2. No gate or latch are proposed for the dumpster location due to the width and access feasibility

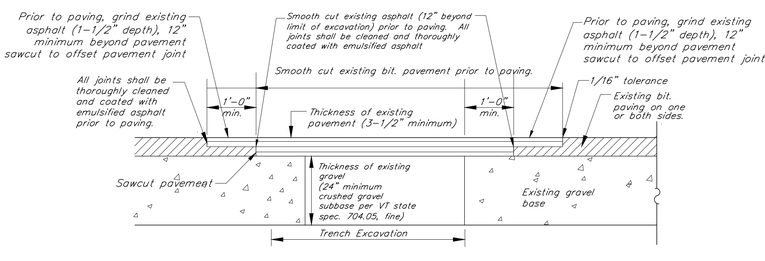
Chain Link Fence & Dumpster Enclosure Detail

N.T.S.



Bollard Detail

N.T.S.



1. Set up and maintain signs and other safety control devices.
2. Reshape hole and patch area by cutting with a concrete saw into square or rectangular shape and cut side faces vertically. Reshape downward solid material and around hole to sound pavement.
3. Backfill trench in 6" lifts and compact each lift to 95% of maximum density of optimum moisture content as determined by ASTM D698 standard proctor.
4. Remove all loose material and thoroughly sweep the hole area clean of mud and standing water.
5. Apply liquid asphalt tack to vertical faces in a uniform manner. Do not puddle tack coat on bottom of hole.
6. Fill top of hole with type IV bituminous concrete and compact in lifts no more than 2" thick. Each lift should be thoroughly compacted with a vibratory plate compactor or a portable roller. Experience has shown that 15 to 20 passes with a vibratory roller and mix temperature above 250F (121C) are necessary to ensure good compaction. Hand tamp should only be be used for small areas (less than 1 s.f.)
7. Clean up area. Do not leave excess fill or excavated material on the pavement. Remove safety signs.

Replacement of Existing Road Subbase and Bituminous Pavement

N.T.S.

TOWN OF MILTON CHARTERED 1763 VERMONT

CIVIL ENGINEER:

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Colchester, Vermont 05446 www.krebsandlansing.com

STAMP:

Project:

TOWN OF MILTON
Public Works Facility

Bombardier Road

Project No.	21282
Scale	N.T.S.
Drawn by	DMR
Checked by	
Date	11/11/2021

Revisions

No.	Date	Description

Drawing Title

Civil Details

Drawing No.

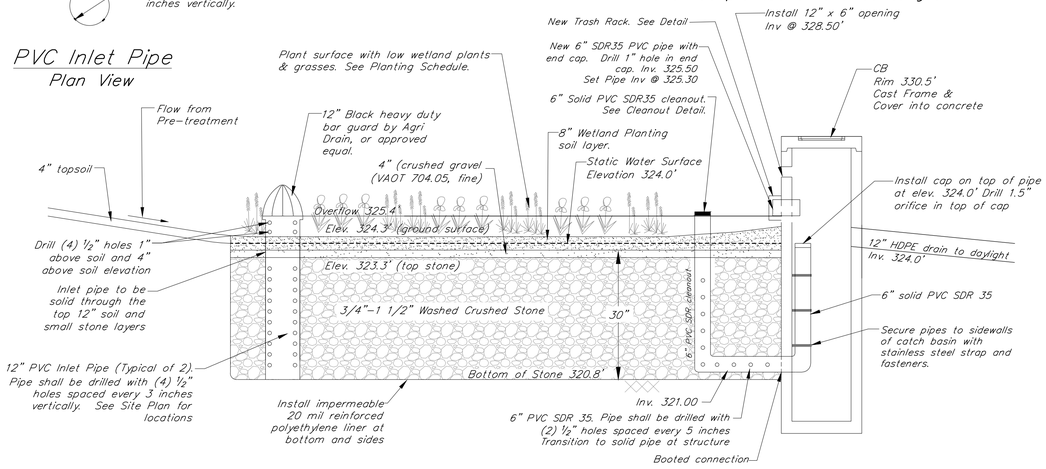
C3.01

21282\DWGS\MPW-Details.dwg

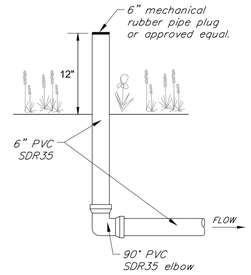
PVC Inlet Pipe
Plan View

See Layout on Site Plan

No woody vegetation (> 2" diameter) shall be planted or allowed to grow



Gravel Wetland #1 (NW)
N.T.S.



Gravel Wetland Cleanout Detail
N.T.S.

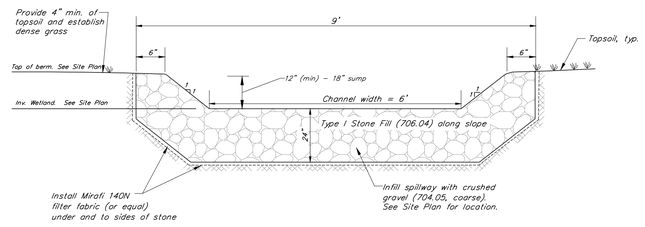
Wetland Planting Schedule

Elevation Range	Area (Sq.ft.)	Example Species	Planting Rate	Total Quantity
369.0 (gravel Wetland)	2,100	Water Lily, Water Celery Pondweed, Northern Arrowhead, Softstem Bulrush	1 Plant/ 4 sq.ft.	175

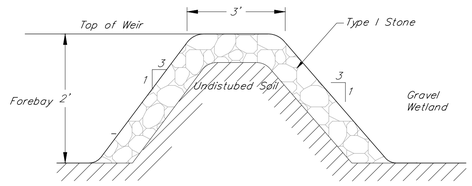
WETLAND PLANTING SOIL CHARACTERISTICS

Parameter	Value
pH range	6.0 to 7.0
Compost (low phosphorus or leaf compost)	Wetland soil may contain 3% max low phosphorus compost (Compost shall have no more than 0.2% total phosphorus)
Total Phosphorus	4 mg/kg utilizing Mehlich-3 or Modified Morgan test
Soluble salts	500 ppm, maximum
Soil **(low hydraulic conductivity (0.1-0.01 ft/day)**	
Sieve Size	Percent Passing
0.5"	±10%
No. 10	75-90% (±5%)
No. 100	40-50% (±5%)
No. 200	25-50% (±5%)

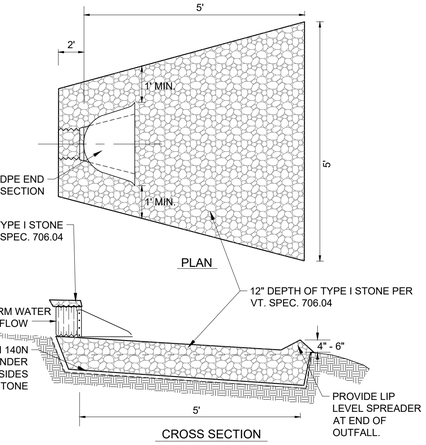
A dense and vigorous vegetative cover must be established and maintained over all pervious drainage areas upslope of the system



Spillway Cross Section Detail
N.T.S.



Forebay Weir Cross Section Detail
N.T.S.



STORMWATER OUTFALL DETAIL
N.T.S.

BIORETENTION SOIL CHARACTERISTICS

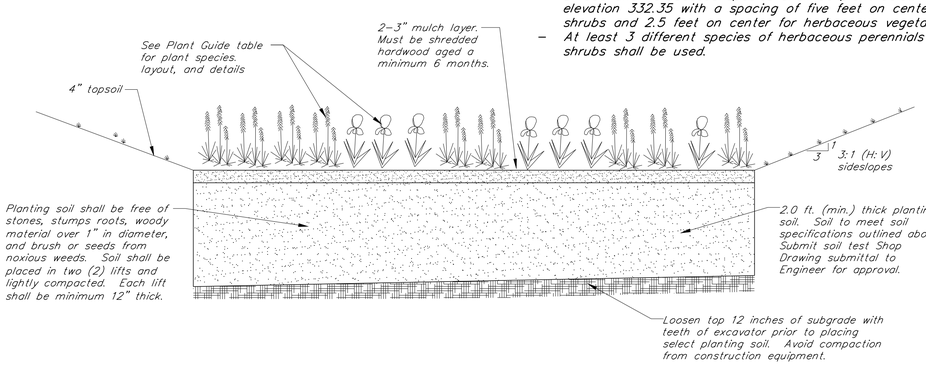
Parameter	Value
pH range	5.2 to 7.00
Organic matter	2.5% to 8.0% by volume
Soil (loamy sand, sandy loam, or loam)	
Sand	60% to 85% passing by weight
Silt	0% to 20% passing by weight
Clay	0% to 5% passing by weight
Mulch	Bark Mulch - Submit sample for approval
Available Phosphorus	0.2%

PLANT GUIDE FOR STORMWATER BIORETENTION AREAS

TREES	SHRUBS	HERBACEOUS SPECIES
Acer rubrum (Red Maple)	Hamemelis virginian (Witch Hazel)	Iris versicolor (Blue Flag)
Juniperus virginiata (Eastern Red Cedar)	Ilex verticillata (Winterberry)	Lobelia cardinalis (Cardinal Flower)
Platanus occidentalis (Sycamore)	Vibernum dentatum (Arrowhead)	Rudbeckia laciniata (Cuteaf Coneflower)
Salix Nigra (Black Willow)	Alnus serrulata (Brook-side Alder)	Scirpus cyperinus (Woolgrass)
Pinus rigida (Pitch Pine)	Cornus stolonifera (Redosier Dogwood)	Scirpus pungens (Three Square Bulrush)

A dense and vigorous vegetative cover shall be established over all pervious drainage areas upslope of the bioretention areas.

- From this list at least 8 trees shall be planted above elevation 332.35 (in approximate locations shown).
- Shrubs and herbaceous species shall be plant below elevation 332.35 with a spacing of five feet on center for shrubs and 2.5 feet on center for herbaceous vegetation.
- At least 3 different species of herbaceous perennials and shrubs shall be used.



Bioretention Planting Soil Bed Detail
N.T.S.

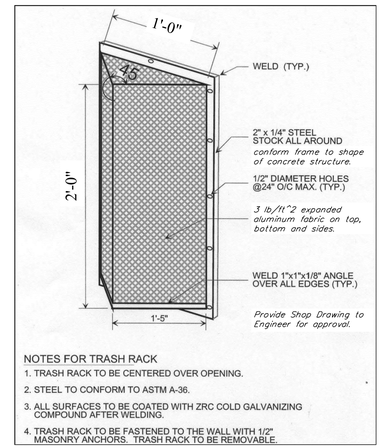


Figure D.1. Trash Rack Protection for Low Flow Orifice

Trash Rack Detail
N.T.S.

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Bombardier Road

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Revisions

No.	Date	Description

Drawing Title

Civil Details

Drawing No.

C3.02

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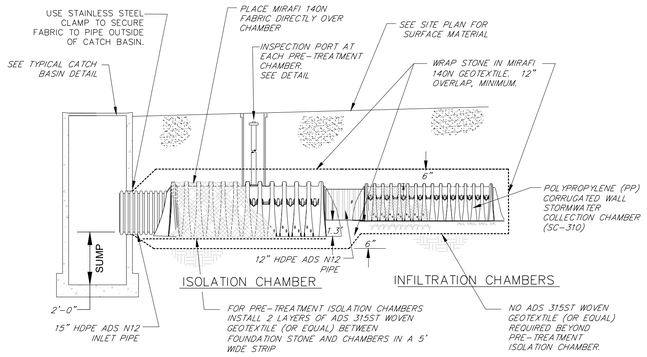
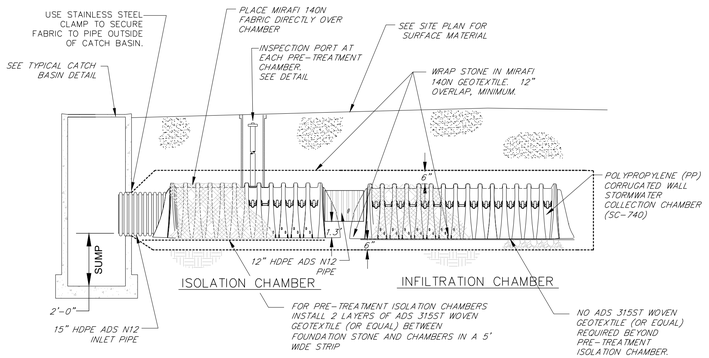


Stormtech Chamber System #1

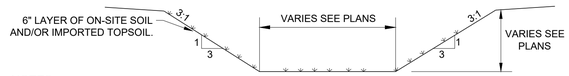
N.T.S.



Stormtech Chamber System #2

N.T.S.

Infiltration System Construction Notes:
All upstream/upslope construction shall be complete and stabilized prior to allowing runoff to enter any infiltration systems. "Stabilized" shall mean paved surfaces, washed crushed stone, or vegetated areas that have established a dense and vigorous vegetative cover.

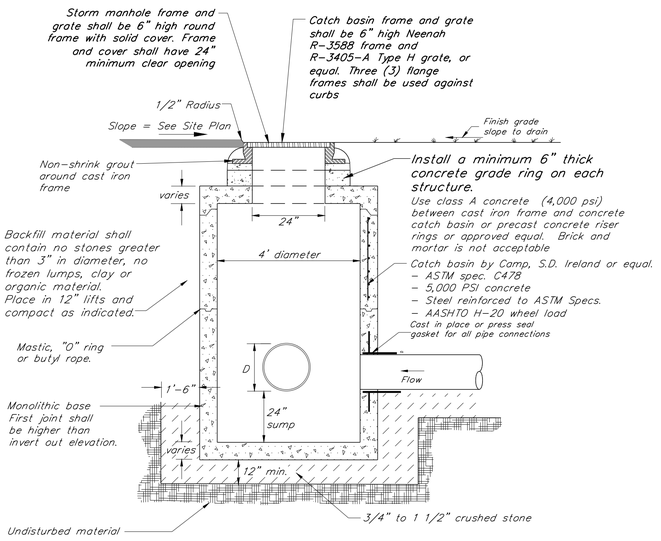


NOTES

1. TYPICAL GRASS SWALE & INFILTRATION BASIN CROSS SECTION. SEE PLAN VIEW FOR LOCATIONS.
2. TYPICAL SIDE SLOPES TO BE 3:1.
3. DURING CONSTRUCTION TEMPORARILY SEED AND HEAVILY MULCH. POST CONSTRUCTION CONTRACTOR SHALL RE-GRADE ANY EROSION, REMOVE BUILD UP SEDIMENTS, PERMANENT SEED AND HEAVILY RE-MULCH.
4. CROSS-SECTION SHALL BE EXCAVATED TO NEAT LINES AND GRADES. OVER-EXCAVATED AREAS SHALL BE BACKFILLED WITH MOIST SOIL COMPACTED TO DENSITY OF SURROUNDING MATERIAL.
5. ALL EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF IN APPROVED UPLAND AREA (PER OSPC) SUCH THAT IT DOES NOT INTERFERE WITH FUNCTION.

GRASS SWALE & INFILTRATION BASIN CROSS SECTION

N.T.S.

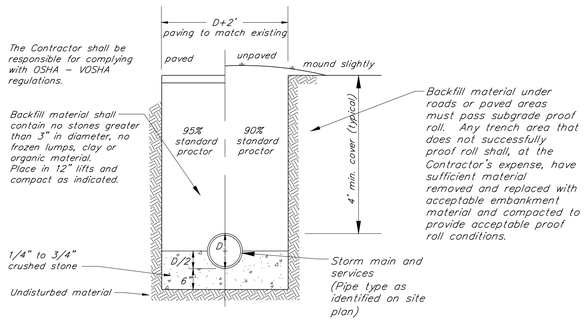


Typical Catch Basin/Storm Manhole Detail

N.T.S.

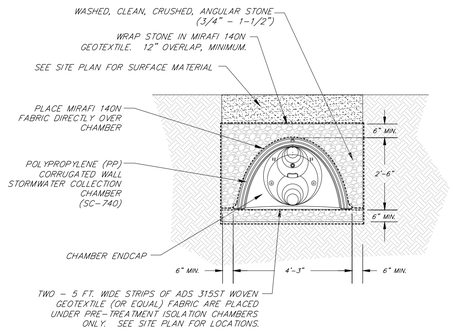
PVC SDR 35 pipe shall not be installed when the temperature drops below 32° F or goes above 100° F unless prior approval is obtained from the Engineer. Extra care is required when handling PVC pipe during cold weather. PVC pipe shall not be stored outside and exposed to prolonged periods of sunlight as pipe discoloration and reduction in pipe impact strength will occur. If PVC pipe is to be stored on site for 1 month or longer it shall be covered with canvas or other opaque material.

All new storm and sanitary extending from structures shall be laid with a pipe laser to elevation and slope as shown on the plans.



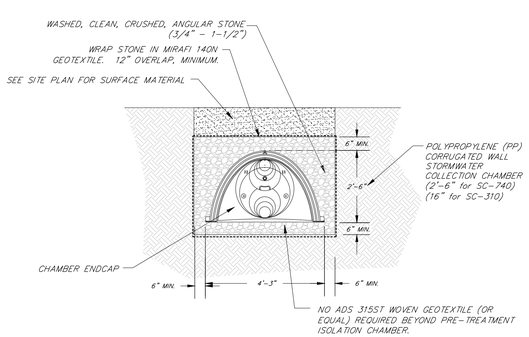
Typical Storm Trench Detail

N.T.S.



Typical Pretreatment Isolation Chamber Cross Section

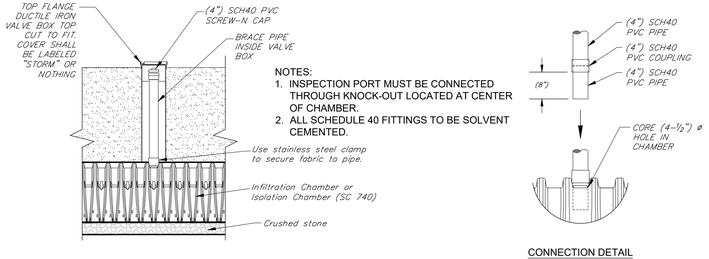
N.T.S.



Typical Infiltration Chamber Cross Section

N.T.S.

One Inspection port shall be installed in each pre-treatment isolation chamber row. See site plan for inspection port locations.



Typical Inspection Port Cross Section

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Drawing No.

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Construction Notes

The Contractor will be responsible for all construction of water main, storm and sanitary sewer systems as shown on the plans. The Contractor will be responsible for all necessary adapters, fittings, etc. to make connections to the existing and proposed units. The Contractor shall be responsible for all work shown or implied on the plans and/or referenced in the specifications and permits. The Contractor shall submit, for approval by the Engineer, all types of materials and products used.

Water Main (Applies to new domestic water mains and services) (See also Fire Service Main Notes)

1. The pipe for water main shall be CL52 ductile iron. Ductile iron fittings shall conform to AWWA C110, 350 pounds working pressure. Valves shall be manufactured to meet all requirements of AWWA specification C509.

2. All pipe shall be installed in accordance with AWWA C600. The pipe shall be kept free of foreign matter and debris during installation. When the process of pipe laying has stopped, any open ends of pipe shall be plugged. There shall be a minimum of 6'-0" (1.82 m) cover over all pipe and service lines. Any pipe deflection shall not exceed fifty (50%) percent of recommended manufacturer's maximum deflection. Backfill materials and procedures shall be as detailed on the drawings. The Contractor shall be responsible for any and all sheeting and/or shoring necessary to comply with OSHA – VOSHA regulations.

3. The testing of the water main shall consist of the testing of all installed pipe, services and hydrants in accordance with AWWA C600. The testing shall consist of a pressure test and leakage test. All testing shall be done with potable water and in the presence of the Engineer, and representatives from the Town of Milton Water Department. The pressure test consists of maintaining a minimum internal pipe pressure of 200 psi (140,620 kg/m^2) for two (2) hours. The testing allowance shall be defined as the maximum quantity of makeup water that is added into a pipeline undergoing hydrostatic pressure testing, or any valved section thereof, in order to maintain pressure within +/– 5 psi of the specified test pressure (after the pipeline has been filled with water and the air has been expelled). No pipe installation will be accepted if the quantity of makeup water is greater than that determined by the following formula:

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

L = testing allowance (makeup water), in gallons per hour
S = Length of pipe tested, in feet
D = Nominal pipe diameter, in inches
P = average test pressure during the hydrostatic test, in pounds per square inch (gauge)

4. Chlorinating of the system shall be accomplished after the water main has been successfully pressure tested and thoroughly flushed. Disinfecting shall be in accordance with AWWA C–651. The disinfecting process shall be deemed acceptable only after two consecutive sets of acceptable samples, taken from the flushed and disinfected main 24 hours apart, shows no evidence of bacteriological contamination. For proper disinfection use minimum 25 mg/l chlorine concentration for 24 hours. The concentration must remain above 10 mg/l. Tablet disinfecting is not acceptable.

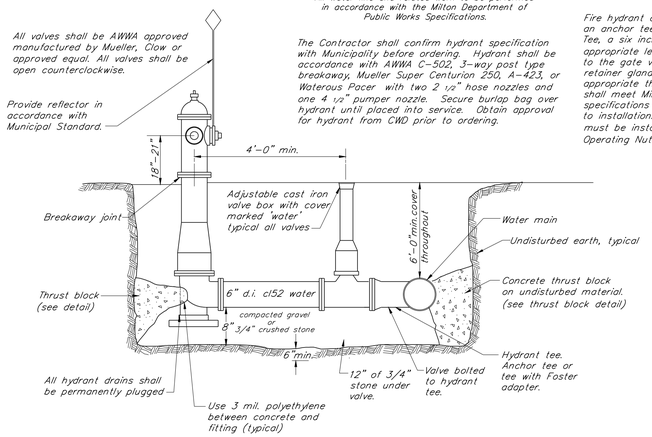
5. The water main shall be thoroughly flushed with a minimum flow velocity of 2.5 ft/s to flush foreign materials out of the valves and hydrants. Prior to flushing, the Contractor shall contact the Owner, Fire Department in the municipality, the District Water Supply or Department of Public Works, and the Engineer.

All valves shall be AWWA approved manufactured by Mueller, Clow or approved equal. All valves shall be open counterclockwise.

All water line and related work to be performed in accordance with the Milton Department of Public Works Specifications.

The Contractor shall confirm hydrant specification with Municipality before ordering. Hydrant shall be accordance with AWWA C–502, 3–way post type breakaway, Mueller Super Centurion 250, A–423, or Waterous Pacer with two 2 1/2" hose nozzles and one 4 1/2" pumper nozzle. Secure burlap bag over hydrant until placed into service. Obtain approval for hydrant from CWD prior to ordering.

Fire hydrant assemblies shall consist of an anchor tee or a Swivel Joint Hydrant Tee, a six inch RW gate valve, the appropriate length of 6" D.I. pipe secured to the gate valve with the appropriate retainer glands, the fire hydrant, and appropriate thrust block. All hydrants shall meet Milton Water Department specifications and shall be plugged prior to installation. Waterous fire hydrants must be installed with a "Boston Operating Nut."



Typical Hydrant & Gate Valve Assembly

N.T.S.

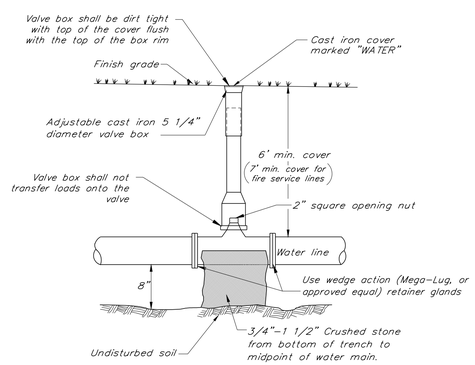
Notes:

1. Contractor shall provide swing ties for all water line bends and elbows.
2. All MJ glands shall be 'Megalug' or approved equal.
3. Mechanical joint restraints with twist off nuts shall be EBAA, Sigma, or approved equal.

WATER & SEWER Testing and Contractor Coordination Requirements

1. All water lines and sewer lines shall be thoroughly tested by the Contractor in accordance with the Environmental Protection Rules (09/29/07), and the Chapter 21 Water Supply Rules (the more stringent rule shall apply).
2. All private or municipal waterlines shall be tested by the Contractor in accordance with the procedures outlined in AWWA C600 and/or NFPA 24.
3. The Contractor will be responsible for all construction of water main and sanitary sewer systems as shown on the plans. The Contractor will be responsible for all necessary adapters, fittings, etc. to make connections to the existing and proposed units. The Contractor shall be responsible for all work shown or implied on the plans and/or referenced in the specifications and permits. The Contractor shall submit, for approval by the Engineer, all types of materials and products used.
4. No water main shall be closer than ten (10) feet to any sanitary sewer or sanitary manhole and five (5) feet to any catch basin or storm sewer line. Provide minimum of 18" vertical separation between water main and storm/sanitary sewer crossing.
5. The Contractor shall be responsible for construction as–builts to service locations, and any water main fittings. As–builts shall be recorded in accordance with the outlined procedures.
6. **The Contractor shall be responsible for contacting the Engineer, Municipality, and Water District, when applicable, at least 48 hours prior to starting construction on any portion of the exterior water or sanitary systems. This notification requirement shall continue to the completion of the water and sanitary systems.**
7. Utility Testing. The Contractor shall be responsible for scheduling water and sanitary testing, with the Engineer, Municipality Public Works Department, and/or the Water District at a minimum of 48 hours prior to the test. Based on availability of Engineer's staff, the Engineer shall accommodate the testing schedule within 48 hours of the Contractor requested test date/time.
8. The Contractor must successfully pre–test the water and forcemain for 2 hours prior to scheduling the Engineer. The Contractor shall notify Engineer immediately if pre–test failed.
9. The Contractor shall immediately contact the Engineer if pre–scheduled testing and/or water/sewer construction is canceled. If Contractor does not contact Engineer and Engineer visits the site, the Contractor shall be responsible for Engineer's fees/mileage for site visit.
10. The Contractor shall coordinate water construction with the Milton Water Department. The Contractor shall leave thrust blocks and other required sections of new line exposed until the Water Department has inspected and approved them.

1. Valves shall be manufactured to meet all requirements of AWWA C509 or C515 latest edition. Valves twelve inches (12") and smaller shall be bubble tight, zero leakage at 200 psi working pressure. Valves shall have non–rising stems, open counter clockwise (left) and provide a two inch (2") square operating nut with an arrow cast in the metal indicating direction of opening. Each valve shall have the maker's name, pressure rating and year in which it was manufactured cast on the body. Valves shall be mechanical joint on each end, and secured to the adjoining pipe with an approved retainer gland. Prior to shipment from the factory each valve shall be tested by hydrostatic pressure equal to twice the specified working pressure.
2. Gate valves shall be Mueller, Kennedy, AFC, M&H or approved equal on water distribution mains and Mueller, AFC, or approved equal on CWD Transmission mains.
3. Gate valves used to convey or dispense water for human consumption shall comply with the Vermont Law (Act 193) An Act Relating to Prevention of Lead Poisoning By Exposure to Lead in Consumer Products, and shall contain no more than 0.25% lead by weighted average. Fixtures containing brass must comply with NSF/ANSI 61 Annex G.
4. Buried gate valves shall be provided with a two inch (2") square wrench nut and shall be installed with a cast iron valve box as required to allow access to the valve operating nut at all times. In installations where the depth from grade to top of valve operating nut is greater than five feet (5'), a valve stem riser shall be provided and installed such that the depth from the valve stem riser nut to grade is from four feet to five feet (4'–5'). Valve stem risers shall be of high strength stainless steel and of welded construction (see Valve Stem Extension Detail in CWD Standard Specifications).
5. All gate valve bolts, studs and nuts shall be made from corrosion resistant stainless steel.
6. Tapping valve inlet and outlet connection shall be Standardized Mechanical Joint unless specified otherwise on the drawings for the type of pipe required for the branch or lateral pipeline.
7. Valve boxes located in roadways shall have one non–adjustable paving riser of a height ranging from one and a half inches (1.5") to six inches (6") as needed, to be brought to final pavement grades

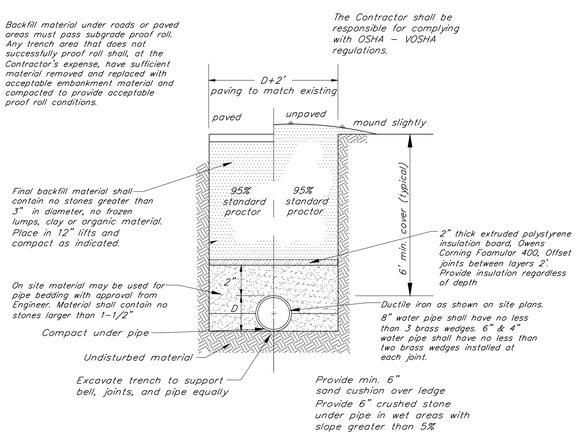


Typical Resilient Wedge Gate Valve

N.T.S.

Backfill material under roads or paved areas must pass subgrade proof roll. Any trench area that does not successfully proof roll shall, at the Contractor's expense, have sufficient material removed and replaced with acceptable embankment material and compacted to provide acceptable proof roll conditions.

The Contractor shall be responsible for complying with OSHA – VOSHA regulations.

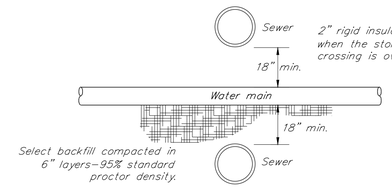


Typical Water Trench Detail

N.T.S.

NOTES:

1. The location of sewer/storm mains in relation to water mains shall be in accordance with the Vermont Water Supply Rules.
2. Water mains shall be laid at least 10 feet horizontally from any existing or proposed sanitary manholes, sanitary sewer, or force mains. Storm sewers and manholes shall be at least 5 ft horizontally from any existing or proposed water main. The distance shall be measured edge to edge. If this distance cannot be obtained variance shall be approved by the ANR Drinking Water & Groundwater Protection Division.
3. 18" separation shall be maintained whether water is over or under sewer. At crossings, one full length of water pipe shall be located so both joints are as far from the sewer as possible. If the sewer main is over the water main, the water main shall be wrapped in V–Bio Enhanced Polyethylene Encasement in accordance with the manufacturer's requirements. At a minimum, the V–Bio wrap shall extend beyond the water pipe joint on each side of the sewer pipe crossing. If the 18" vertical separation distance cannot be obtained, then a variance must be approved in accordance with the Water Supply Rule.
4. A minimum separation of 25 ft. shall be maintained between waterlines and underground storage tanks. 50 ft. separation is preferred, if possible.



Sewer / Water Separation Detail

N.T.S.

All water line and related work to be performed in accordance with the Town of Milton Public Works specifications.

Section — Elevation

Anchorage of Valves

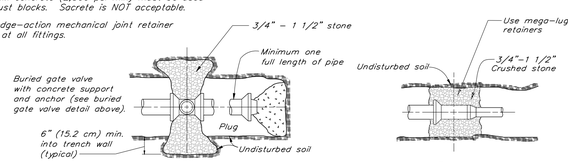
Note

A thrust block shall be installed at all water main bends, end caps, and tees.

Precast thrust blocks are NOT acceptable.

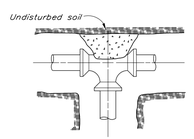
Redi–mix concrete (2,500 psi min) must be used for thrust blocks. Sacrete is NOT acceptable.

Use wedge–action mechanical joint retainer glands at all fittings.



Valve/Dead End

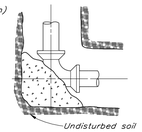
Reducer



Tee

Note: Place 4 mil. (minimum) polyethylene sheet between all concrete thrust blocks and pipe/or fittings to prevent bond.

Concrete shall not cover bolts, etc. of fittings.



90°, 45°, 22 1/2°, or 11 1/4° Bend

Minimum Area of Bearing Surface of Concrete Thrust Block (in square feet)

3"				4"				6"				8"				12"				SOIL CONDITION	SAFE BEARING LOAD(PSF)
ENDS & TEES	VALVES 90° ELB.	REDUC 45° ELB.	22.5° ELB.	ENDS & TEES	VALVES 90° ELB.	REDUC 45° ELB.	22.5° ELB.	ENDS & TEES	VALVES 90° ELB.	REDUC 45° ELB.	22.5° ELB.	ENDS & TEES	VALVES 90° ELB.	REDUC 45° ELB.	22.5° ELB.	ENDS & TEES	VALVES 90° ELB.	REDUC 45° ELB.	22.5° ELB.		
0.5	0.5	0.5	0.5	0.5	1.0	0.5	0.5	1.0	1.5	1.0	0.5	2.0	2.5	1.5	1.0	4.0	5.5	3.0	1.5	Sound shale	10,000
1.0	1.0	1.0	0.5	1.5	2.0	1.0	0.5	3.0	4.0	2.0	1.0	4.5	6.5	3.5	2.0	10.0	14.0	7.5	4.0	Cemented gravel & sand	4,000
1.0	1.0	1.0	0.5	2.0	0.5	1.5	1.0	3.5	5.0	3.0	1.5	6.0	8.5	5.0	2.5	13.0	18.5	10.0	5.0	Coarse & fine compact sand	3,000
1.5	2.5	1.5	1.0	2.5	3.5	2.0	1.0	5.5	7.5	4.0	2.0	9.0	13.0	7.0	3.5	20.0	27.5	15.0	8.0	Medium clay (can be spaded)	2,000
3.0	4.5	2.5	1.5	5.0	7.0	4.0	2.0	10.5	15.0	8.0	4.0	18.0	25.0	14.0	7.0	39.0	55.0	30.0	15.0	Soft clay	1,000
Maximum water pressure = 200 PSI (140,620 kg/m^2)																					

Thrust Block Details

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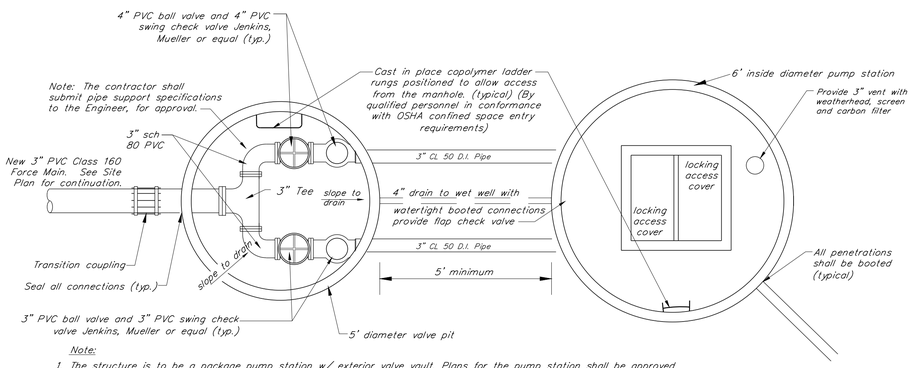
Note:
The 4" PVC valves shall be Sch. 80 solvent weld PVC and shall meet ASTM D-1784 & D-2467 and D-3441 (for PVC) rated for a pressure of 232 psi



Note:

1. The structure is to be a package pump station w/ exterior valve vault. Plans for the pump station shall be approved by the Engineer prior to construction.
2. The submersible pumps shall be assembled and tested at the factory.
3. The Contractor shall provide the design for floatation prevention, approved by the Engineer, prior to construction.
4. The station shall include all necessary controls, switches, fittings, power service, and supply all appurtenances necessary to make the station complete and operable.
5. All electrical equipment shall comply with National Electrical Code requirements and all City of Vergennes codes.

Plan

Sewage Pump Notes

1. The sewage pumps shall be designed such that, with any one pump out of service, the remaining unit(s) will have capacity to handle the design peak hourly flow.
2. The pumps shall be recessed impeller, explosion proof, non-clog type specifically designed for raw sewage applications.
3. Each pump shall be of heavy cast iron construction. The shaft shall be of solid stainless steel construction sealed against leakage by a double mechanical seal.
4. Pumping sequence shall be arranged in an alternating "lead"/"lag" configuration. When liquid level reaches the predetermined "lead pump on" elevation, the designated lead pump shall start automatically. This pump shall continue to operate until such time as the liquid level falls below the designated "pump off" elevation. If flow into the wet well exceeds the capacity of the lead pump, the liquid level rises to the "lag pump on" elevation, then the designated lag pump shall be automatically activated. Both the lag pump and the lead pump shall continue to operate until liquid level falls to the "pump off" elevation. A "high level alarm" condition shall occur if liquid level rises above the predetermined alarm level (typically established at an elevation 6" above the "lag pump on" elevation). The alarm condition shall remain in affect until manually reset from the control panel.

Controls

The main equipment control system shall be mounted on separate posts or on buildings as specified on Electrical Plans in a NEMA 4 panel, complete with suitable latching devices. All circuit breakers, motor starter reset buttons, and pump control switches shall be mounted so that they are operable without opening the cabinet. The low voltage, automatic pump control section shall be separate from the high voltage circuit breaker motor starter section and shall be provided with a hinged access door and latch. The control switches shall be mounted on the face of the automatic pump control section door. A grounding-type convenience duplex outlet shall be provided for operation of 115 volt AC devices.

Thermal magnetic circuit breakers shall be provided for branch disconnect service and over-current protection of all motor, control and auxiliary circuits. Magnetic across-the-line starters with under voltage release and overload coils for each phase shall be provided for each pump motor to give protection against single phasing. Each single phase auxiliary motor shall be equipped with an over-current protection device, in addition to its branch circuit breaker, or shall be impedance protected. All switches shall be labeled and a coded wiring diagram shall be provided.

A running time meter shall be supplied for each pump to record the hours of operation. The meter shall be enclosed in a dust and moisture proof molded plastic case. The flush mounted dial shall register in hours and tenths of hours up to 99999.9 hours before repeating. The meter shall be suitable for operation from a 115 volt, 60 cycle supply and shall be mounted on the surface of the control cabinet.

Wiring

The pump station shall be completely pre-wired at the factory, except for the power feeder lines. All wires shall meet the requirements of the National Electric Code and shall be color-coded as indicated on the wiring diagram. All wiring outside the panel shall be in conduit, except for the 115 volt accessory items which are provided with insulated service cord. Conduit shall be provided from the control panel across the ceiling, and up the entrance tube to receive the feeder lines, and shall terminate in a threaded conduit connection through the wall of the entrance tube. All receptacles shall be of the ground fault type.

Electrical System

All material and equipment necessary for a complete and workable electrical system shall be furnished and installed including: conduit and fittings, wire and cable, service panel, grounding, alarm system, connections to pump station, power company connection fees, telephone service fees.

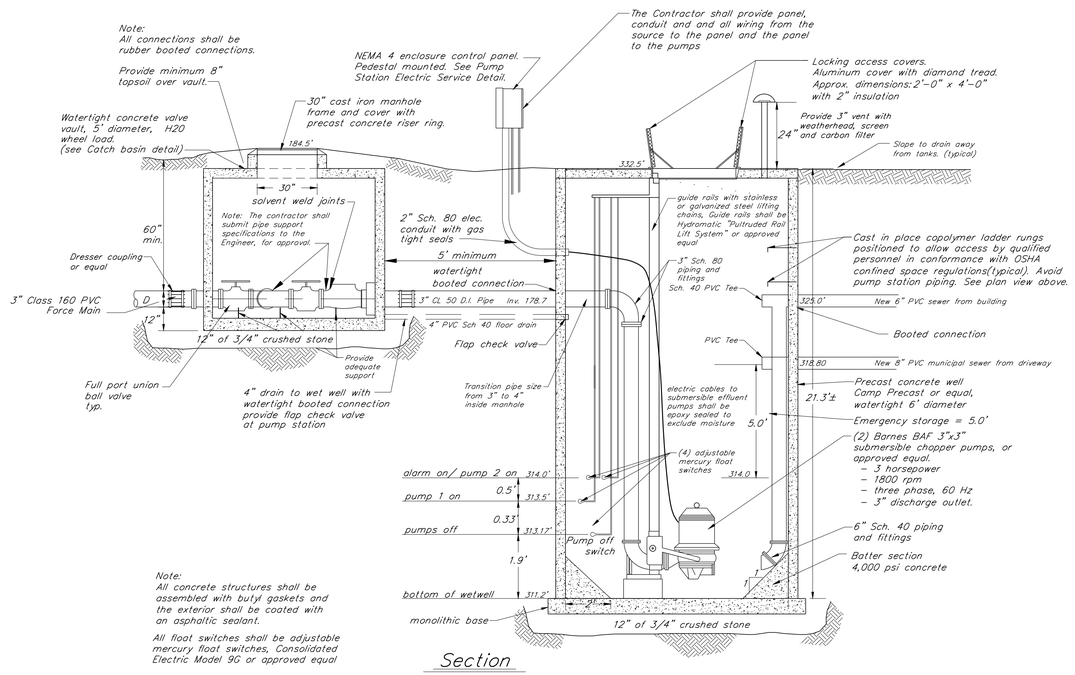
Packaged pump station will be furnished completely wired including controls and will require only power wiring from the service panel to the control panel in the pump station and signal wiring for the high level signal from the pump station control to the service panel. The above grade panel and signal communicator shall be provided by the pump station manufacturer.

All materials and equipment shall meet the standards of the National Electrical Manufacturer's Association and Underwriters Laboratories, Inc., and shall bear their label wherever standards have been established and label service is available.

Installation of electric systems and controls shall be in conformance with the latest edition of the National Electric Code, local ordinances and regulations prescribed by the local power company.

Completed electric work performed shall comply with the latest edition of the National Electric Code Underwriters Laboratories regulations and all Municipal, State and other public or private authorities having jurisdiction. The contractor is responsible for acquiring all necessary permits. All equipment and workmanship shall be guaranteed to be free from mechanical and electrical defects for a period of one year from the day of final acceptance. Any replacement of parts or adjustments, including labor made necessary by such defects and adjustments, shall be rectified without cost to the Owner.

Note:
All connections shall be rubber booted connections.



Note:
All concrete structures shall be assembled with butyl gaskets and the exterior shall be coated with an asphaltic sealant.

All float switches shall be adjustable mercury float switches, Consolidated Electric Model 9G or approved equal

Section

Duplex Pump Station

not to scale

Pump Station Testing Notes

1. The Contractor shall test both the pump station wetwell and the valve pit for watertightness prior to backfill. The leakage test shall conform to applicable sections of the State of Vermont Environmental Protection Regulations, Chapter 14, Indirect Discharge Rules (April 2003). This test shall be witnessed by the Engineer and shall be performed as follows:

   After the structure has been assembled in place, all lifting holes and exterior joints shall be filled and pointed with an approved non-shrinking mortar. All pipes and other openings into the structure shall be suitably plugged and the plugs placed to prevent blowout.

   Pump Station structure shall be checked for infiltration by filling with water to the top of the cone section. A stabilization period of one hour shall be provided to allow for absorption. At the end of this period, the structure shall be refilled to the top of the cone, if necessary, and the measuring time of at least six hours begun. At the end of the test period, the structure shall be refilled to the top of the cone measuring the volume of water added. This amount shall be converted to a 24 hour rate and the leakage determined on the basis of depth. The leakage for each structure shall not exceed one gallon per vertical foot for a 24 hour period for exfiltration and there shall be no visible infiltration.

   If the structure fails the test it shall be thoroughly cleaned and resealed, from the outside, and retested at the Contractors expense.

2. All penetrations and joints shall have watertight seals.
3. The Contractor shall provide all necessary unions, fittings, etc. for easy pump removal.
4. The pump station shall include all the necessary controls, switches, fittings and appurtenances to make the station complete.
5. The Contractor shall provide an audible and flashing alarm and fused disconnect switch. All necessary cable and wiring shall be supplied by the Contractor.
6. The Contractor shall use Schedule 80 PVC with solvent weld joints for all piping inside pump station and valve pit.
7. All electrical equipment shall comply with the National Electric Code and other applicable codes.
8. Any modifications to pump station design or location must be approved by the Engineer and other permitting authorities.
9. The Contractor shall anchor tank as required to prevent flotation of valve pit and pump station wet well. Flotation calculations for the structures must be provided by the Contractor.

Pump Station Design Criteria

Design Flows: 525 GPD

10 employees x 15 GPD = 150 GPD

5 Vehicle washes/day x 75 GPD/Wash = 375 GPD

Use duplex pumps in 6 foot diameter wetwell.

Volume of wetwell per foot = 211 gallons/foot

Dose of 8 cycles/day for 180 min. retention time

Volume of minimum dose = 525 gallons/8 cycles = 65 gallons/cycle

Height of pump cycle = $\frac{65 \text{ gallons/cycle}}{211 \text{ gallons/foot}}$ = 0.31 feet/cycle

Minimum volume of emergency storage using Design Flow and 16 hour delivery:

Volume = $\frac{525 \text{ gallons/day}}{16 \text{ hours/day}} \times 4 \text{ hours} = 132 \text{ gallons}$

Emergency storage will be in Pump Station with interior storage volume of:

Volume of wetwell per foot = 211 gallons/foot

Provide 5' Height of emergency storage = 5.0 feet x 211 gal/ft = 1,055 gallons

Average Flow 24 hour day = $\frac{525 \text{ gallons/day}}{(24 \text{ hours/day})(60 \text{ minute/hour})} = 0.36 \text{ gallons/minute}$

Required Testing

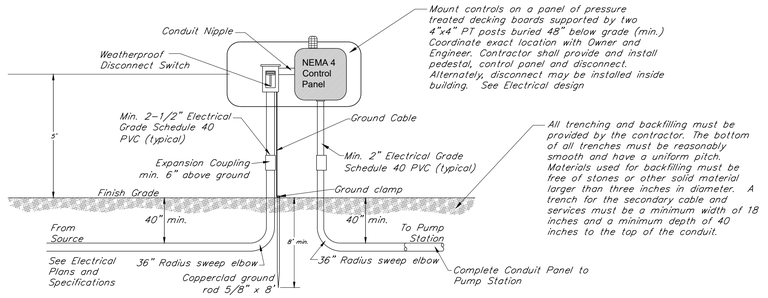
All mechanical, control and alarm functions shall be tested in the presence of the Owners representative to demonstrate that all equipment is fully operational.

Any grounds, opens, shorts or other defects shall be rectified at no cost to the Owner before acceptance.

The contractor and electrician shall perform a start up test with potable water. Engineer shall witness test. Flow rate of pumps, start up amperage, run amperage, flow rate, alarms, floats, alternator, etc. shall be measured.

Pump Station Control Panel Requirements

1. All Panels shall be NEMA 4. (lockable)
2. All Panels shall include (at a minimum) the following equipment:
   - Fused disconnect for main power feed
   - UL508 stamp and approval
   - Overload relays with manual reset
   - Individual circuit breakers for each pump
   - HOA switches for each pump
   - Automatic alternator to cycle pumps
   - Leak seal detector
   - Audible alarm and flashing light
   - Elapsed time meters for each pump
3. It is preferable that the same manufacturer supply both the pumps and the control panel. Since this is not always possible separate manufactures can be used if prior approval is obtained from the Engineer.
4. Coordinate with Owners electrician to verify electric service.



Typical Pump Station Electric Service

n.t.s.

System Curve For Pump Selection New Pressurized Distribution

Gallon/Per/Minute GPM	Velocity	Static Head	Friction Loss	Minor Loss	Discharge Head	Total Dynamic Head
100	2.39ft/sec	8ft	0.66ft	5ft	2.31ft	15.97ft
125	2.99ft/sec	8ft	0.99ft	5ft	2.31ft	16.30ft
150	3.58ft/sec	8ft	1.38ft	5ft	2.31ft	16.69ft

Minimum pump operating point capable of 125 G.P.M. @ 15.64' T.D.H.

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STAMP:

Project:

TOWN OF MILTON
Public Works Facility

Bombardier Road

Project No.	21282
Scale	N.T.S.
Drawn by	DMR
Checked by	
Date	11/11/2021

Revisions

No.	Date	Description

Drawing Title

Civil Details

Drawing No.

C3.05

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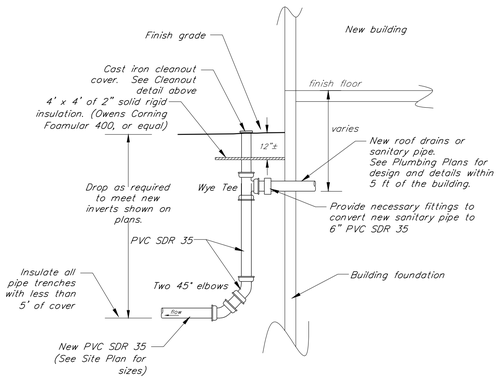
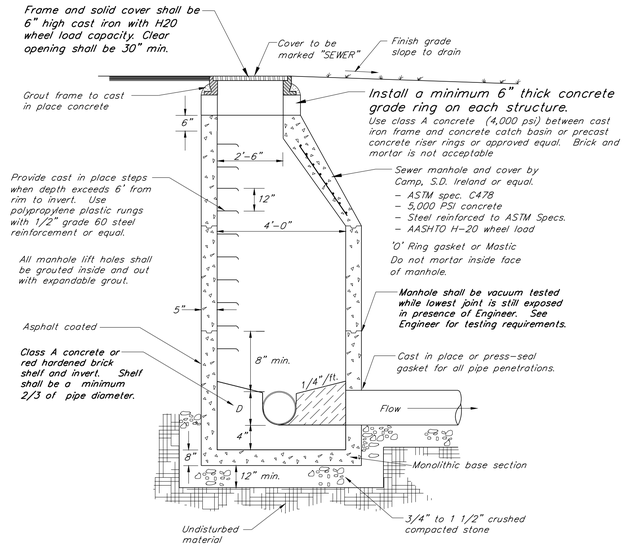


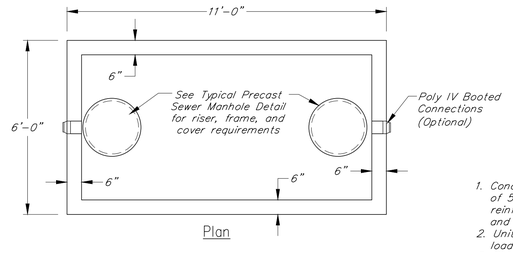
Drop Outlet Plumbing Connection Detail

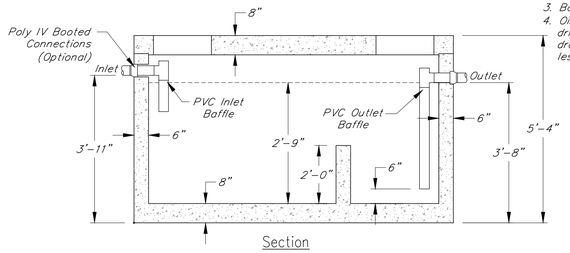
N.T.S.



Typical Precast Sewer Manhole

N.T.S.



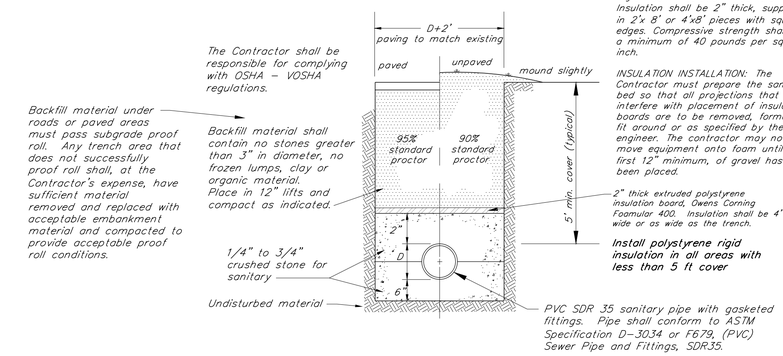


1. Concrete will meet the minimum strength of 5,000 psi or 28 days. Steel reinforcement shall be grade 60. Joints and seals shall use Butyl Sealant.
2. Unit, riser and rim shall meet H20 loading.
3. Booted pipe connections.
4. Oil/water separator is for incidental drippings from the shop area and the drop off area, flows are expected to be less than 1 GPD.

Heavy Duty 1,000 Gallon Oil/Water Separator Detail

N.T.S.

PVC SDR 35 pipe shall not be installed when the temperature drops below 32° F or goes above 100° F unless prior approval is obtained from the Engineer. Extra care is required when handling PVC pipe during cold weather. PVC pipe shall not be stored outside and exposed to prolonged periods of sunlight as pipe discoloration and reduction in pipe impact strength will occur. If PVC pipe is to be stored on site for 1 month or longer it shall be covered with canvas or other opaque material.

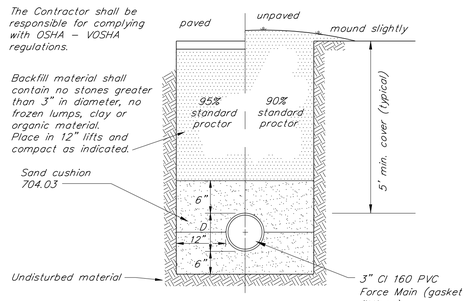


Typical Sanitary Trench Detail

N.T.S.

Sanitary Testing Requirements

1. All sewer lines and manholes shall be thoroughly tested by the Contractor in accordance with the Environmental Protection Rules (09/29/07).
2. All sanitary manholes shall be vacuum tested in the presence of the Engineer. The structure shall be tested prior to backfill with the lowest seam exposed. Test procedures and pressure shall be determined jointly by the local approval agency and the Engineer. Failure of any vacuum test shall necessitate repair and/or replacement of the structure and retest. Water testing manholes is not acceptable.
3. All sanitary mains shall be air tested in the presence of the Engineer. At a minimum, the test pressure shall be 4 pounds per square inch at the highest point along the test for 4 minutes.
4. Utility Testing. The Contractor shall be responsible for scheduling sanitary testing at a minimum of 24 hours prior to the test. Based on availability of Engineer's staff, the Engineer shall accommodate the testing schedule within 24 hours of the Contractor requested test date/time.
5. The Contractor shall immediately contact the Engineer if pre–scheduled testing and/or water/sewer construction is canceled. If Contractor does not contact Engineer and Engineer visits the site, the Contractor shall be responsible for Engineer's fees/mileage for site visit.



Force Main Trench Detail

N.T.S.

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TOWN OF MILTON
Public Works Facility

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C3.06

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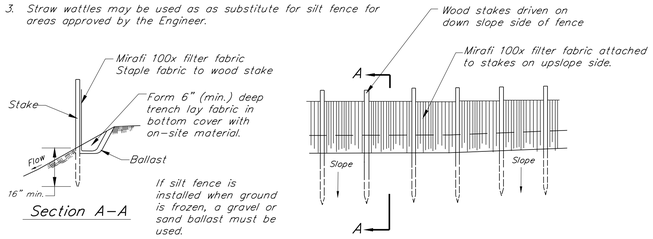
Notes

1. Contractor shall be responsible for the installation, maintenance, and removal of silt fence in all locations shown on the plans.
2. Maintenance shall be performed as needed and material removed when sediment reaches half of fabric height. Remove silt fence after successful establishment of vegetation.
3. Straw wattles may be used as as substitute for silt fence for areas approved by the Engineer.

Silt fence spacing chart	
Slope	silt fence spacing
5% to 10%	50 ft. or less
10% to 20%	25 ft. or less
> 20%	15 ft. or less

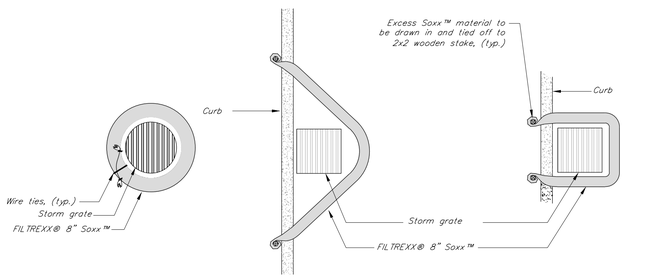


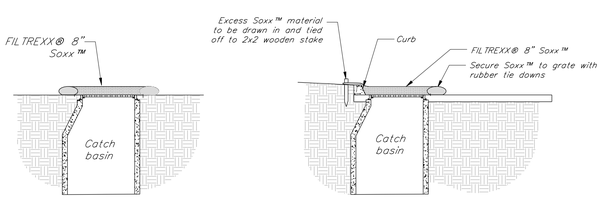
Typical Temporary Silt Fence

N.T.S.

Winter Construction Requirements (October 15th - April 15th)

1. For areas to be stabilized with vegetative cover, seeding shall be completed no later than September 15th to ensure adequate growth and cover.
2. If seeding is not completed by September 15th, additional non-vegetative protection must be used to stabilize the site for the winter period. This includes the use of Erosion Control Matting or netting of a heavy mulch layer.
3. Where mulch is used for temporary stabilization it must be applied at double the standard rate, or a minimum of 3 inches with an 80%-90% cover.
4. Stabilized Construction Entrances shall be enlarged to provide for snow stockpiling.
5. Limits of disturbance shall be moved or replaced to reflect any revised boundaries of winter work.
6. The site shall be managed to provide adequate snow storage and control of meltwater. Cleared snow shall be stored down slope of all areas of disturbance and out of stormwater treatment structures.
7. A minimum 25 foot buffer shall be maintained from perimeter controls such as silt fence.
8. Drainage structures must be kept open and free of snow and ice dams.
9. Silt fence and other practices requiring earth disturbance must be installed ahead of frozen ground.
10. To ensure cover of disturbed soil in advance of a melt event, areas of disturbed soil must be stabilized at the end of each work day, with the following exceptions:
    - If no precipitation within 24 hours is forecast and work will resume in the same disturbed area within 24 hours, daily stabilization is not necessary.
    - Disturbed areas that collect and retain runoff, such as house foundation or open utility trenches.
11. Prior to stabilization, snow or ice must be removed to less than 1 inch thickness.
12. Use stone to stabilize areas such as the perimeter of buildings under construction or where construction vehicle traffic is anticipated. Stone paths should be 10-20 feet wide to accommodate vehicular traffic.





NOTES:
1. All material to meet FILTREXX® specifications.
2. Filter Media™ fill to meet application requirements.
3. Compost material to be dispersed on site, as determined by engineer.

FILTREXX SiltSoxx Inlet Protection

GENERAL GRADING AND SITE WORK NOTES

1. ALL AREA DISTURBED AND ALL AREAS WITHIN THE CLEARING LIMITS SHALL BE GRADED AND COVERED WITH A MINIMUM OF 4" OF LOAM TOPSOIL. THE AREAS TO BE LOAMED SHALL BE FREE AND CLEAR OF ROOTS, WASTE MATERIAL AND OTHER DELETERIOUS MATERIAL. TOPSOIL SHALL BE SPREAD AND LIGHTLY COMPACTED TO A DEPTH OF 4". TOPSOIL SHALL BE APPROVED BY THE ENGINEER. ALL SIDE SLOPES ARE TO BE LOAMED.
2. ALL TURF ESTABLISHMENT SHALL BE IN ACCORDANCE WITH SECTION 651 OF THE VT STANDARD SPECIFICATIONS 2018 AND THE TOWN'S SPECIFICATIONS. MULCHING SHALL FOLLOW SEEDING BY NO MORE THAN 24 HOURS.
3. ALL CUT SLOPES SHALL BE NO STEEPER THAN 2.0H ON 1.0V. ALL FILL SLOPES SHALL BE NO STEEPER THAN 2.0H ON 1.0V.
4. THE CONTRACTOR SHALL NOT DISTURB ANY GROUND BETWEEN OCTOBER 15TH BETWEEN APRIL 15TH WINTER MONTHS, UNLESS APPROVED BY THE ENGINEER.
5. TEMPORARY SEDIMENT CONTROL MEASURES SHALL BE ERECTED PRIOR TO ANY CLEARING OR CONSTRUCTION. THESE MEASURES MAY BE ERECTED IN PHASES, BUT IN NO CASE SHALL GROUND DISTURBANCE PROCEED SEDIMENT CONTROL INSTALLATION. SPECIAL AREAS MAY BE DESIGNATED BY THE OWNER FOR PRESERVATION OF EXISTING TREES. THESE AREAS SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSURE NO DAMAGE IS DONE TO DESIGNATED TREES.
6. EXISTING PLANTINGS ARE LOCATED IN GENERAL AREAS AS SHOWN ON THIS PLAN. CONTRACTOR SHALL PROTECT PLANTINGS SO AS NOT TO DAMAGE THESE OR THEIR ROOT SYSTEMS.
7. SLOPE STABILITY BASED UPON UNSATURATED SOIL CONDITIONS. IF DURING CONSTRUCTION SATURATED SOILS ARE ENCOUNTERED, CONTACT THE ENGINEER IMMEDIATELY.

SEEDING SPECIFICATIONS

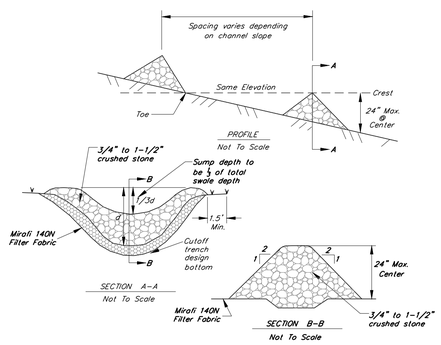
PERMANENT SEED MIX SHALL BE USED AS EARLY AS PRACTICABLE BETWEEN 5/15 AND 9/15 AND SHALL MEET THE FOLLOWING CRITERIA:

SEED	% WEIGHT
CREEPING RED FESCUE	40%
KENTUCKY BLUEGRASS	30%
PERRENNIAL RYEGRASS	30%

Refer to Post Construction Soil Restoration Plan for additional requirements

If hydroseeding is used for temporary stabilization measures for turf establishment. Specifications are:
Hydroseed Additives:
Fertilizer: 19-19-19 75 lbs per 1,000 gallons of water
Lime: 100 lbs. per 1,000 gallons of water
Mulch: 300 lbs. per 1,000 gallons of water.
Tacifer: 5 lbs. per 1,000 gallons of water.

1. Areas having soil compaction as a result of construction shall have any crushed stone removed and the subgrade shall be roto-tilled prior to placing topsoil. Refer to the Post Construction Soil Depth and Quality Requirements.
2. If hand seeding, only straw mulch is to be used and secured by netting either organic or inorganic. If inorganic is used, it must be removed before the first mowing.
3. Starter fertilizer shall be applied at the manufacturer's suggested rate at the time of seeding. Fertilizer application will not be allowed in sensitive areas and adjacent to drainage ways as determined by the Engineer.
4. Watering is to be done by the Contractor and is to last for the duration of the warranty period to maintain proper growth. All apparatus necessary to apply the water must be furnished by the Contractor (i.e. hoses, sprinklers, etc.).
5. Staking of all topsoiled areas to control foot traffic will be required. Unless otherwise specified, acceptable staking materials will be grade stakes and twine or string with flagging attached for visibility.
6. A guarantee through the first mowing is required with any sparse or bare areas larger than 1 sq. ft. to be redone.
7. The Contractor is responsible for the first mowing. After the first mowing and prior to the Owner taking responsibility for the lawn areas the Contractor and an Owner's Representative shall meet to inspect the vegetation establishment.
8. Contractor is responsible for all topsoil to complete the project as shown. If existing volume of topsoil is inadequate, the Contractor, at no cost to the Owner, shall purchase offsite approved topsoil as necessary.



CONSTRUCTION SPECIFICATIONS

1. Stone will be placed on a filter fabric foundation to the lines, grades and locations shown in the plan.
2. Set spacing of check dams to assume that the elevations of the crest of the downstream dam is at the same elevation of the toe of the upstream dam.
3. Extend the stone a minimum of 1.5 feet beyond the ditch banks to prevent cutting around the dam.
4. Protect the channel downstream of the lowest check dam from scour and erosion with stone or liner as appropriate.
5. Ensure that channel appurtenances such as culvert entrances below check dams are not subject to damage or blockage from displaced stones.

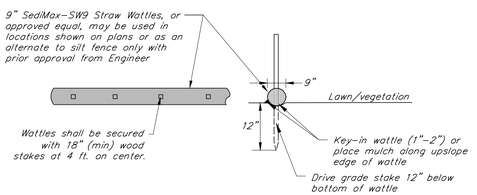
Stone Check Dam

Construction Limit Barriers

- Temporary chain-linked construction fence may be used to delineate construction limits where practical or where directed in the Contract Documents.
- Orange construction fence or snow fence shall be used to demarcate short-term construction activities.
- 3" thick orange polyester mesh webbing may be used to demarcate construction disturbance limits that are not proximate to environmentally sensitive areas (wetlands, RTE plants, etc.)

NOTES:
1. Contractor shall be responsible for the installation, maintenance, and removal of straw wattles in all locations shown on the plans.
2. Maintenance shall be performed as needed and material removed when sediment reaches half of product height. Remove wattle after successful establishment of vegetation.

Wattle spacing chart	
Slope Gradient (H: V)	Wattle spacing
< 6:1	50 ft. or less
6:1 - 4:1	35 ft. or less
> 4:1 - 2:1	20 ft. or less
> 2:1 - 1:1	10 ft. or less
> 1:1	5 ft. or less



Typical Straw Wattle Sediment Control

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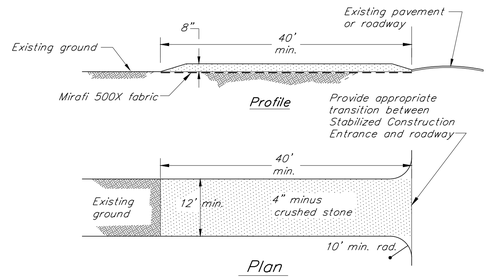

Note:

- Contractor shall be responsible for the installation, maintenance, and removal of a stabilized construction entrance at each construction entrance for the project. The Construction Stabilized Entrance and its continued maintenance shall be a minimum measure to prevent tracking of sediment off-site.
- Contractor to use Mirafi 500x under stone for temporary construction roads.
- Stabilized construction entrances shall be repaired when voids are 80% filled with sediment. Repair shall include adding additional 4" minus crushed stone and/or removal of contaminated stone.

THIS DETAIL TO BE USED FOR ALL TEMPORARY STONE STABILIZATION AREAS IDENTIFIED ON THE PLANS

Temporary Stabilized Construction Entrance & Staging Areas

N.T.S.

Construction Stakeout Notes

The Contractor shall be responsible for all construction stakeout for the project. The Engineer shall provide the Contractor an AutoCAD R2000 drawing of the site design. The drawing will include horizontal and vertical survey control. Additional survey control will be the responsibility of the Contractor.

1. The Contractor shall be responsible for using proper survey equipment and having properly trained personnel to use this information. Any Contractor that does not have proper equipment or personnel shall subcontract the work to a competent consultant.
2. The horizontal control datum may be based on a coordinate system that is unique for this project. Project north may not refer to astronomic or magnetic north.
3. The Contractor shall check the integrity of survey control points by occupying a control point checking distance to back sight and checking distance and angle to another control point prior to any construction stakeout. The contractor shall not proceed with stakeout if either measured distances or angles do not match calculated values.
4. Graphical images of infrastructure in the AutoCAD drawing may not be in an accurate representation of its size. It is the Contractor's responsibility to verify size and shape of all items to be staked out.
5. After completion of radial stakeout with the survey transit, the Contractor shall check each stakeout point as necessary to verify the horizontal and vertical position of the point and that it is correct in relationship to the rest of the project.
6. The Contractor shall complete all construction stakeout to an accuracy of 0.1 feet (excluding building stakeout).

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C3.07

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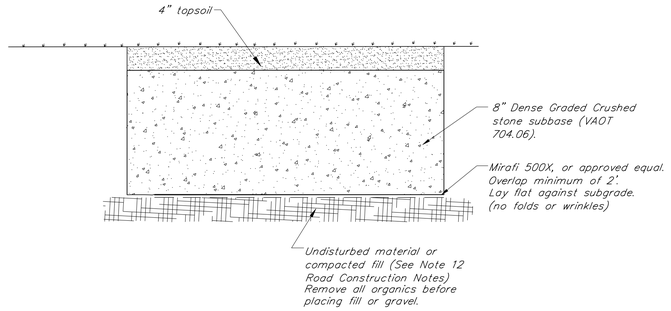


New Stable Vegetated Path Detail

N.T.S.

AS-BUILT (RECORD) DRAWINGS FOR SITE UTILITIES

Refer to Specifications for additional requirements.

At the completion of the project the Contractor shall be responsible for providing the Owner with a complete Utility Record Drawing in AutoCAD and PDF format. The Record Drawing shall meets the specifications below:

Utility

Water
- All pipe sizes and types shall be provided.
- All water gate valves and shut-off valves shall be horizontally located with three (3) swing ties.
- All bends and fittings shall be horizontally located with three (3) swing ties and the top of pipe elevation shall be provided accurate to 0.1 ft.

Sanitary
- All rims, inverts, pipe sizes, and types shall be provided.
- Cleanouts shall be horizontally located with three (3) swing ties and the pipe invert elevation shall be provided accurate to 0.1 ft.
- Service pipe inverts shall be provided at the building with a horizontal measurement from a building corner.

Storm
- All manhole/CB/DI – rims, inverts, pipe sizes, and types shall be provided.
- Inverts of all yard drains shall be provided.
- Cleanouts and fittings (wye, reducers, etc.) shall be horizontally located with three (3) swing ties and the pipe invert elevation shall be provided accurate to 0.1 ft.
- Service pipe inverts shall be provided at the building with a horizontal measurement from a building corner.

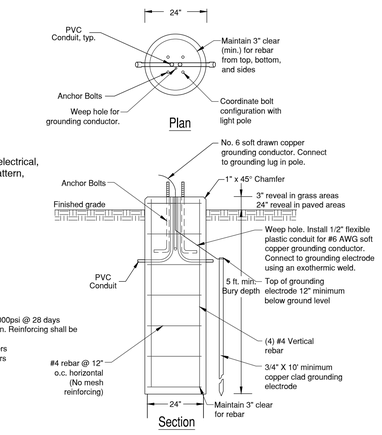
Electric
- Horizontal alignment shall be accurately sketched on a Site Plan. The Site Plan shall be specific to electric and communication utilities only.
- Trench x-section (number and type conduit, encasement detail, conduit length, run direction) shall be provided for each run of conduit. If the cross-section changes mid run the location of the change must be indicated with a new cross section detail.

VT Gas
- Contractor shall be responsible for providing Owner with a complete "mark-up" plan showing the layout of VT Gas piping.

Site Lighting
- Contractor shall be responsible for providing to the Owner a complete "mark-up" plan showing the layout of the site lighting conduit from light pole to light pole.

Other –
- Contractor shall be responsible for locating and identifying all existing utilities that are exposed in the process of installing new utilities.

Swing ties may be substituted with survey shots taken with survey equipment able to locate infrastructure with a horizontal accuracy of 1 ft and a vertical accuracy of 0.1 ft.



NOTE:
See Electrical Plans for electrical, conduit, light pole bolt pattern, and grounding design.

SPECIFICATIONS:
- Concrete Minimum Strength 5000psi @ 28 days
- Reinforcement per Specification. Reinforcing shall be ASTM A615 Grade 60
- PVC Conduit Supplied by Others
- Anchor Bolts Supplied by Others
- Weights Subject to Variation

Typical Light Pole Base

N.T.S.

TOWN OF MILTON CHARTERED 1763 VERMONT

CIVIL ENGINEER:

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Colchester, Vermont 05446 www.krebsandlansing.com

STAMP:

Project:

TOWN OF MILTON
Public Works Facility

Bombardier Road

Project No.	21282
Scale	N.T.S.
Drawn by	DMR
Checked by	
Date	11/11/2021

Revisions

No.	Date	Description

Drawing Title

Civil Details

Drawing No.

C3.08

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