

PRE-DEVELOPMENT ALLOWABLE RELEASE RATES & ACTUAL ROUTED RELEASE RATES

STORM EVENT	*PRE-DEVELOPMENT RELEASE RATE (CFS)	**ROUTED RELEASE RATE (CFS)	ELEVATION IN FEET	VOLUME PROVIDED
2	2.73	2.75	483.03	10,070 CUFT
10	6.41	4.18	483.72	15,355 CUFT
25	9.29	4.85	484.15	18,754 CUFT
50	12.28	5.43	484.56	22,122 CUFT
100	15.33	5.95	484.98	25,510 CUFT

* = FROM PRE-DEV. HYDROGRAPH
** = FROM RATING TABLE

PROPOSED DETENTION POND 2 PLAN

SCALE: 1"=20'

- Richard F Gosselin, Jr Chairman _____
- Paul A Pikelis Vice Chairman _____
- Terry Burke Dotson Member _____
- Francis Desimone Alternate Member _____
- Bruce M Devault Member _____

LEGEND

- RIGHT OF WAY LINE
- EXISTING WATER LINE
- EXISTING SANITARY SEWER LINE
- EXISTING STORM SEWER LINE
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- EXISTING CONTOURS MAJOR
- EXISTING CONTOURS MINOR
- PROPOSED CONTOURS MAJOR
- PROPOSED CONTOURS MINOR
- ⊙ SANITARY SEWER MANHOLE
- ⊙ STORM SEWER MANHOLE
- ⊙ WATER METER
- ⊙ WATER VALVE
- ⊙ FIRE HYDRANT
- ⊙ THRUST BLOCK

BRANSON SURVEYING & ENGINEERING, LLC
 ID No. 00156774
 231 ROCKPOINT DRIVE
 WALNUT SHADE, MO 65771
 417-860-9697

SINGLETARY ARMS
 Project Name and Address
 115 W MAIN STREET, 119 W MAIN STREET
 3 BURBANK STREET, 4 BURBANK STREET
 MILLBURY, MA 01527

PROPOSED DETENTION POND 2 PLAN
 Sheet Title

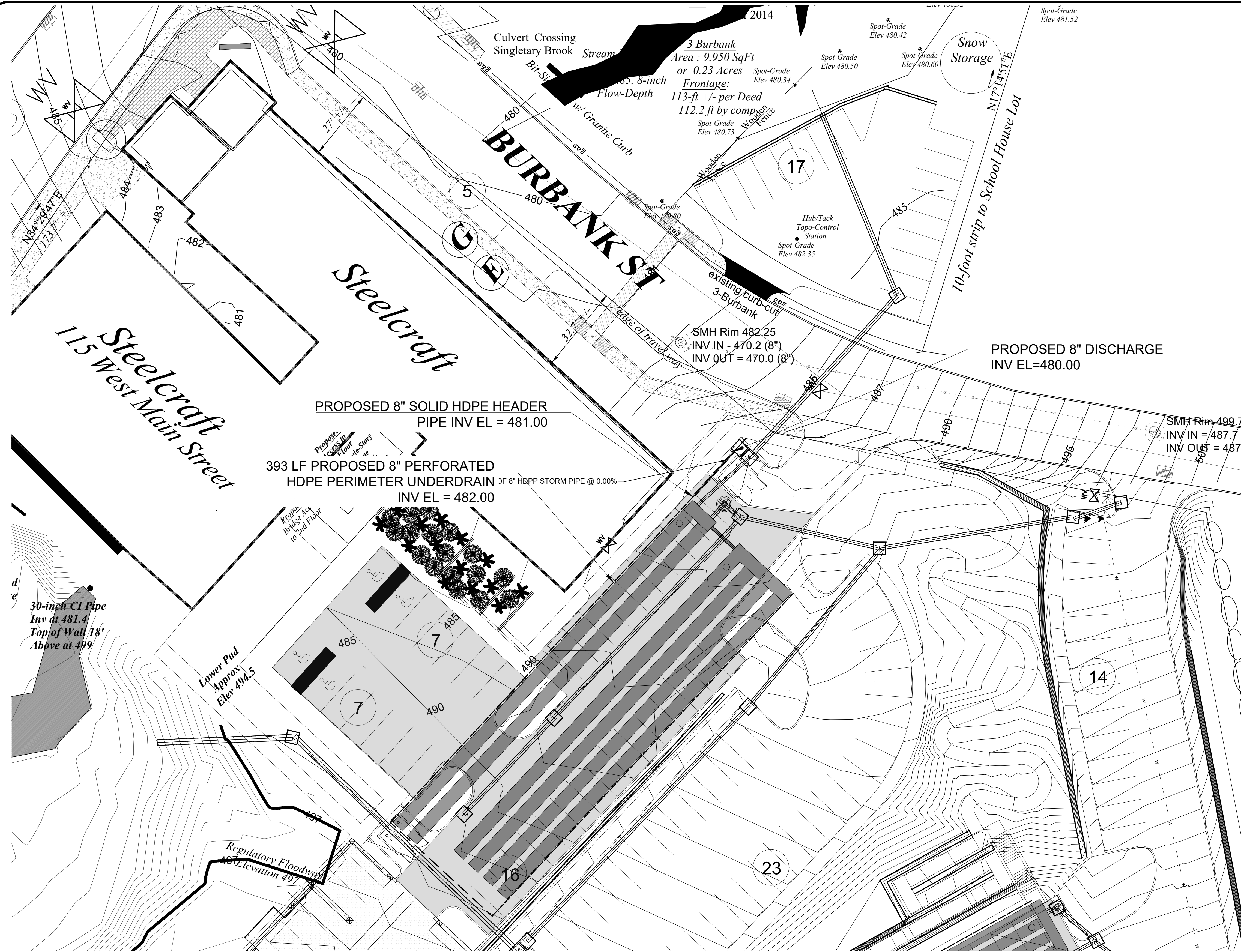
TODD M. CHANDLER
 No. 55647
 PROFESSIONAL ENGINEER
 STATE OF MASSACHUSETTS

3/1/2021
 Date

No.	Revision/Issue	Date
1	RESPONSE TO CITY/STANTEC COMMENTS	09/28/2020
2	RESPONSE TO CITY/STANTEC COMMENTS	10/22/2020
3	RESPONSE TO CITY/STANTEC COMMENTS	12/09/2020
4	RESPONSE TO CITY/STANTEC COMMENTS	01/29/2021
5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
 Date 03/06/2020
 Scale AS NOTED

Sheet **C-21**



SCALE: 1"=20'

PERVIOUS PAVERS

- Richard F Gosselin, Jr Chairman _____
- Paul A Pikelis Vice Chairman _____
- Terry Burke Dotson Member _____
- Francis Desimone Alternate Member _____
- Bruce M Devault Member _____

LEGEND

- RIGHT OF WAY LINE
- EXISTING WATER LINE
- EXISTING SANITARY SEWER LINE
- EXISTING STORM SEWER LINE
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- EXISTING CONTOURS MAJOR
- EXISTING CONTOURS MINOR
- PROPOSED CONTOURS MAJOR
- PROPOSED CONTOURS MINOR
- ⊙ SANITARY SEWER MANHOLE
- ⊙ STORM SEWER MANHOLE
- ⊙ WATER METER
- ⊙ WATER VALVE
- ⊙ FIRE HYDRANT
- ⊙ THRUST BLOCK

BRANSON SURVEYING &
 ENGINEERING, LLC
 133 N. 801.56774
 231 ROCKPOINT DRIVE
 WALNUT SHADE, MO 65771
 417-860-9697

Project Name and Address
SINGLETARY ARMS
 115 W MAIN STREET, 119 W MAIN STREET
 3 BURBANK STREET, 4 BURBANK STREET
 MILLBURY, MA 01527

Sheet Title
PROPOSED DETENTION POND 2
UNDER DRAIN PLAN



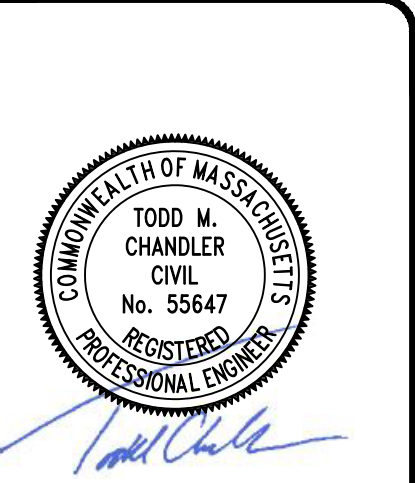
3/1/2021 Date

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5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
 Date 08/06/2020
 Scale AS NOTED
 Sheet C-21.1

BRANSON SURVEYING & ENGINEERING, LLC
ID No. 00149076
231 ROCKPOINT DRIVE
WALNUT SHADE, MO 65771
417-860-9697

Project Name and Address
SINGLETARY ARMS
115 W MAIN STREET, 119 W MAIN STREET
3 BURBANK STREET, 4 BURBANK STREET
MILLBURY, MA 01527
Sheet Title
PROPOSED DETENTION POND 2 SECTION

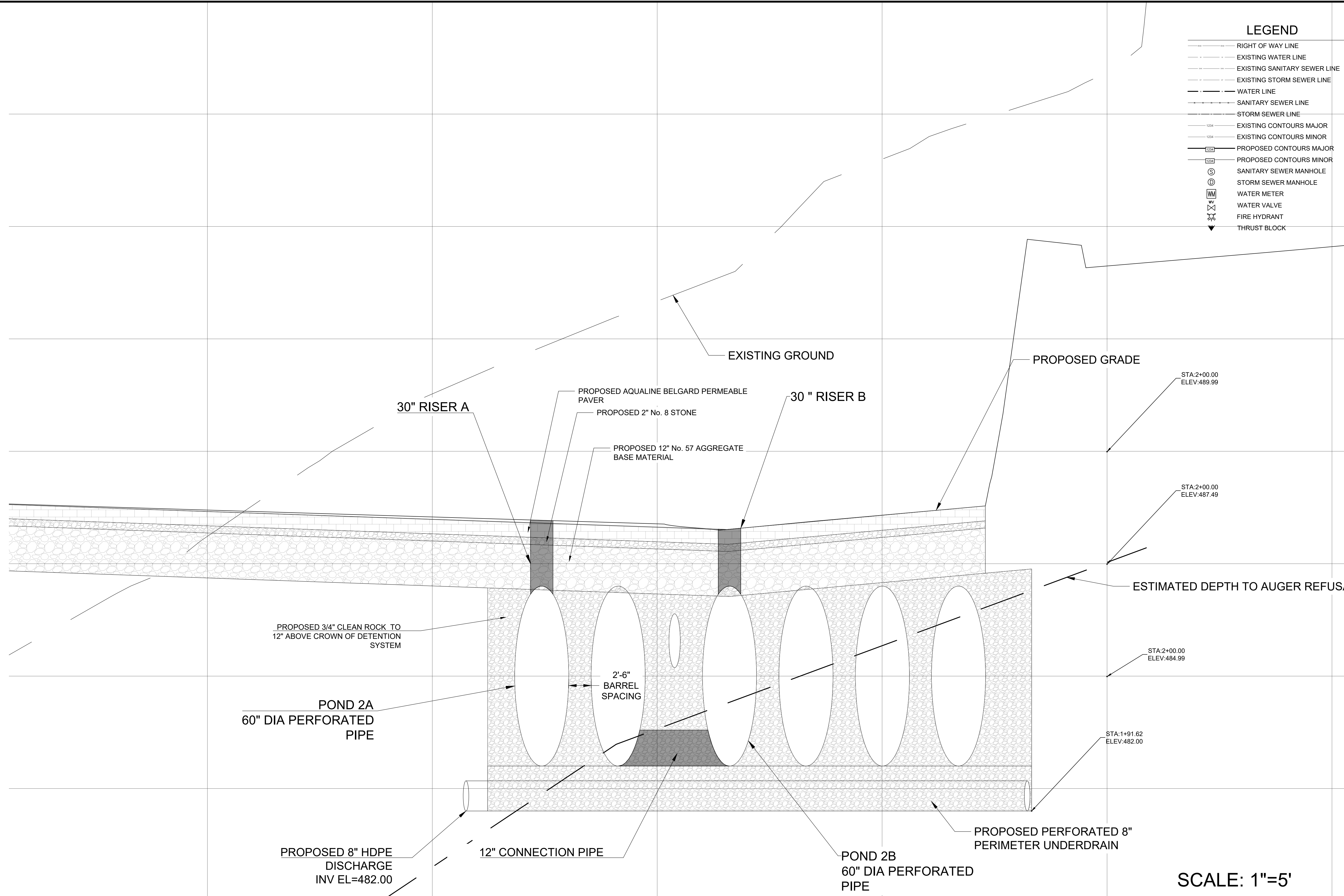


3/1/2021
Date

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5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

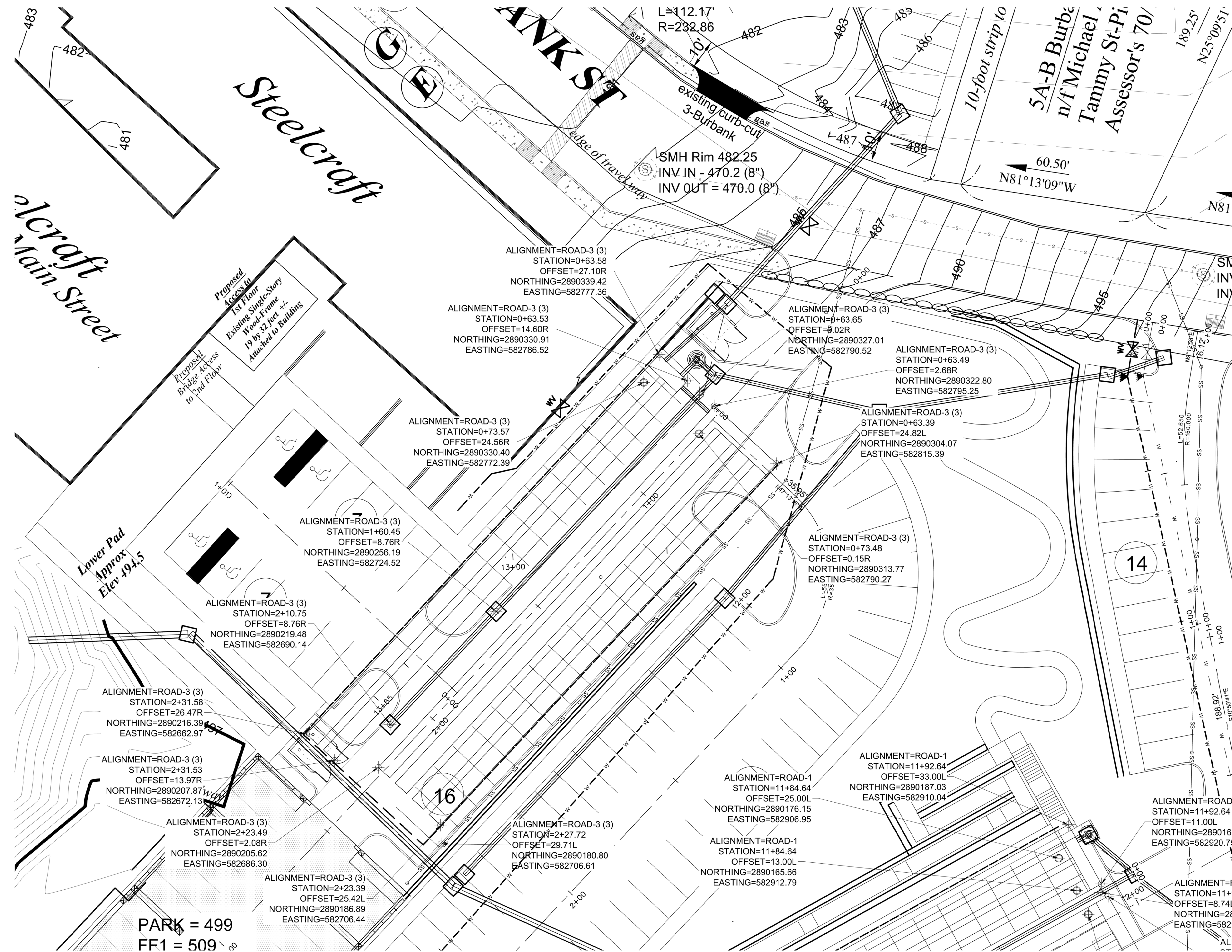
Project No. ***
Date 08/06/2020
Scale AS NOTED
Sheet C-21.2

- LEGEND**
- RIGHT OF WAY LINE
 - EXISTING WATER LINE
 - EXISTING SANITARY SEWER LINE
 - EXISTING STORM SEWER LINE
 - WATER LINE
 - SANITARY SEWER LINE
 - STORM SEWER LINE
 - EXISTING CONTOURS MAJOR
 - EXISTING CONTOURS MINOR
 - PROPOSED CONTOURS MAJOR
 - PROPOSED CONTOURS MINOR
 - SANITARY SEWER MANHOLE
 - STORM SEWER MANHOLE
 - WATER METER
 - WATER VALVE
 - FIRE HYDRANT
 - ▼ THRUST BLOCK



SCALE: 1"=5'

- Richard F Gosselin, Jr Chairman _____
- Paul A Piktelis Vice Chairman _____
- Terry Burke Dotson Member _____
- Francis Desimone Alternate Member _____
- Bruce M Devault Member _____



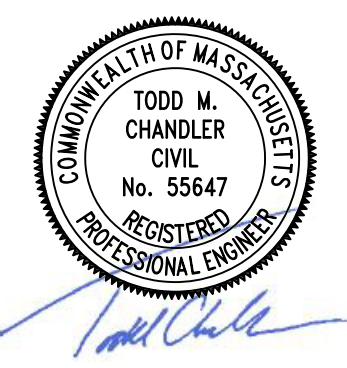
SCALE: 1"=20'

- Richard F Gosselin, Jr Chairman _____
- Paul A Piktelis Vice Chairman _____
- Terry Burke Dotson Member _____
- Francis Desimone Alternate Member _____
- Bruce M Devault Member _____

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 3 BURBANK STREET, 4 BURBANK STREET
 MILLBURY, MA 01527

Sheet Title
**PROPOSED DETENTION POND 2
 DIMENSION PLAN**



3/1/2021
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5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
 Date 03/06/2020
 Scale AS NOTED

Sheet
C-21.3

General Water Notes

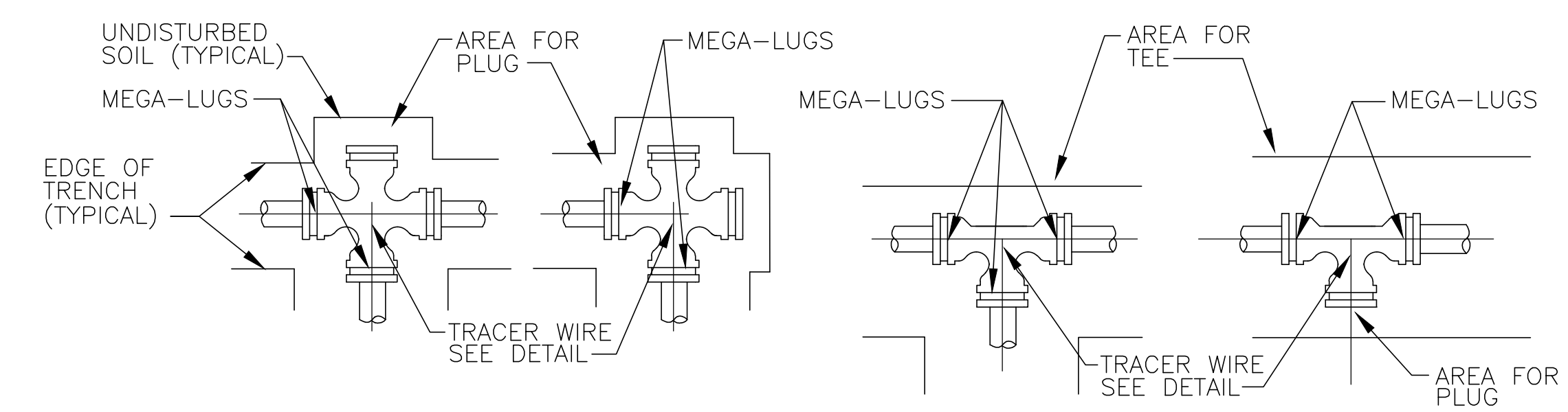
1. WATER SYSTEM COMPONENTS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND REGULATIONS, CLEANED, DISINFECTED AND BACTERIOLOGICALLY CLEARED FOR SERVICE.
2. ALL PIPING SHALL BEAR THE 'NSF' SEAL FOR POTABLE WATER.
3. WATER MAINS SHALL BE PVC CONFORMING TO AWWA C-900, DR 18 FOR PIPE SIZES 4"-12". PIPES 14" OR LARGER SHALL BE AWWA C-905, DR 18. ALL COUPLINGS, CLEANING COMPOUNDS, SOLVENTS, LUBRICANTS, AND PIPE PREPARATION, FOR LAYING, SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURERS LATEST RECOMMENDATIONS.
4. DEPTH OF WATER LINES TO BE 48" MINIMUM COVER FROM FINISH GRADE.
5. WATER MAINS TO BE LOCATED 6.00' FROM BACK OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
6. ALL SLEEVES UNDER PAVEMENT SHALL EXTEND 5' BEYOND THE BACK OF CURB.
7. DISINFECTING: FOLLOWING THE PRESSURE TESTING, THE CONTRACTOR SHALL DISINFECT ALL SECTIONS OF THE WATER DISTRIBUTION SYSTEM. DISINFECTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF AWWA STANDARD C651 "DISINFECTING WATER MAINS", AND ALL APPROPRIATE AGENCY APPROVAL.
8. ALL HYDROSTATIC TEST SHALL BE IN ACCORDANCE WITH AWWA C600 FOR DUCTILE IRON PIPE AND C605/M23 FOR PVC PIPE.
9. ALL WATER MAINS SHALL BE INSTALLED, PRESSURE AND LEAK TESTED IN ACCORDANCE WITH AWWA C600, (62-555.320(21)(b)1 ALL INSTALLATION, TESTING AND FIELD PROCEDURES MUST BE PROVIDED AND MUST CONFORM TO THE APPLICABLE AWWA STANDARDS.
10. ALL PIPING MATERIALS AND SPECIFICATIONS COVERING PIPES, JOINTS AND PACKING MATERIALS, INTERNAL COATING AND LININGS, FITTINGS, SPECIALS AND APPURTENANCES SHALL ALL BE IN ACCORDANCE WITH THE CORRESPONDING AWWA STANDARDS AND BE CONFORMING TO NSF REQUIREMENTS.

Utility Construction Notes

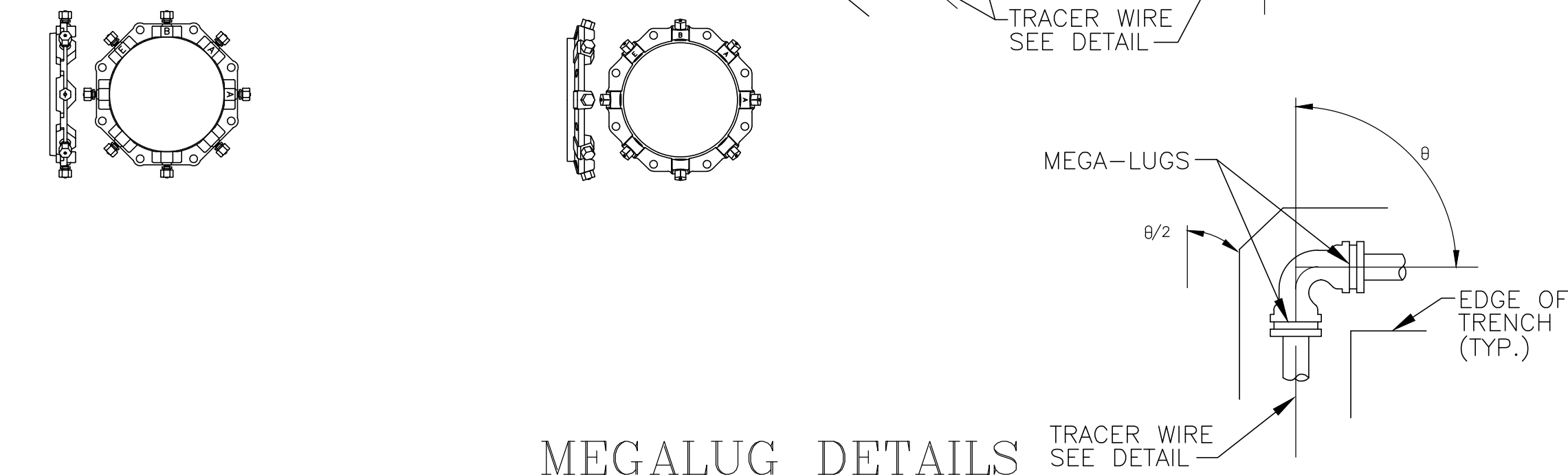
- Location of Public Water System Mains:
 For the purpose of this section, the phrase "Water Mains" shall mean Mains, including treatment Plant process piping, conveying either raw, partially treated, or finished drinking water; Fire Hydrant leads; and service lines that are under the control of a Public Water System and that have an inside diameter of three (3) inches or greater.
- (1) Horizontal Separation Between Underground Water Mains and Sanitary or Storm Sewers, Wastewater or Storm water Force Mains, and On-site Sewage Treatment and Disposal Systems:
 - (a) New or relocated, underground WATER MAINS shall be laid to provide a horizontal distance of at least (3) Three Feet between the outside of the WATER MAIN and the outside of any existing or proposed Storm Sewer, Storm water AND Force Main
 - (b) New or relocated, underground WATER MAINS shall be laid to provide a horizontal distance of at least (3) three feet, and preferably (10) Ten Feet, between the outside of the WATER MAIN and the outside of any existing or proposed vacuum-type Sanitary Sewer.
 - (c) New or relocated, underground WATER MAINS shall be laid to provide a horizontal distance of at least (6) Six Feet, and preferably (10) Ten Feet, between the outside of the WATER MAIN and the outside of any existing or proposed Gravity- or Pressure-type Sanitary Sewer, and Wastewater Force Main.

The Minimum Horizontal Separation distance between WATER MAINS and Gravity-type Sanitary Sewers shall be reduced to (3) Three Feet where the BOTTOM of the WATER MAIN is laid at least (6) Six inches above the Top of the Sewer.

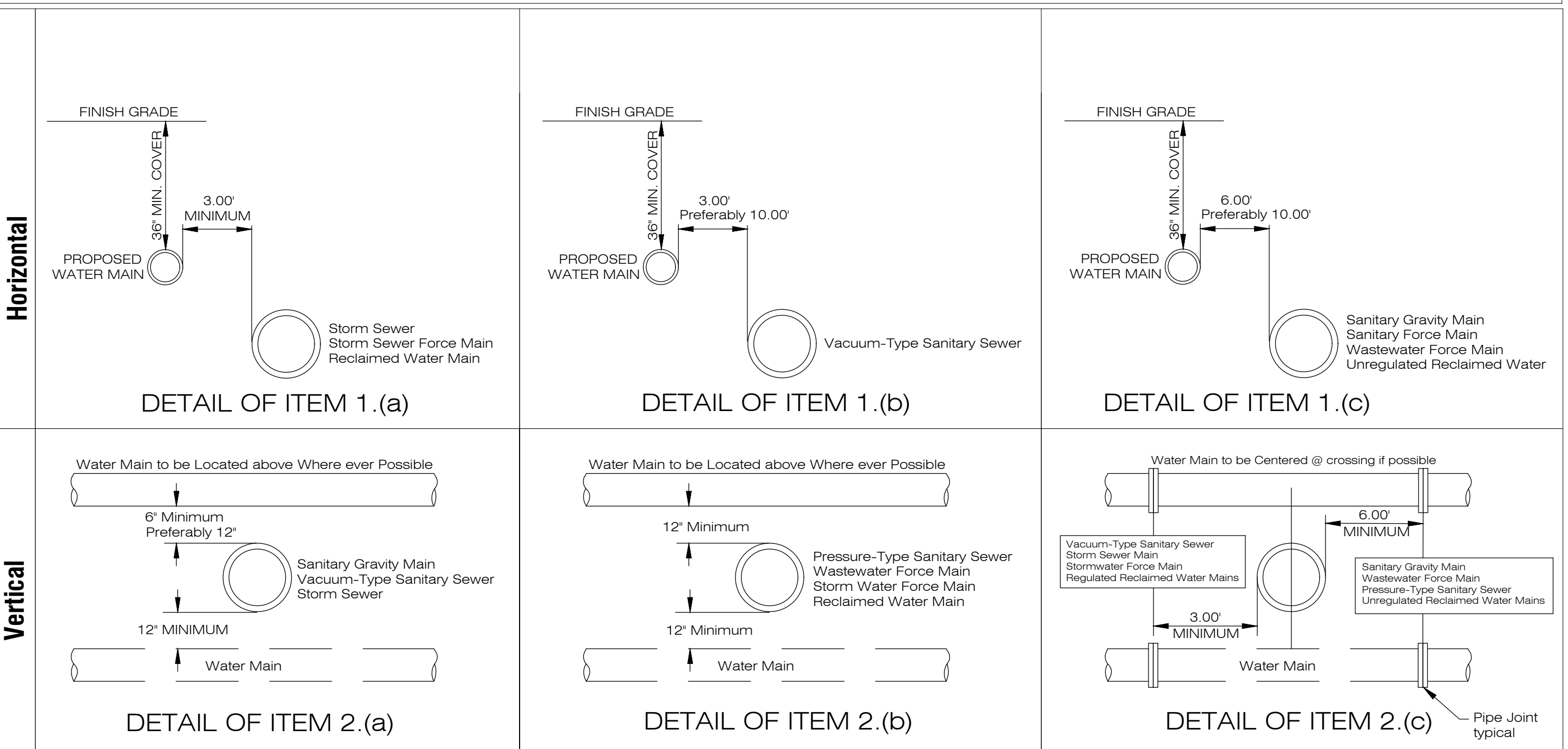
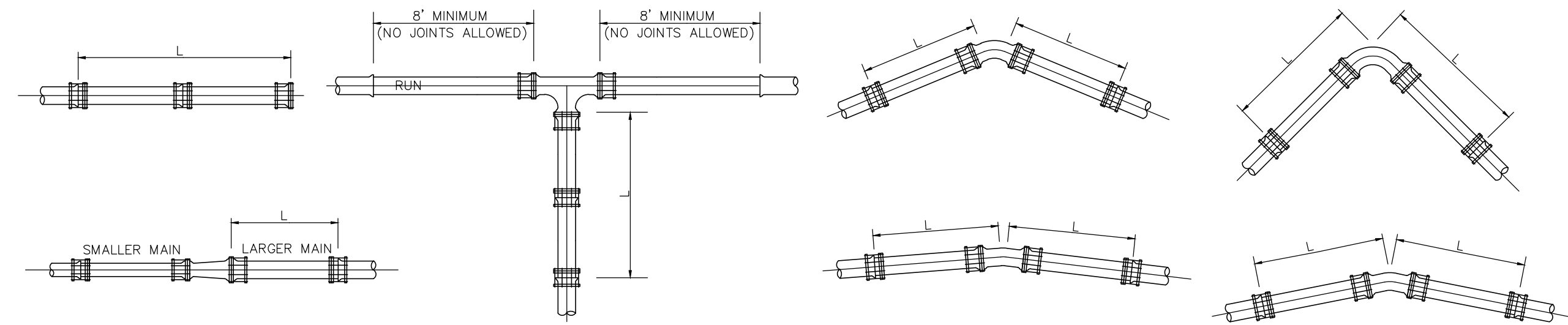
 - (d) New or relocated, underground WATER MAINS shall be laid to provide a horizontal distance of at least (10) Ten Feet between the outside of the WATER MAIN.
- (2) Vertical Separation Between Underground WATER MAINS and Sanitary or Storm Sewers, Wastewater or Storm water Force Mains:
 - (a) New or relocated underground WATER MAINS crossing any existing or proposed gravity- or vacuum-type sanitary sewer or storm sewer shall be laid so the outside of the WATER MAIN is at least (6) Six inches, and preferably 12 inches above, or at least 12 inches below the outside of the other pipeline. However, it is preferable to lay the WATER MAIN "ABOVE" the other pipeline.
 - (b) New or relocated, Underground WATER MAINS crossing any existing or proposed pressure-type sanitary sewer, wastewater or stormwater Force Main, shall be laid so the outside of the WATER MAIN is at least (12) inches ABOVE or BELOW the Outside of the other pipeline. However, it is preferable to lay the WATER MAIN above the other pipeline.
 - (c) At the Utility crossings described in paragraphs (a) & (b) Above, one full length of Water Main Pipe shall be centered above or below the other pipeline so the WATER MAIN joints will be as far as possible from the other pipeline. Alternatively, at such crossings, the pipes shall be arranged so that all WATER MAIN joints are at least (3) Three feet from all joints in Vacuum-type Sanitary Sewers, Storm Sewers, Stormwater Force Mains, and at least (6) Six Feet from all Joints in Gravity- or Pressure-type Sanitary Sewers, Wastewater force mains.
- (3) Separation Between WATER MAINS and Sanitary or Storm Sewer Manholes:
 - (a) No WATER MAIN shall pass thru, or come into contact with any part of a Sanitary Manhole or a Storm Sewer Manhole.
- (4) Separation Between Fire Hydrant Drains and Sanitary or Storm Sewers, Wastewater or Stormwater Force Mains, reclaimed Water Pipelines
 New or relocated Fire Hydrants with underground Drains shall be located so that the drains are at least (3) Three Feet from any existing or proposed storm sewer, Stormwater force main, at least (3) Three Feet, and preferably (10) Ten Feet, from any existing or proposed gravity- or Pressure-type Sanitary Sewer, Wastewater force main.
- (5) Exceptions/Mitigation:
 Adherence to the above Constraints and Separations in Items 1 through 4 shall be Complied to, "WITHOUT EXCEPTION". If for some reason where it is not technically feasible or Economically Sensible that Items 1 through 4 cannot be complied with, Contractor will Stop Work and Notify the Engineer of record for the appropriate solution, which will be submitted to 'The Department of Environmental Protection' for APPROVAL, prior to work commencement.



NOTES:
 USE "MEGA-LUG" FITTINGS AS APPROVED BY THE PROJECT ENGINEER. "MEGA-LUG" CALCULATIONS TO BE PROVIDED BY THE CONTRACTOR AND APPROVED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.



MEGALUG DETAILS



UTILITY SEPARATIONS

PIPING CLEARANCES

NOT TO SCALE

- Richard F Gosselin, Jr Chairman
- Paul A Pikelis Vice Chairman
- Terry Burke Dotson Member
- Francis Desimone Alternate Member
- Bruce M Devault Member

Project Name and Address
SINGLETARY ARMS
 115 W MAIN STREET, 119 W MAIN STREET
 3 BURBANK STREET, 4 BURBANK STREET
 MILLBURY, MA 01527

Sheet Title
UTILITY CONSTRUCTION DETAILS

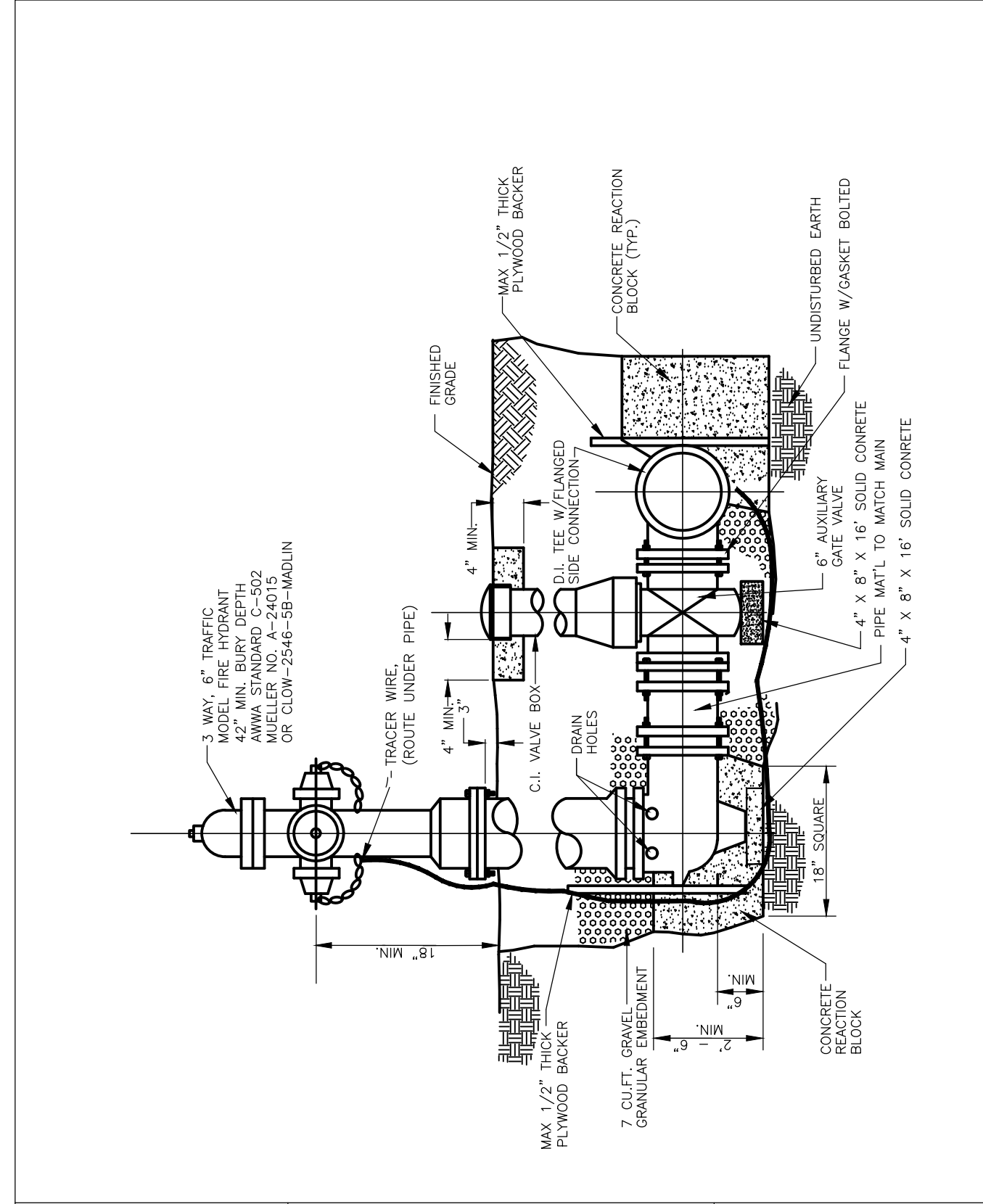


3/1/2021
 Date

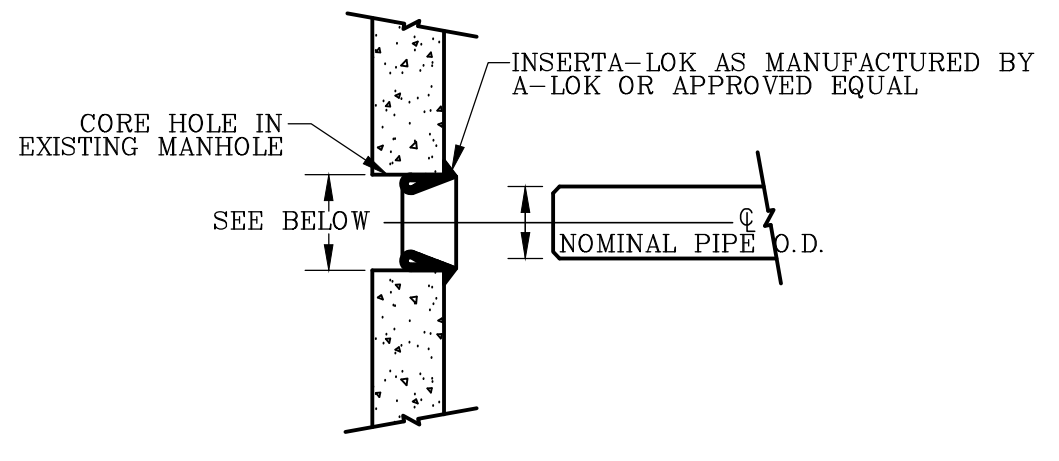
No.	Revision/Issue	Date
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5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
 Date 03/06/2020
 Scale AS NOTED
 Sheet C-22

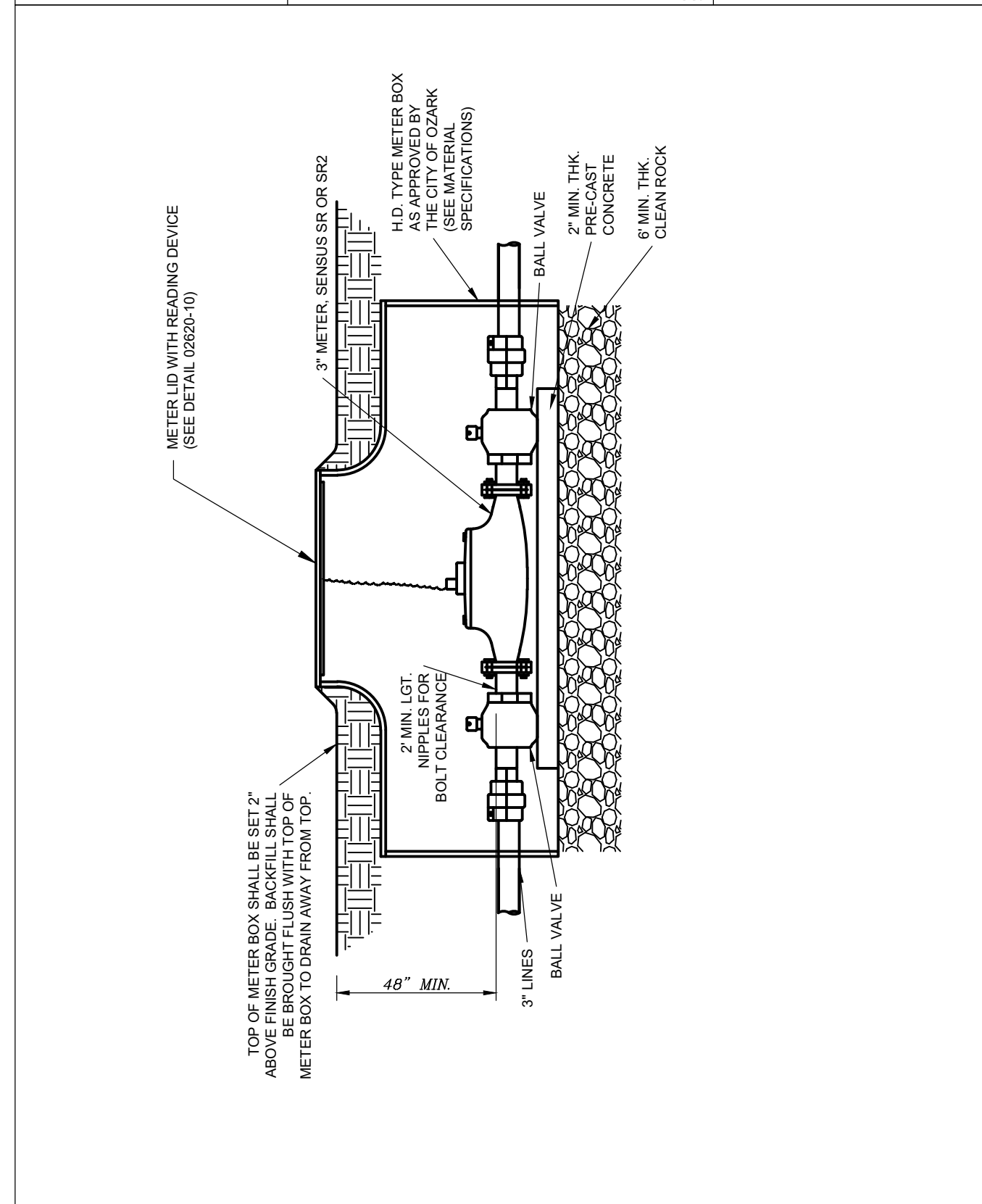
Richard F Gosselin, Jr Chairman _____
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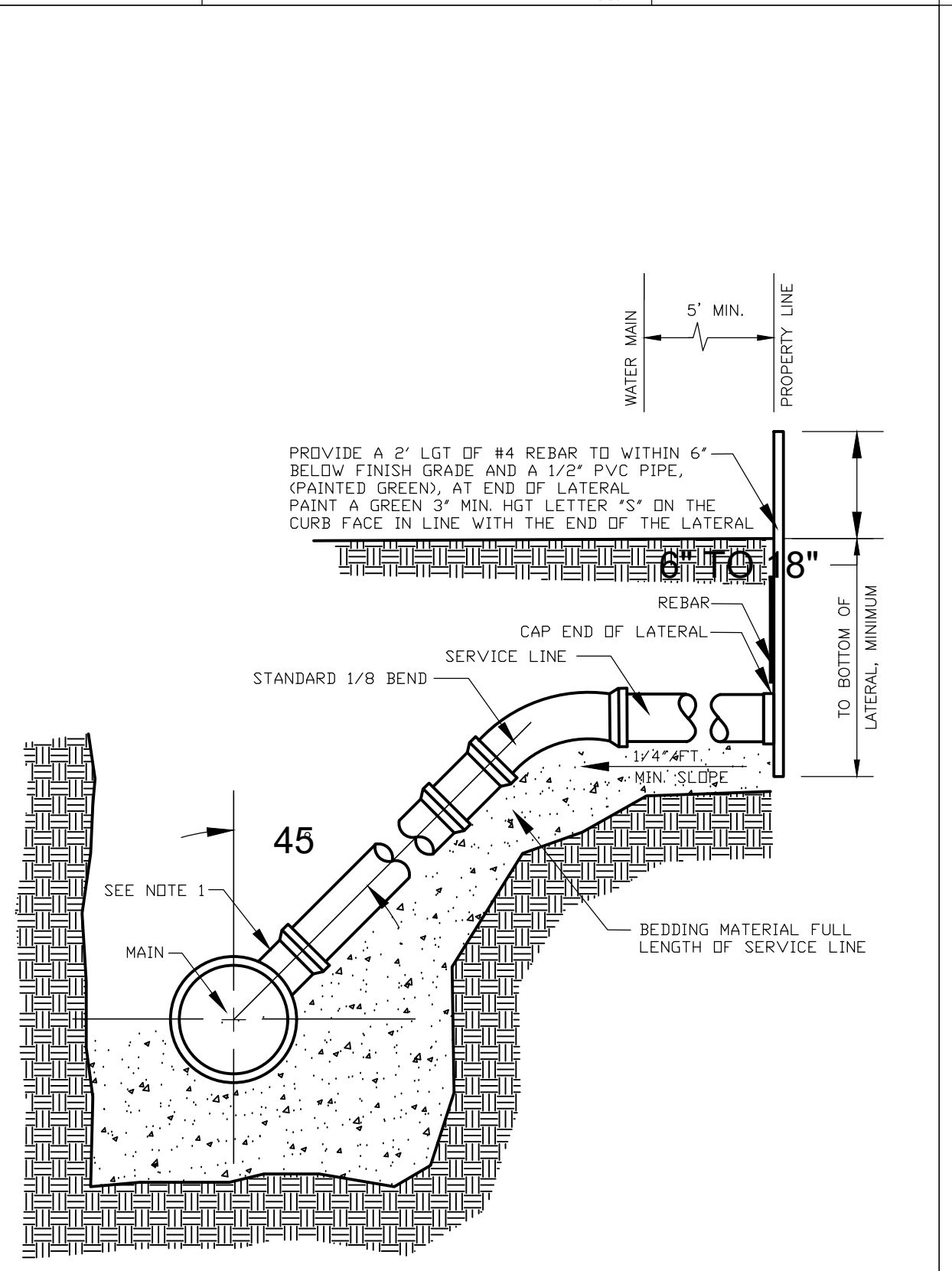
FIRE HYDRANT DETAILS
NTS



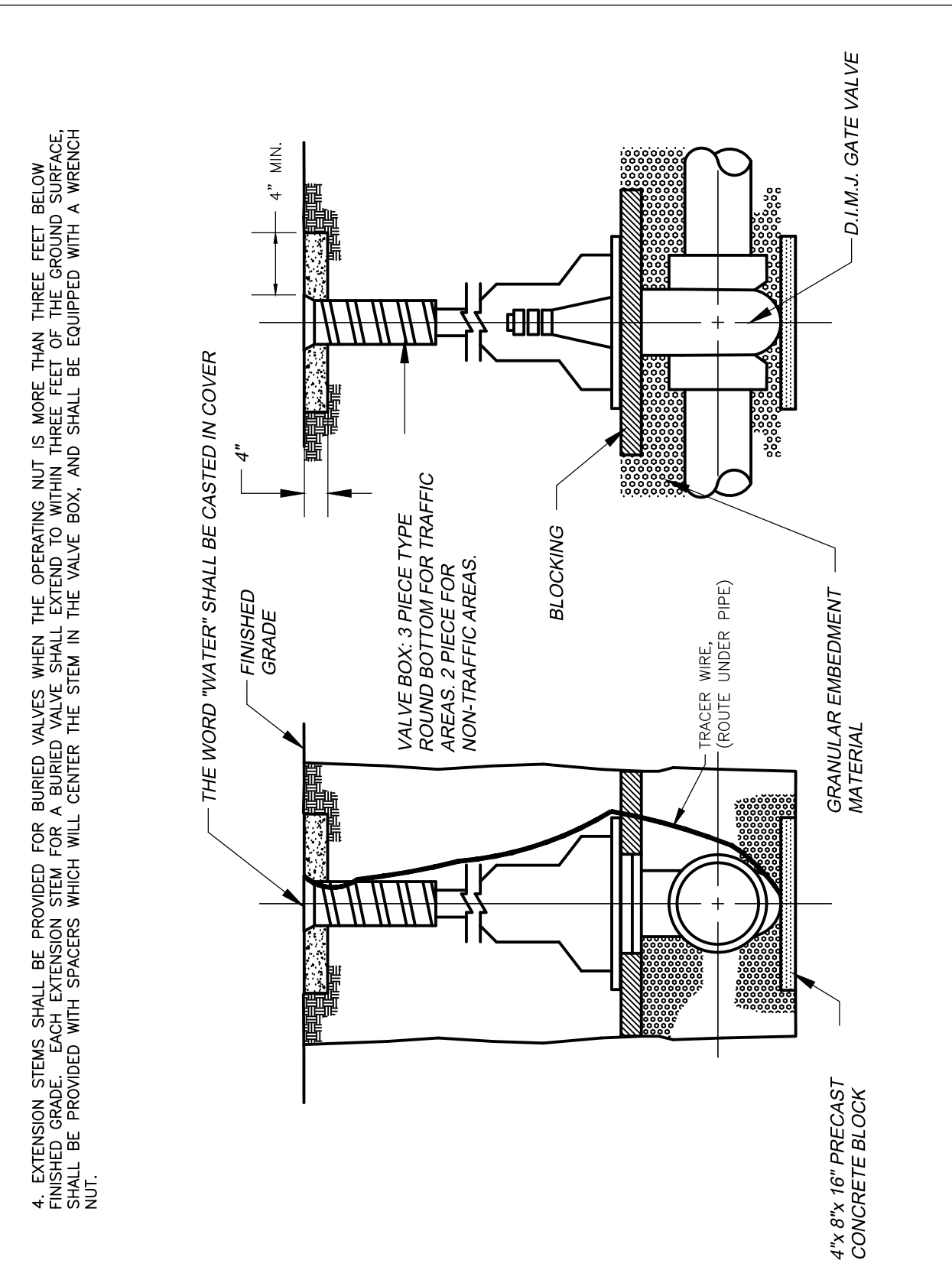
CONNECTION TO EXIST MH
DETAIL
NTS



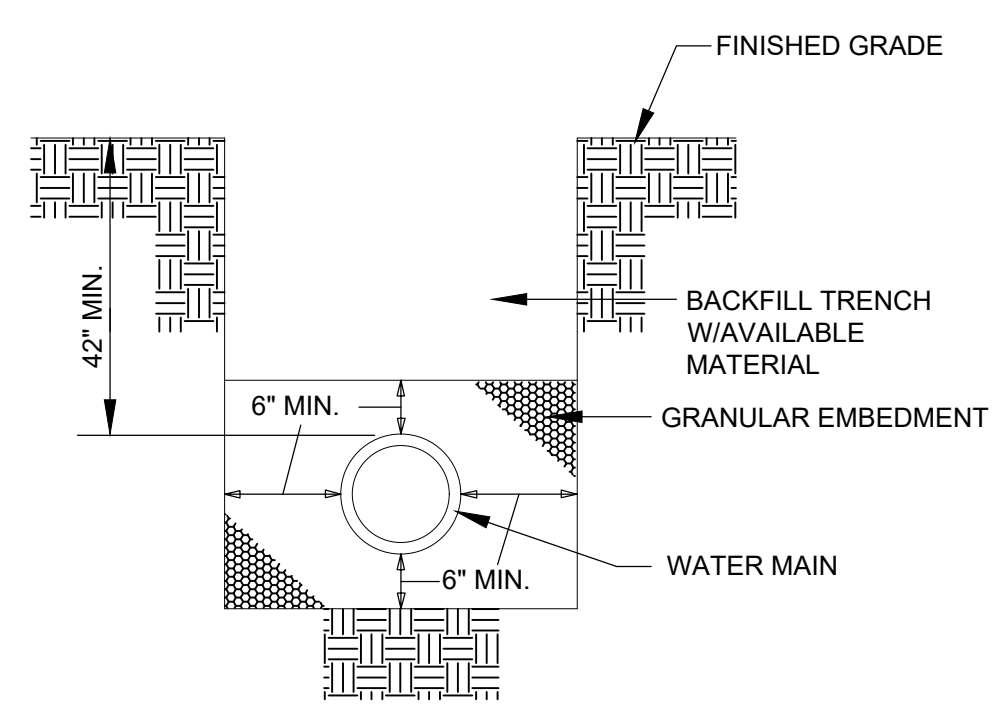
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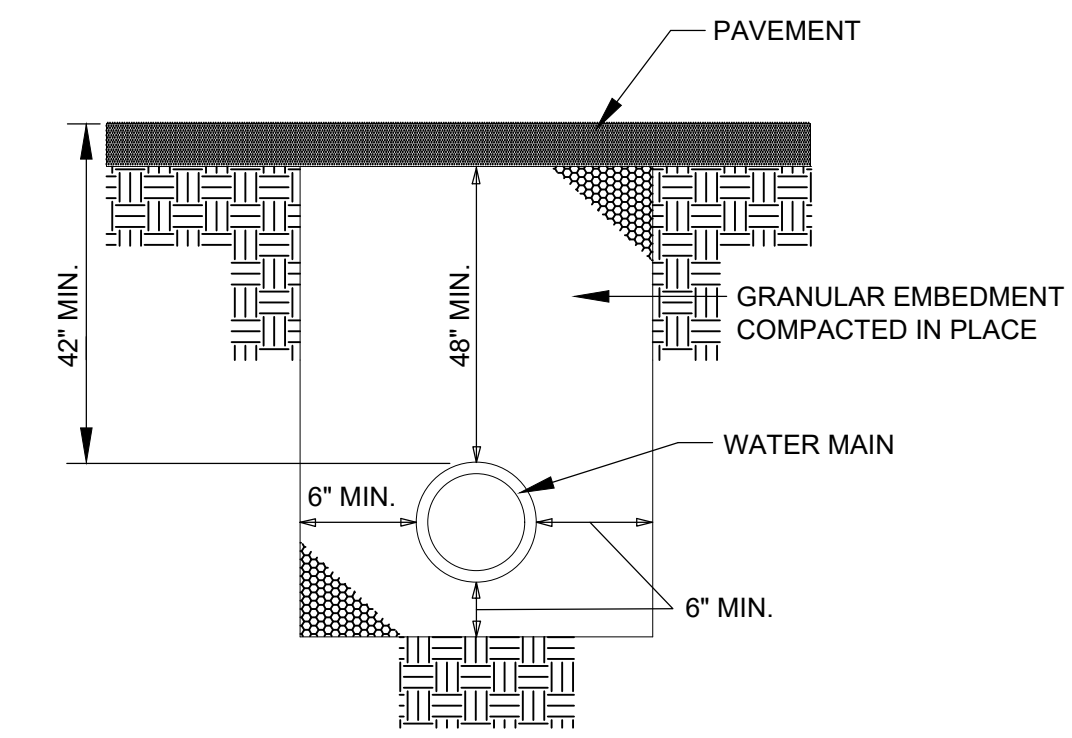
STANDARD SEWER SERVICE
DETAIL
NTS



VALVE
DETAILS
NTS

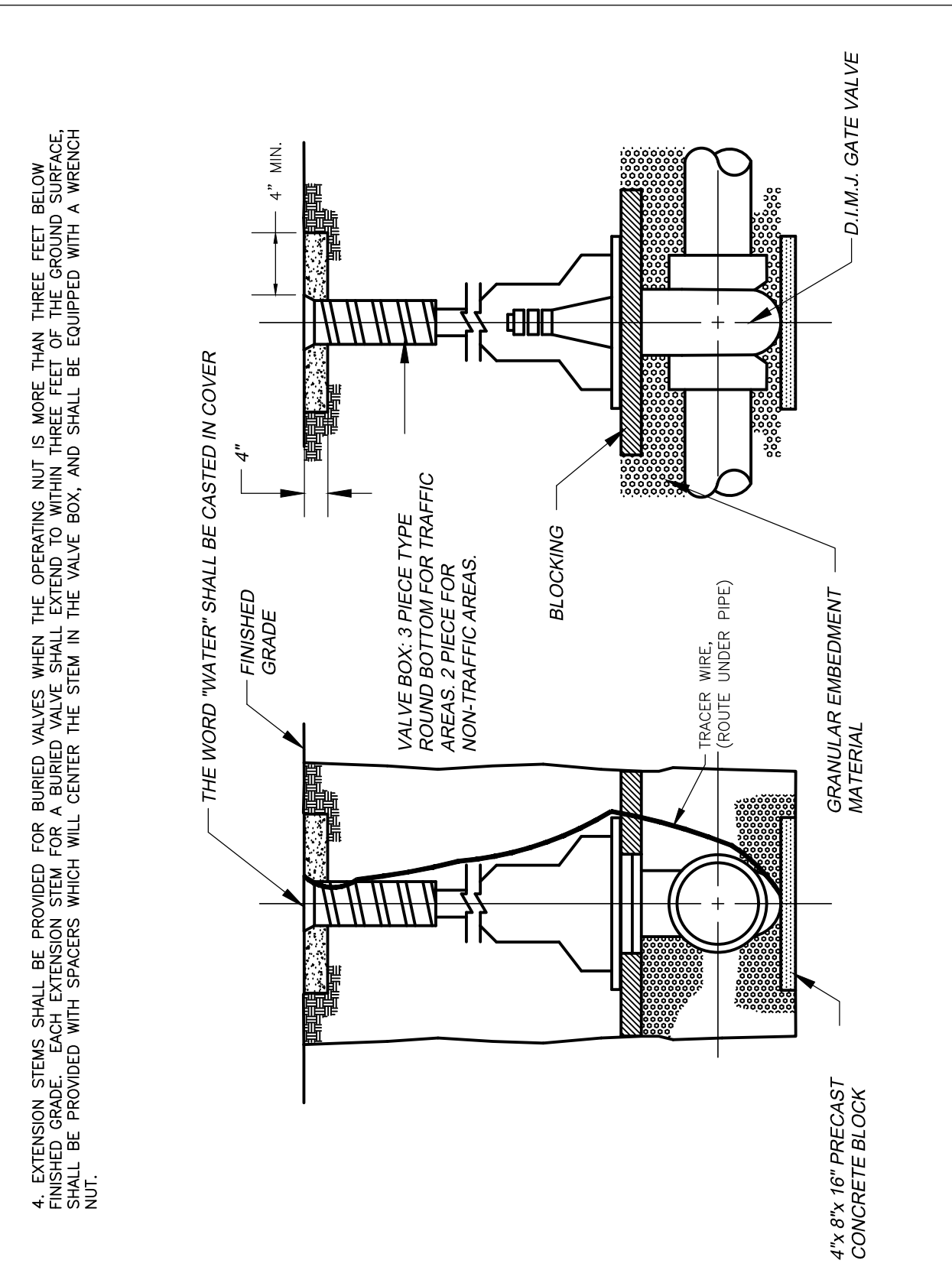


TYPICAL TRENCH DETAIL
NOT TO SCALE



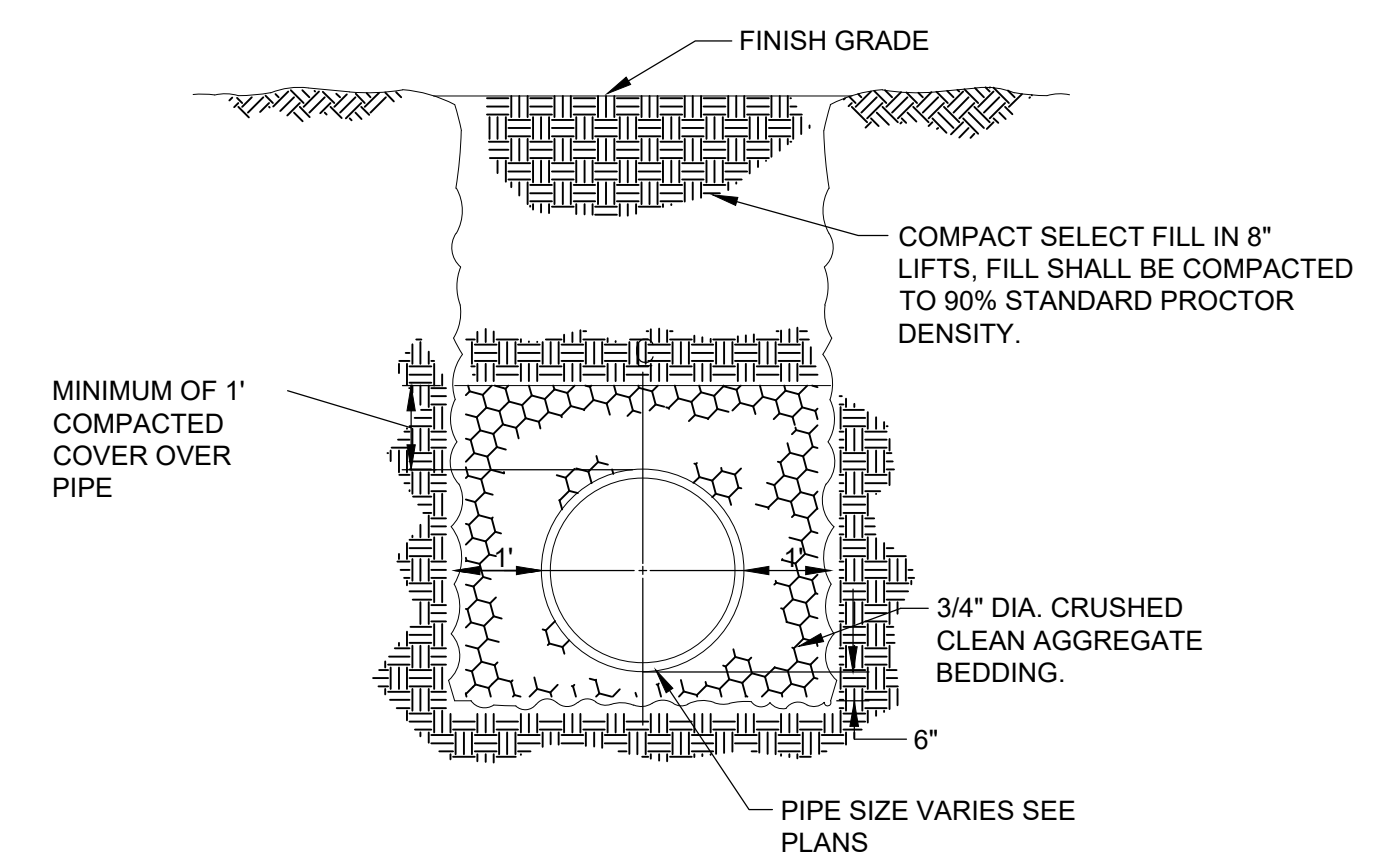
TYPICAL TRENCH DETAIL UNDER ASPHALT
NOT TO SCALE

NOTE:
MAINS IN AREAS OF PROPOSED
STREETS SHALL BE BACKFILLED IN
THIS MANNER.



STORMWATER PIPE
BEDDING DETAIL
NOT TO SCALE

- NOTES:
1. EXTEND GRANULAR BEDDING TO SUBGRADE UNDER IMPROVED SURFACES. WHERE PIPE PASSES UNDER RETAINING WALLS, EXTEND BEDDING TO BOTTOM OF WALL FOOTING.
 2. ALL CPP STORMPIPE SHALL BE SMOOTH WALL HDPE PIPE EQUIVALENT TO ADS N-12, OR APPROVED EQUAL. (UNLESS OTHERWISE NOTED).
 3. ALL CSP STORMPIPE SHALL BE 14 GAUGE PIPE. (UNLESS OTHERWISE NOTED).



BRANSON SURVEYING &
ENGINEERING, LLC
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WALNUT SHADE, MO 65771
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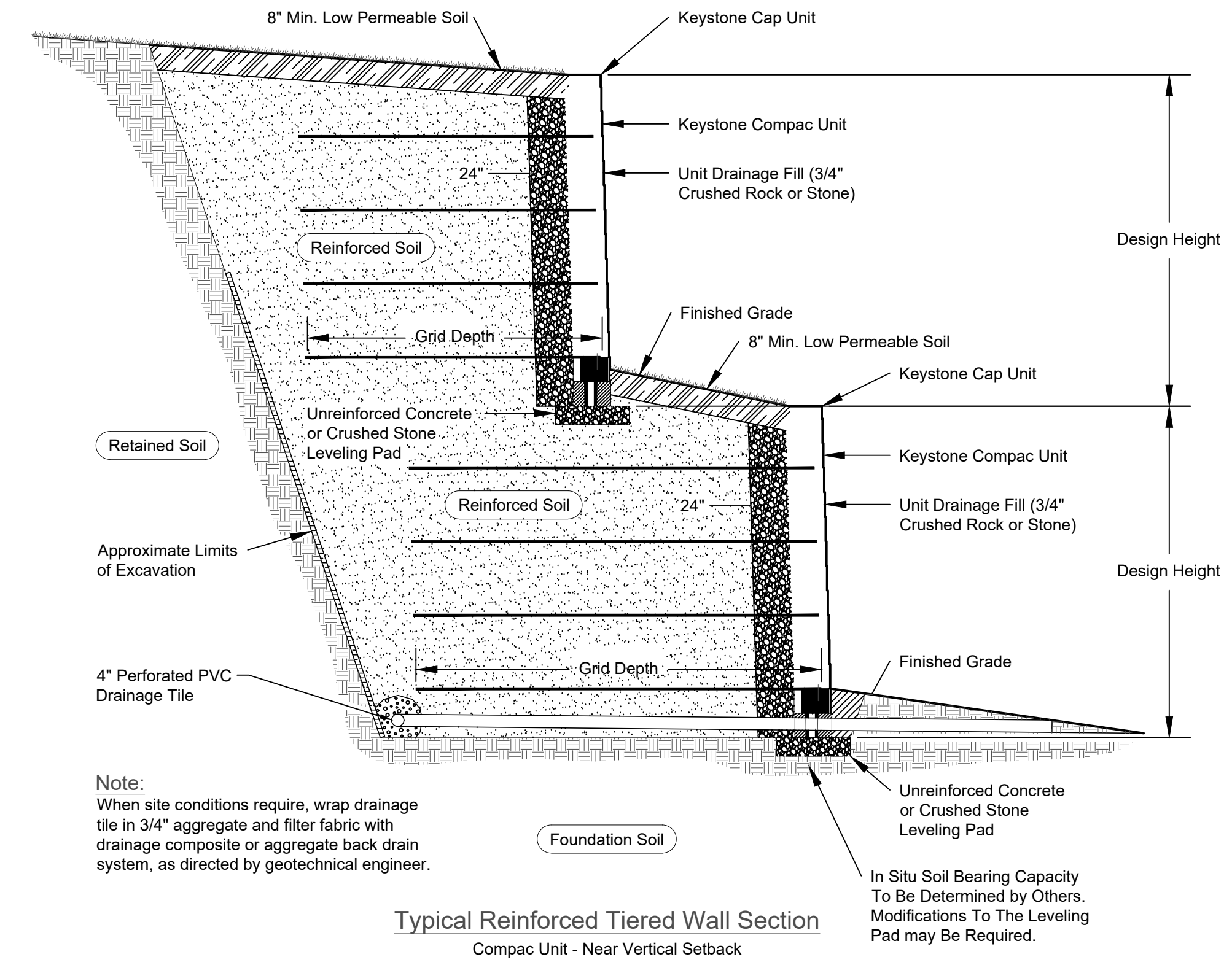
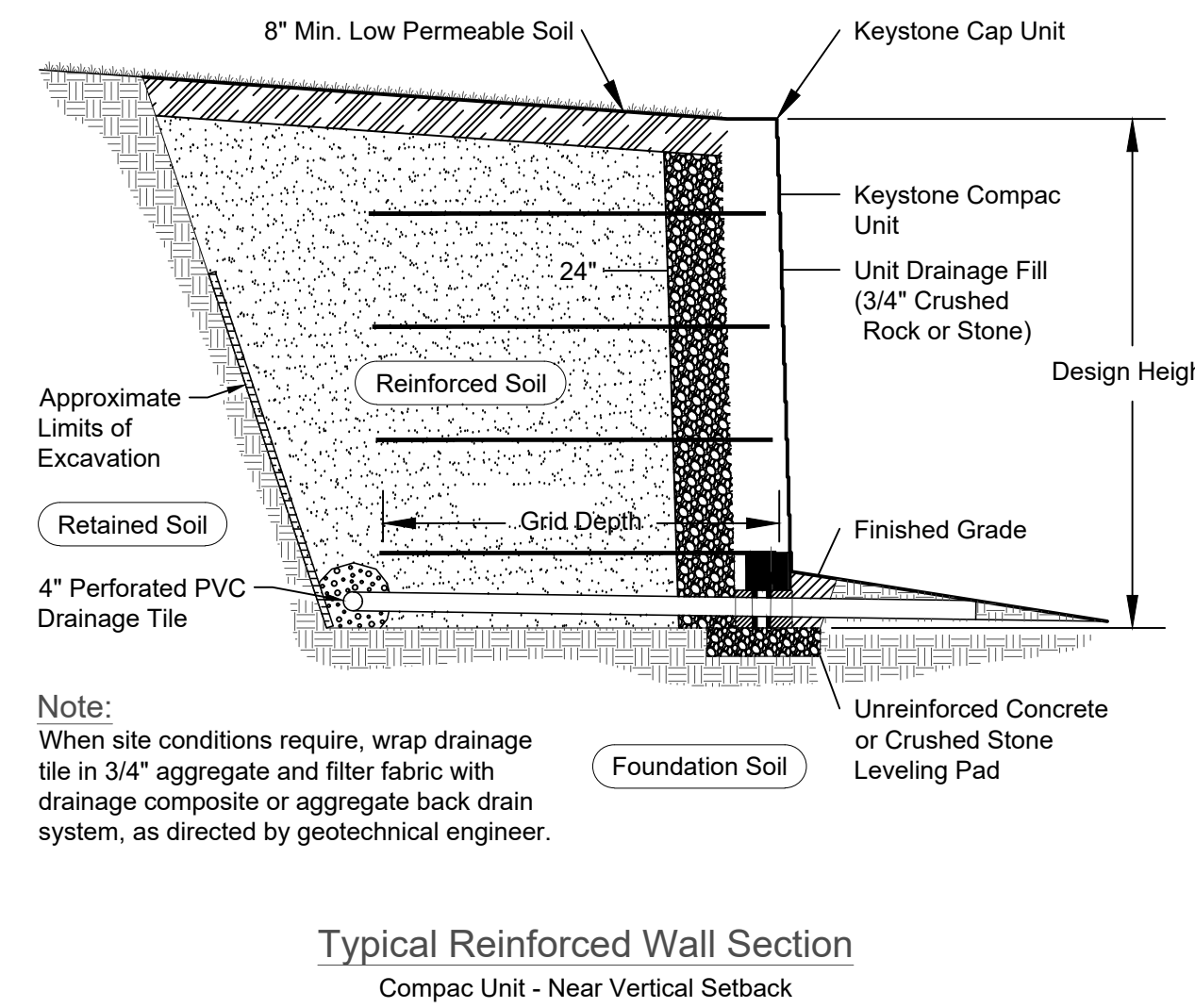
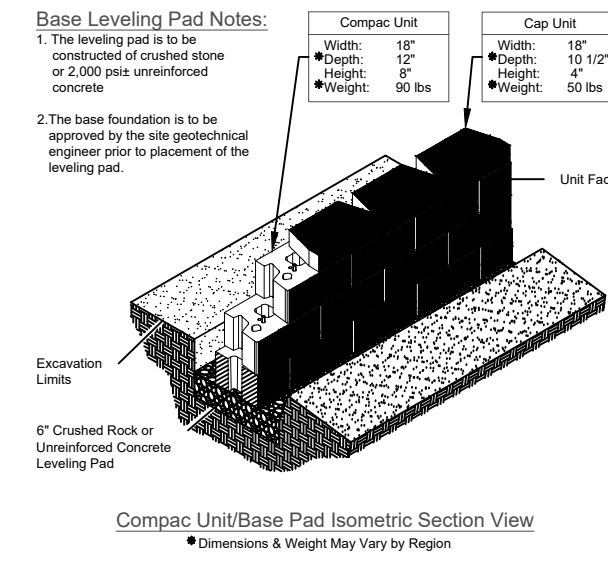
Project Name and Address
SINGLETARY ARMS
115 W MAIN STREET, 119 W MAIN STREET
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MILLBURY, MA 01527
Sheet Title
**UTILITY CONSTRUCTION
DETAILS**



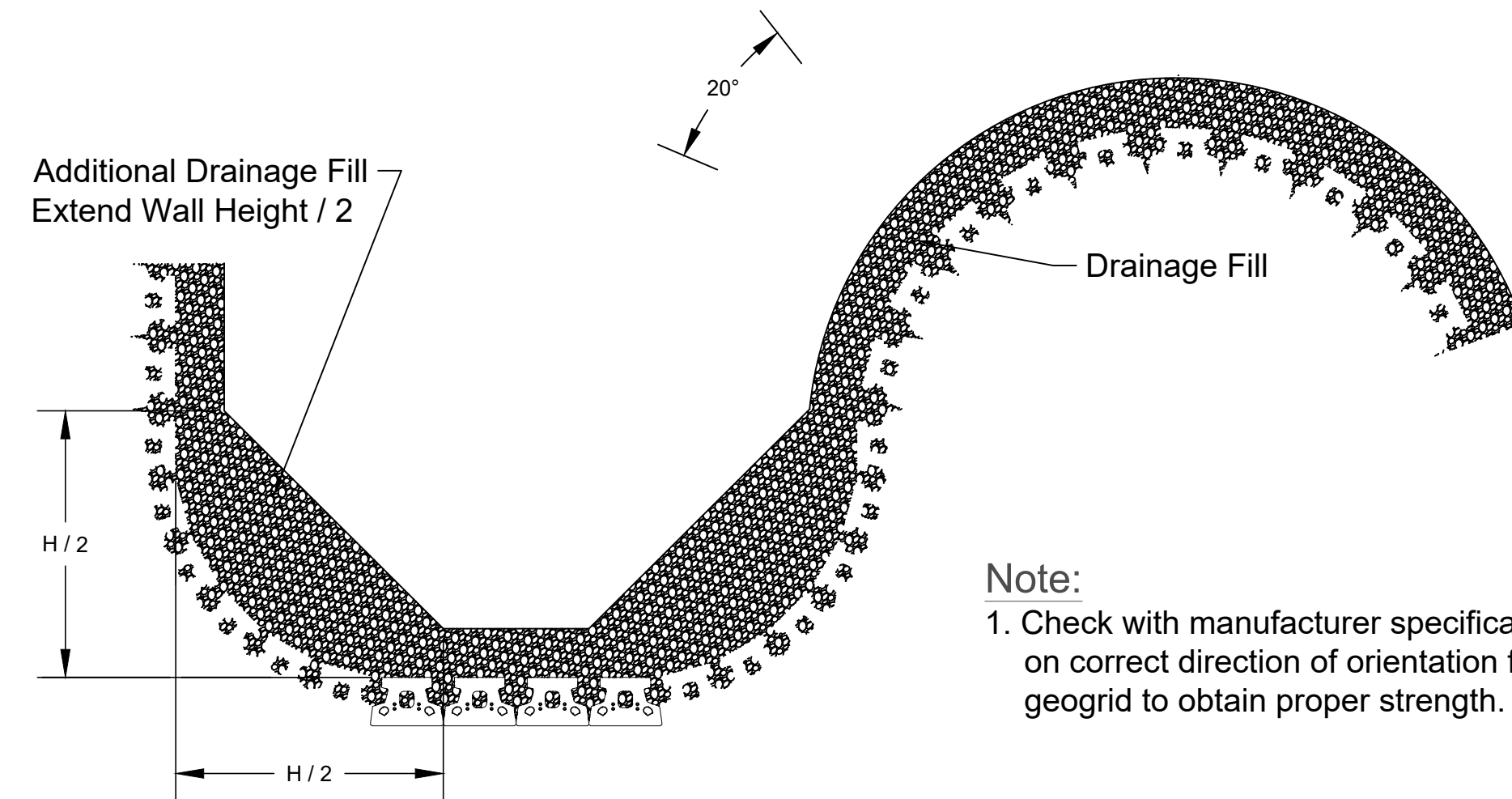
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5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. 03	Sheet C-24
Date 03/06/2020	Scale AS NOTED

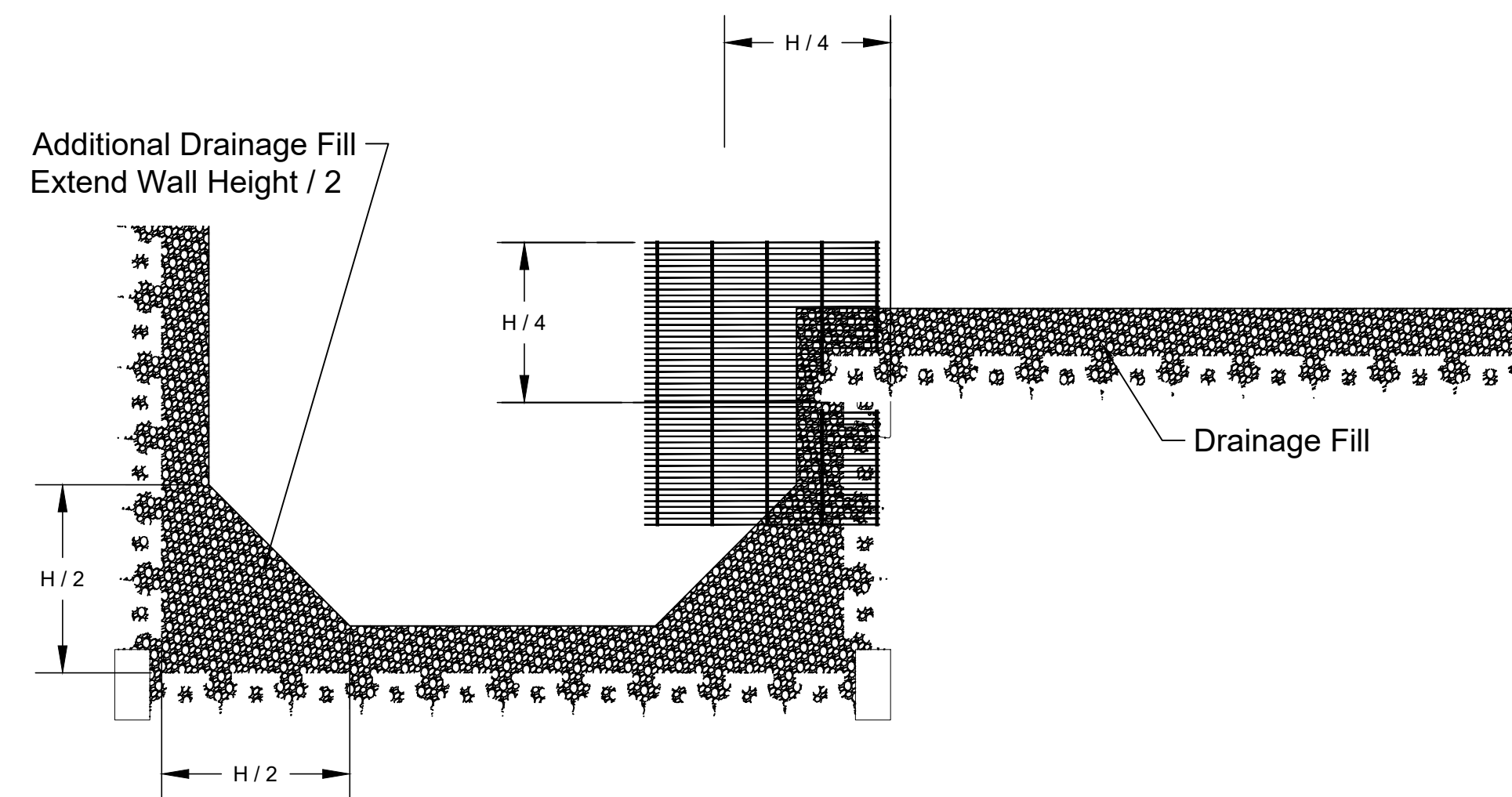


Place Additional Pieces of Geogrid When Angle Exceeds 20°

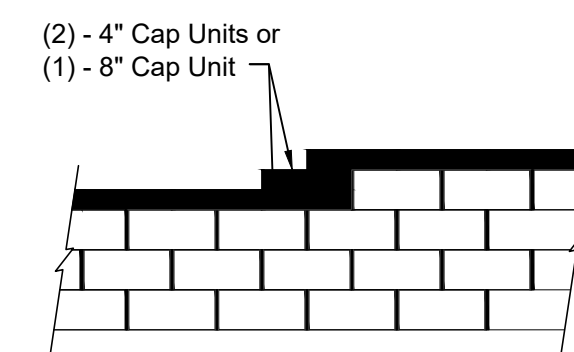


Note:
 1. Check with manufacturer specifications on correct direction of orientation for geogrid to obtain proper strength.

Geogrid Installation on Curves

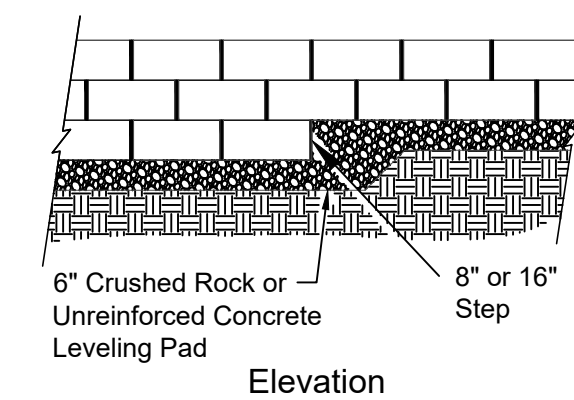


Geogrid Installation at Corners

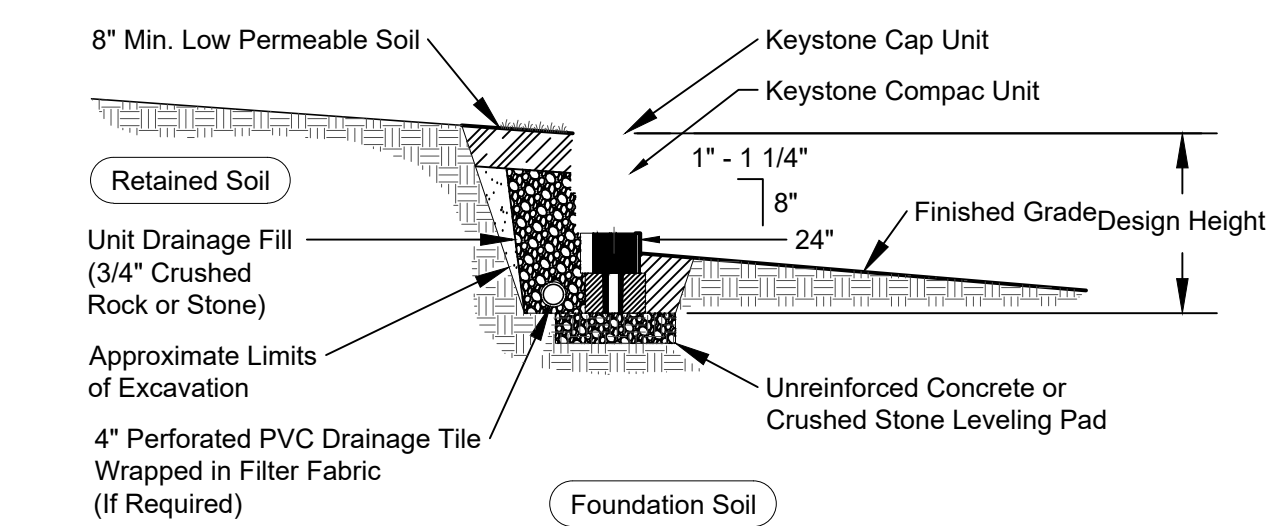
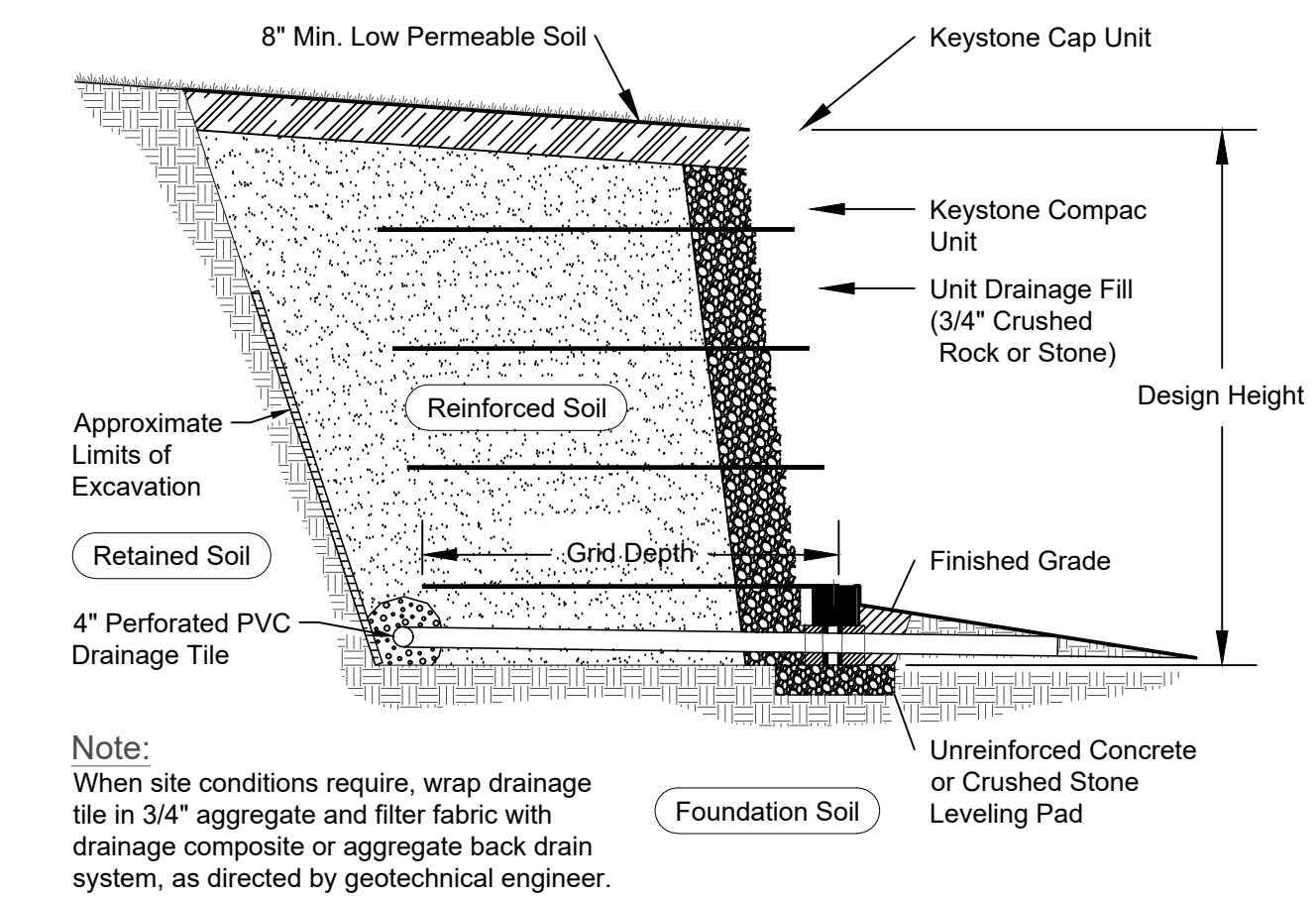
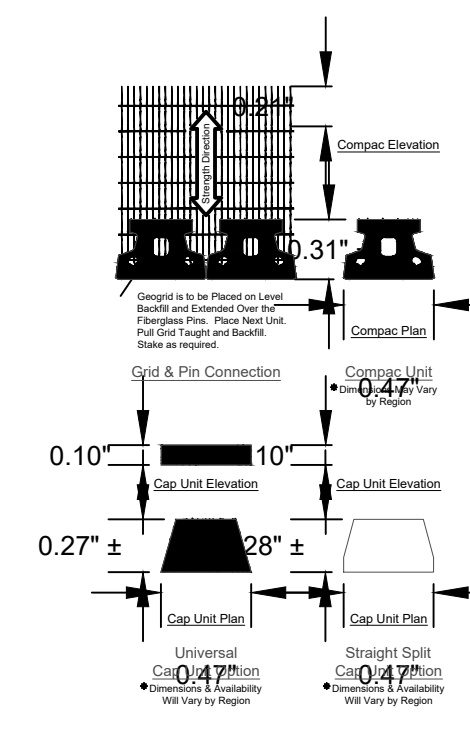
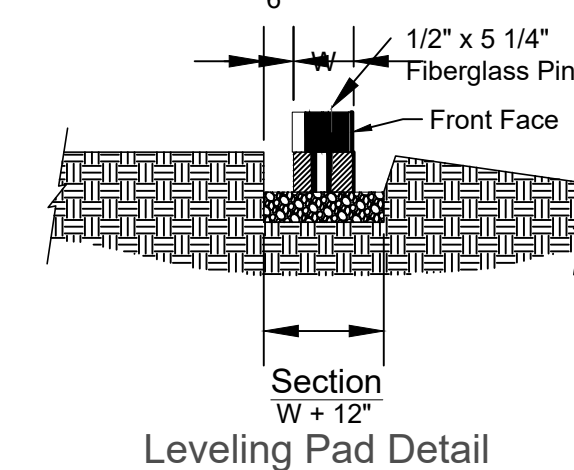


Note:
 1. Secure all cap units with Keystone Kapseal or equal.

Top of Wall Steps



Note:
 1. The leveling pad is to be constructed of crushed stone or 2000 psi unreinforced concrete.



- Richard F Gosselin, Jr Chairman _____
- Paul A Piktels Vice Chairman _____
- Terry Burke Dotson Member _____
- Francis Desimone Alternate Member _____
- Bruce M Devault Member _____

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 MILLBURY, MA 01527

RETAINING WALL DETAILS

Sheet Title



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Project No. ***
 Date 03/06/2020
 Scale AS NOTED
 C-25



Crushed Stone with $\phi = 40^\circ$ over Native Soil with $\phi = 34^\circ$
Non Reinforced Walls with 41" Wide Blocks and Crushed Stone Backfill
Load Condition A, B, and C

Place planter blocks to approximate average batter angle.

LOAD CONDITION	LOAD CONDITION A			LOAD CONDITION B			LOAD CONDITION C		
	Wall Height	Min. Bury Depth	Leveling Pad	Wall Height	Min. Bury Depth	Leveling Pad	Wall Height	Min. Bury Depth	Leveling Pad
0 Planters	7'-6"	6"	6"	7'-6"	6"	6"	7'-6"	6"	6"
	9'-0"	6"	1'-0"	9'-0"	6"	1'-0"	9'-0"	6"	1'-0"
	10'-6"	6"	1'-0"	10'-6"	6"	1'-0"	10'-6"	6"	1'-0"
	12'-0"	1'-0"	1'-0"	12'-0"	1'-0"	1'-0"	12'-0"	1'-0"	1'-0"
	13'-6"	1'-0"	1'-0"						
1 Planter	9'-0"	6"	1'-0"	9'-0"	6"	1'-0"	9'-0"	6"	1'-0"
	10'-6"	6"	1'-0"	10'-6"	6"	1'-0"	10'-6"	6"	1'-0"
	12'-0"	1'-0"	1'-0"	12'-0"	1'-0"	1'-0"	12'-0"	1'-0"	1'-0"
	13'-6"	1'-0"	1'-0"	13'-6"	1'-0"	1'-0"	13'-6"	1'-0"	1'-0"
	15'-0"	1'-0"	1'-0"	15'-0"	1'-0"	1'-0"			
2 Planters	12'-0"	1'-0"	1'-0"	12'-0"	1'-0"	1'-0"	12'-0"	1'-0"	1'-0"
	13'-6"	1'-0"	1'-0"	13'-6"	1'-0"	1'-0"	13'-6"	1'-0"	1'-0"
	15'-0"	1'-0"	1'-0"	15'-0"	1'-0"	1'-0"	15'-0"	1'-0"	1'-0"
	16'-6"	1'-0"	1'-0"	16'-6"	1'-0"	1'-0"	16'-6"	1'-0"	1'-0"
	18'-0"	1'-6"	1'-0"	18'-0"	1'-6"	1'-0"	18'-0"	1'-6"	1'-0"

The above chart was prepared by Redi-Rock™ International for estimating and conceptual design purposes only. All information is believed to be true and accurate, however, Redi-Rock™ International assumes no responsibility for the use of these design charts for actual construction. Determination of the suitability of each chart is the sole responsibility of the user. Final designs for construction purposes must be performed by a registered Professional Engineer, using the actual conditions of the proposed site.

Other Notes:

- Unit weight of 28", 30", 34" and 40" soils is assumed to be 120pcf.
- Minimum factors of safety are 1.5 for sliding, 1.5 for overturning, 2.0 for bearing capacity and 1.3 for global stability.
- Wall stability should be verified in the final design for site specific conditions.
- The wall design shall address both internal and external drainage and shall be evaluated by the Professional Engineer who is responsible for the final wall design.
- Backfill material to be compacted to 95% standard proctor density.
- All Redi-Rock™ International Wall System Specifications are to be followed.



Crushed Stone with $\phi = 40^\circ$ over Native Soil with $\phi = 28^\circ$
Non Reinforced Walls with 60" and 41" Wide Blocks
Load Condition A, B, and C

LOAD CONDITION	LOAD CONDITION A			LOAD CONDITION B			LOAD CONDITION C		
	Wall Height	Min. Bury Depth	Leveling Pad	Wall Height	Min. Bury Depth	Leveling Pad	Wall Height	Min. Bury Depth	Leveling Pad
(1) 60" Block	13'-6"	1'-0"	1'-0"	10'-6"	1'-0"	1'-0"	10'-6"	1'-6"	1'-0"
	15'-0"	1'-0"	1'-0"	12'-0"	1'-0"	1'-0"	12'-0"	2'-0"	1'-0"
				13'-6"	1'-6"	1'-0"			
(2) 60" Blocks	16'-6"	1'-6"	1'-0"	15'-0"	1'-6"	1'-0"	13'-6"	2'-6"	1'-0"
(3) 60" Blocks	18'-0"	2'-0"	1'-0"	16'-6"	2'-0"	1'-0"	15'-0"	3'-0"	1'-0"

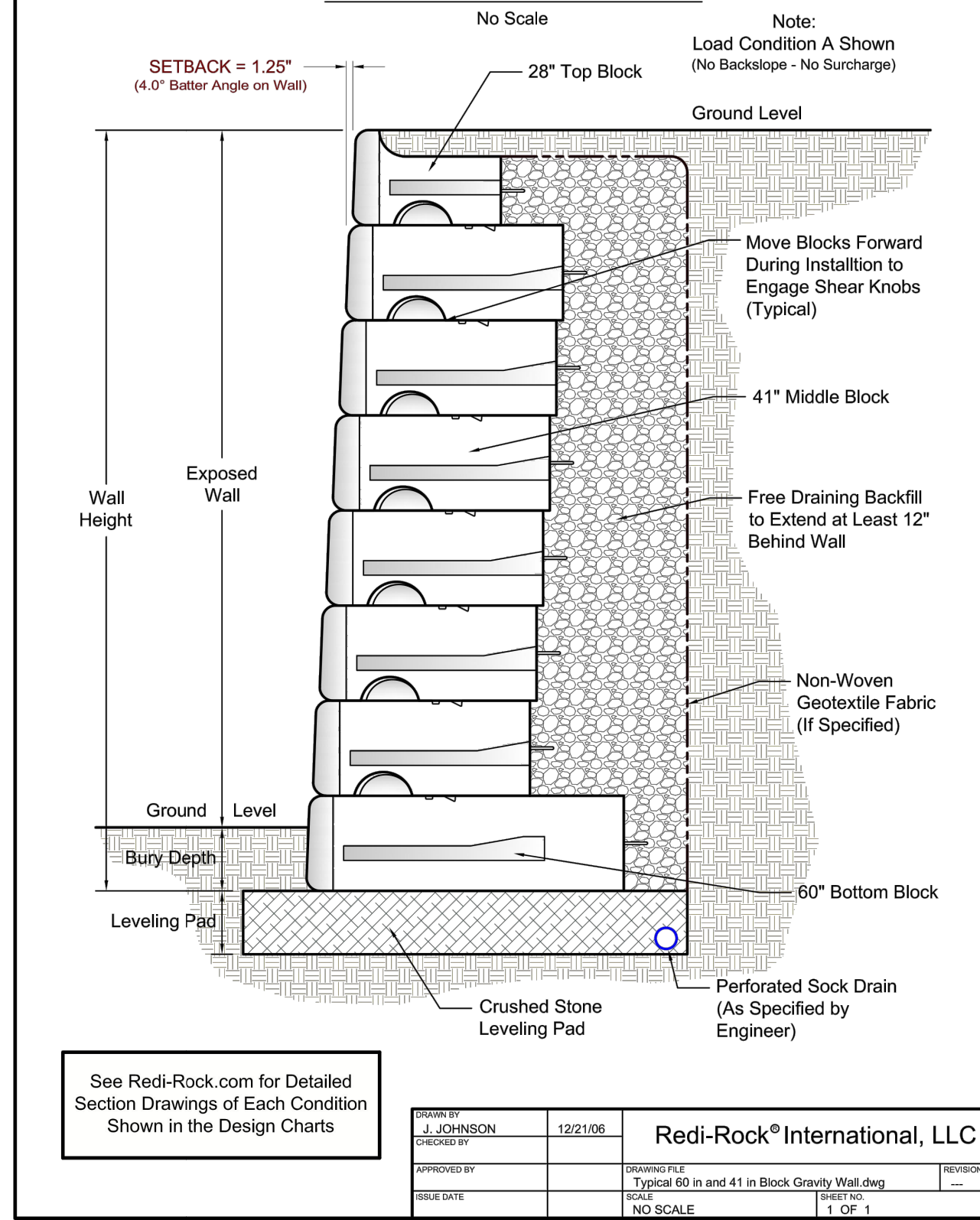
The above chart was prepared by Redi-Rock™ International for estimating and conceptual design purposes only. All information is believed to be true and accurate, however, Redi-Rock™ International assumes no responsibility for the use of these design charts for actual construction. Determination of the suitability of each chart is the sole responsibility of the user. Final designs for construction purposes must be performed by a registered Professional Engineer, using the actual conditions of the proposed site.

Other Notes:

- Unit weight of 28", 30", 34" and 40" soils is assumed to be 120pcf.
- Minimum factors of safety are 1.5 for sliding, 1.5 for overturning, 2.0 for bearing capacity and 1.3 for global stability.
- Backfill material to be compacted to 95% standard proctor density.
- The wall design shall address both internal and external drainage and shall be evaluated by the Professional Engineer who is responsible for the final wall design.
- Backfill material to be compacted to 95% standard proctor density.
- All Redi-Rock™ International Wall System Specifications are to be followed.



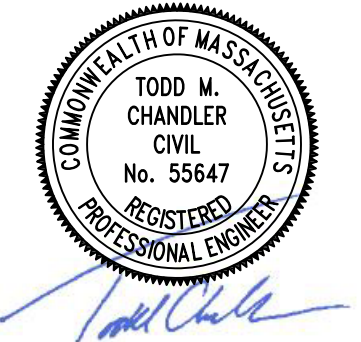
Typical Gravity Wall with 60" and 41" Blocks



Project Name and Address
SINGLETARY ARMS
 115 W MAIN STREET, 119 W MAIN STREET
 3 BURBANK STREET, 4 BURBANK STREET
 MILLBURY, MA 01527

Sheet Title
ALTERNATE RETAINING WALL DETAILS

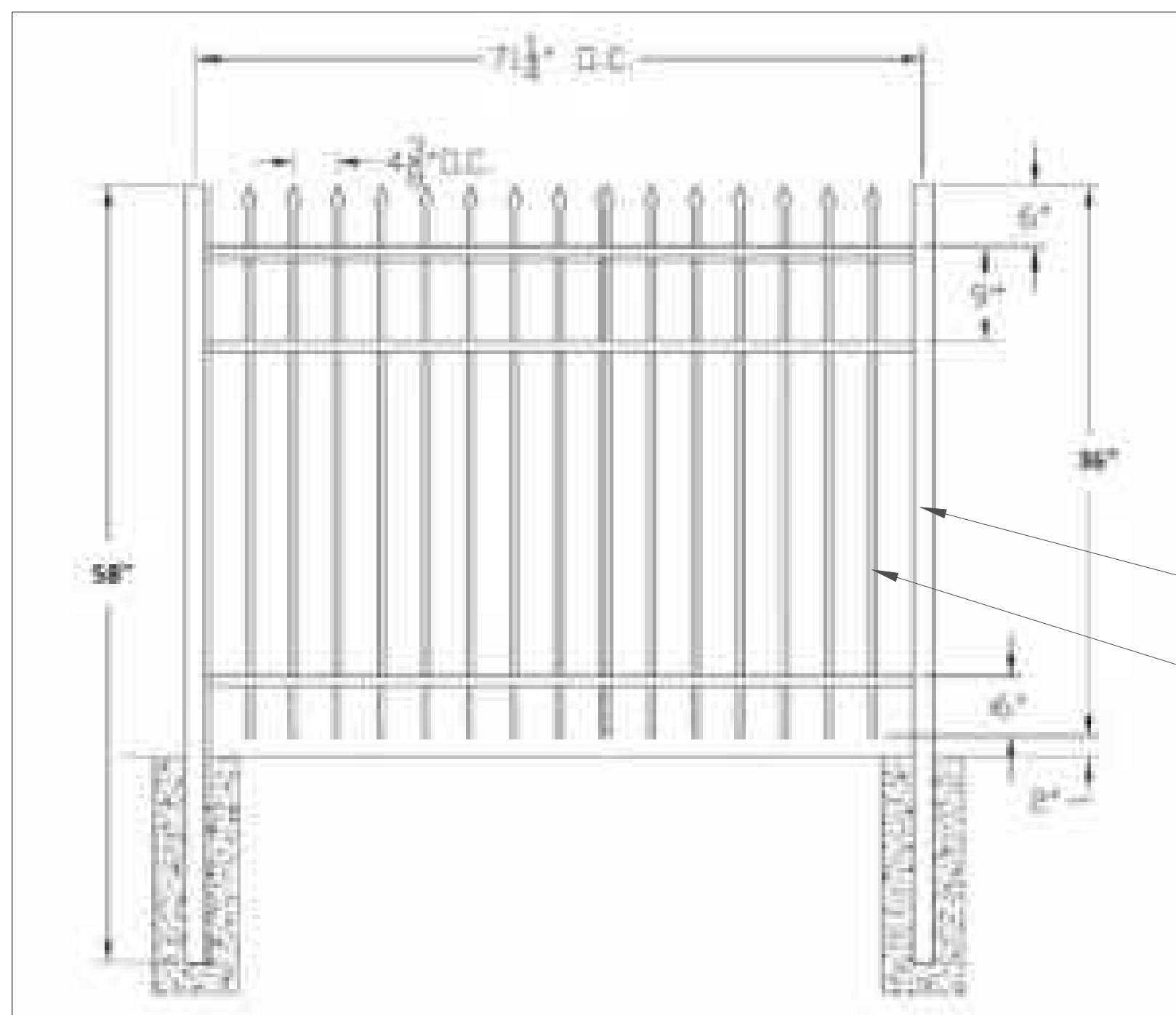
Date
 3/1/2021



Date
 3/1/2021

No.	Revision/Issue	Date
1	RESPONSE TO CITY/STANTEC COMMENTS	09/28/2020
2	RESPONSE TO CITY/STANTEC COMMENTS	10/22/2020
3	RESPONSE TO CITY/STANTEC COMMENTS	12/09/2020
4	RESPONSE TO CITY/STANTEC COMMENTS	01/29/2021
5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
 Date 03/06/2020
 Scale AS NOTED
 Sheet C-25.1



RETAINING WALL FENCE DETAIL

36" TALL 1 1/2 " PAINTED TUBE STEEL

36" TALL 3/4" PAINTED TUBE STEEL

- Richard F Gosselin, Jr Chairman _____
- Paul A Pikelis Vice Chairman _____
- Terry Burke Dotson Member _____
- Francis Desimone Alternate Member _____
- Bruce M Devault Member _____

PLOTTED 2/26/2021 5:57:09 PM

D:\Users\Owner\Documents\big_box_conversion\milbury_moss\115 West Main St - Milbury Mass\site - 25 milbury js.dwg

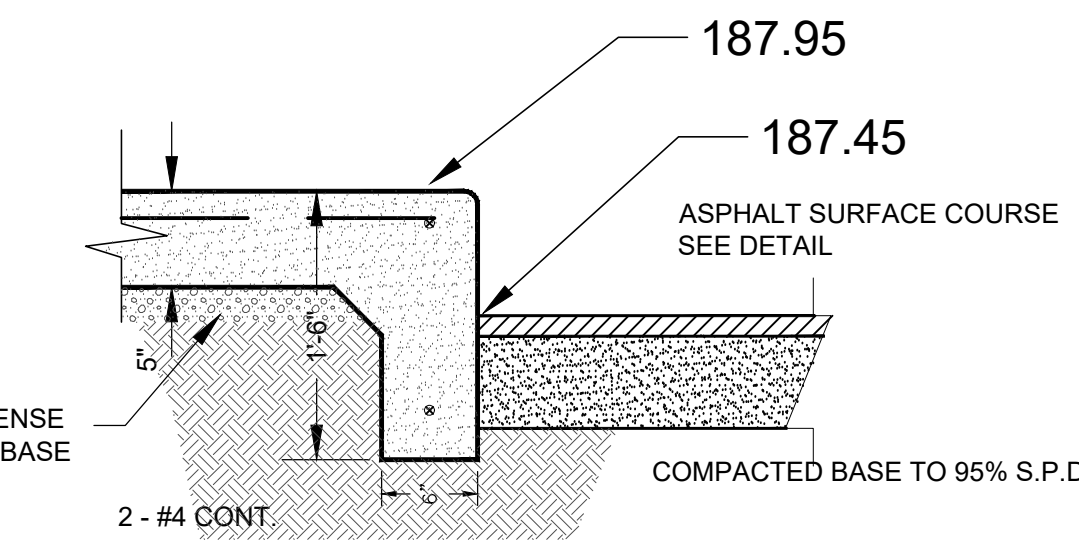
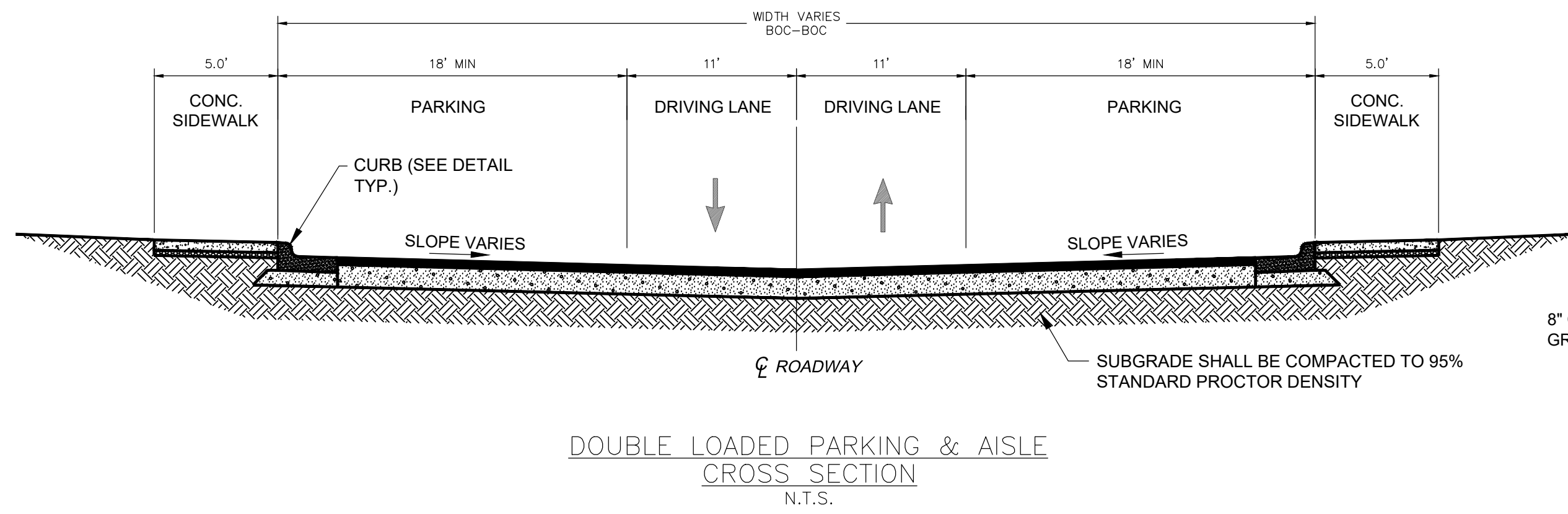
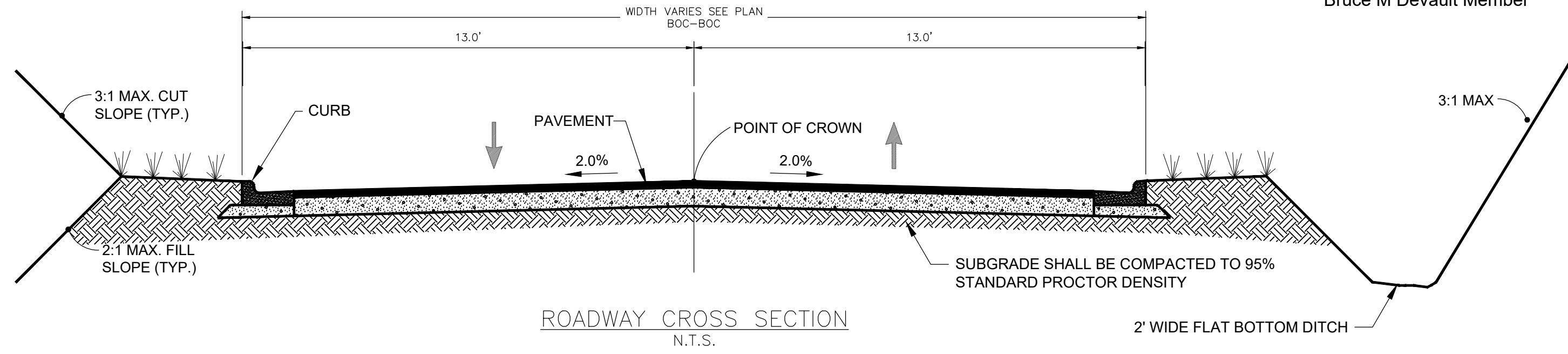
Richard F Gosselin, Jr Chairman _____

Paul A Pikelis Vice Chairman _____

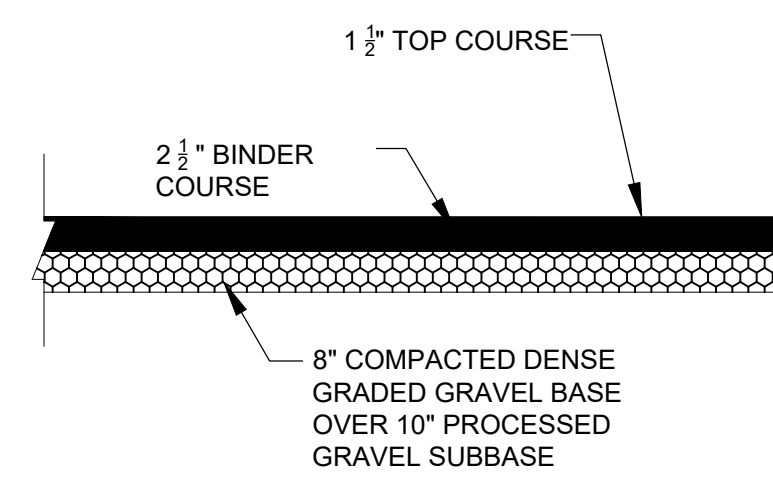
Terry Burke Dotson Member _____

Francis Desimone Alternate Member _____

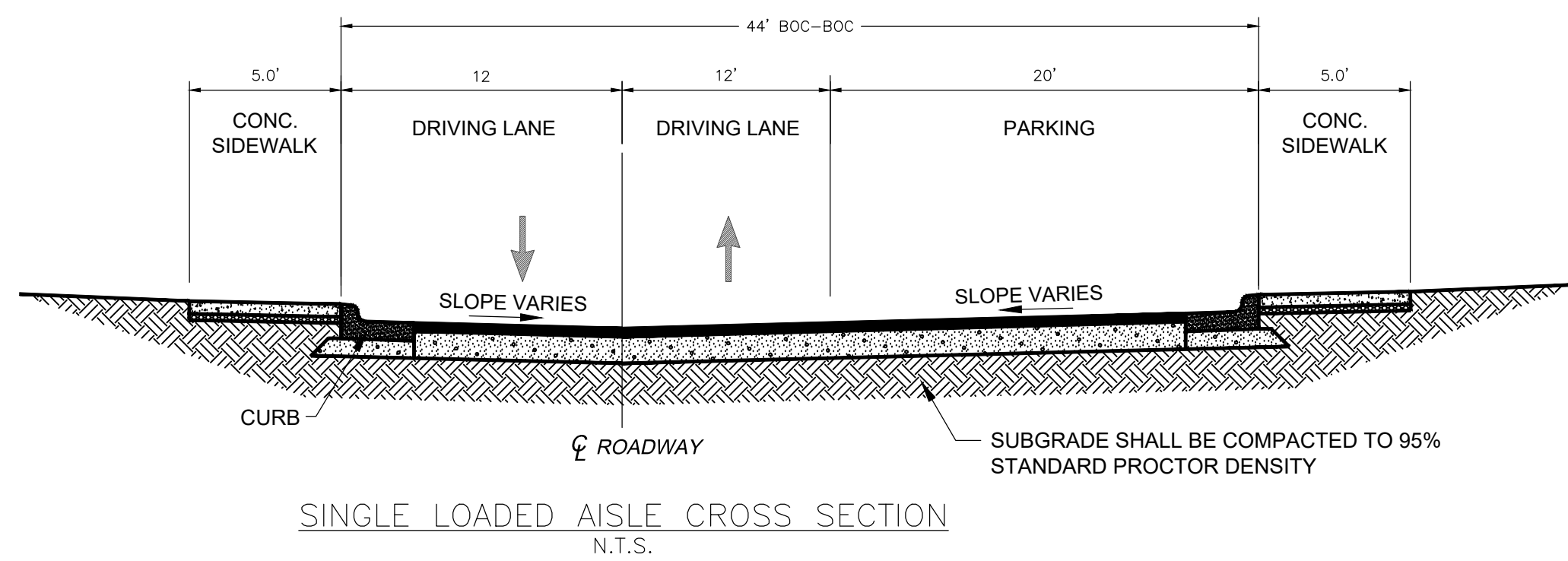
Bruce M Devault Member _____



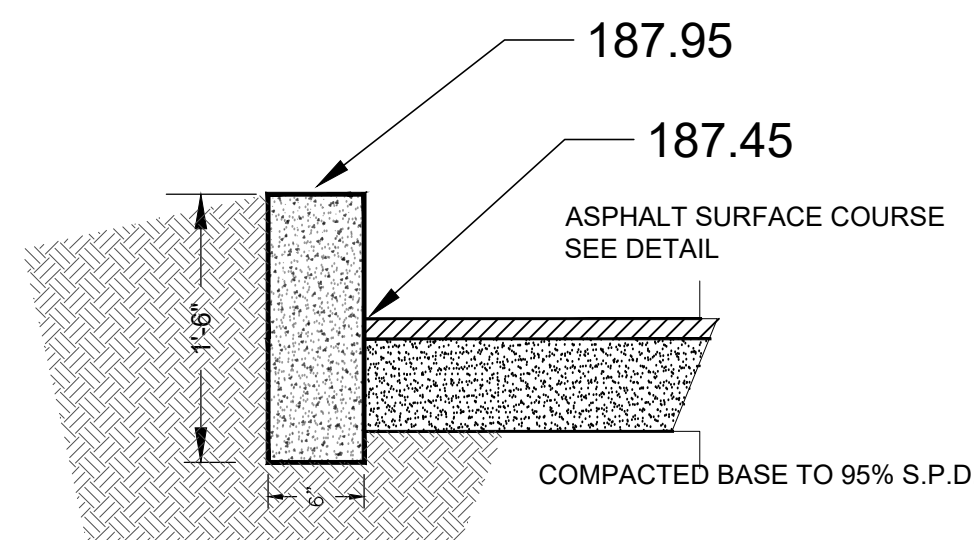
CONCRETE SIDEWALK TYPE II
NOT TO SCALE



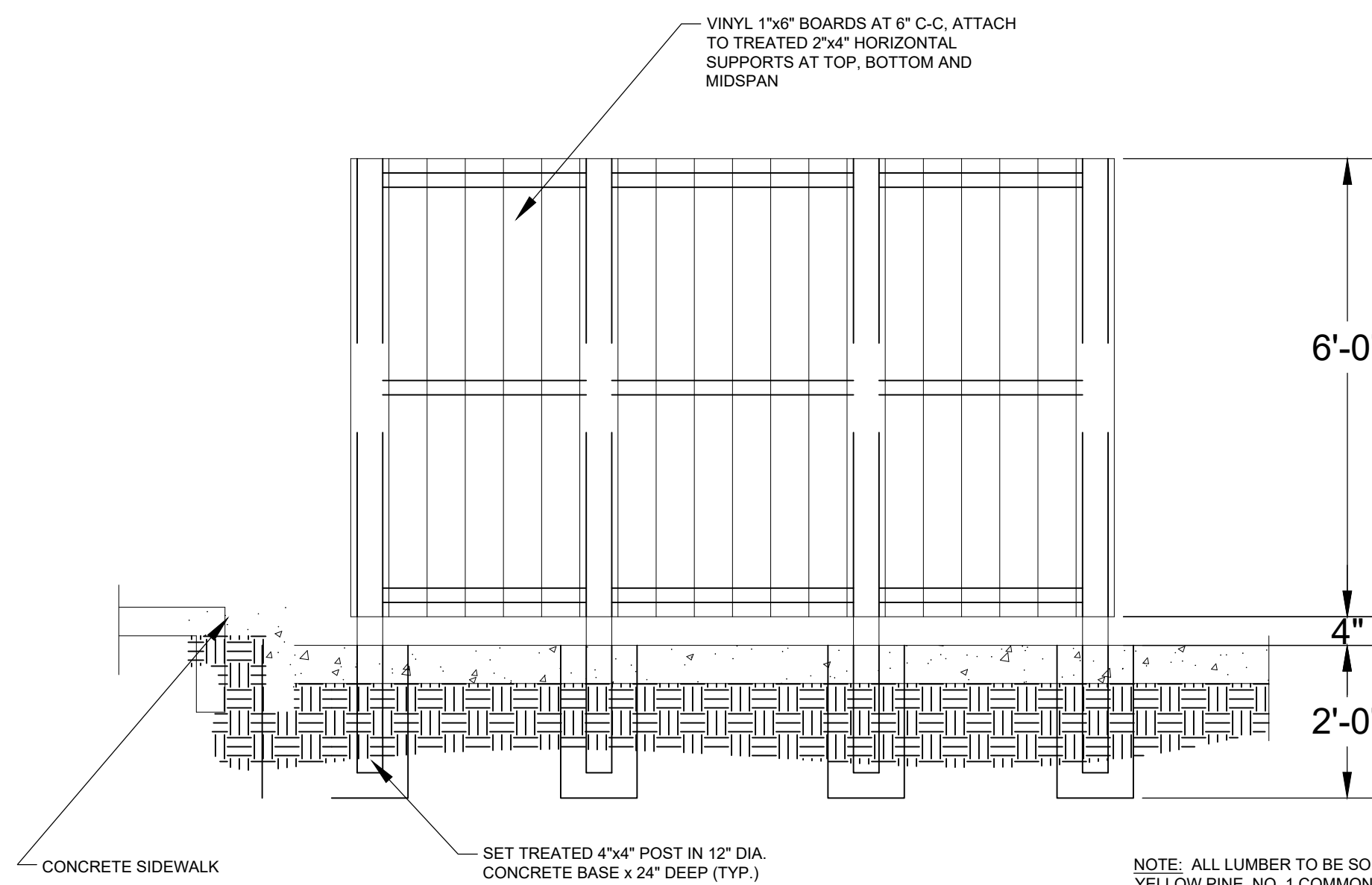
TYPICAL PAVEMENT DETAIL
NOT TO SCALE



4" CONC. SIDEWALK OVER 4" COMPACTED
BASE MATERIAL W/ 6X6-W1.4 X W1.4 WIRE
MESH. MAX CROSS SLOPE 2%



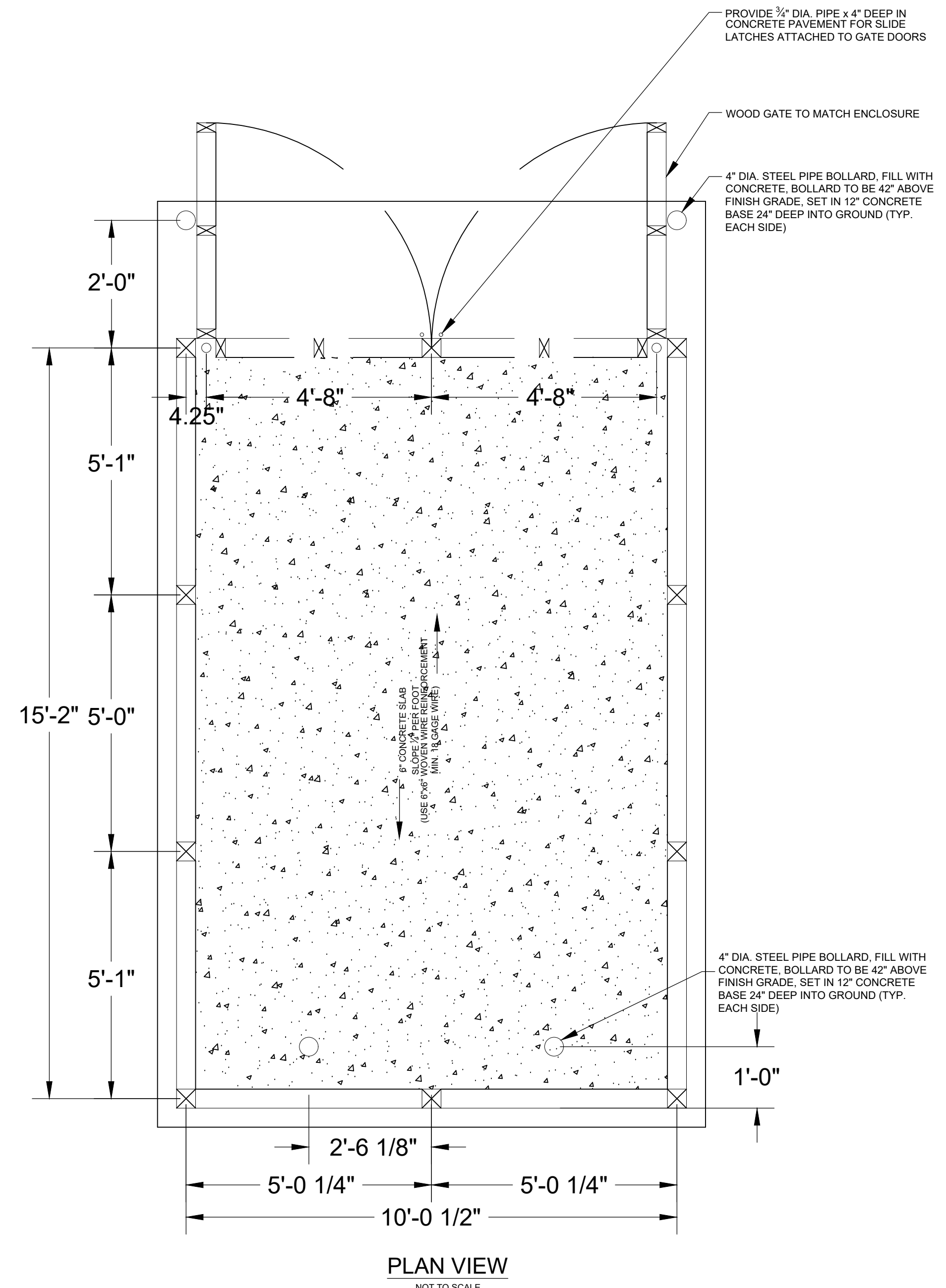
STANDARD CONCRETE CURB
DETAIL
NOT TO SCALE



SIDE ELEVATION
NOT TO SCALE

NOTE: ALL LUMBER TO BE SOUTHERN
YELLOW PINE, NO. 1 COMMON GRADE,
OR AS APPROVED BY THE ARCHITECT.
AFTER ASSEMBLY, APPLY ONE COAT
"OLYMPIC" SEMI-TRANSPARENT STAIN
NO. 709

DUMPSTER ENCLOSURE DETAIL
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

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ENGINEERING, LLC
ID No. 001450776
231 ROCKPOINT DRIVE
WALNUT SHADE, MO 65771
417-860-9697

Project Name and Address
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115 W MAIN STREET, 119 W MAIN STREET
3 BURBANK STREET, 4 BURBANK STREET
MILLBURY, MA 01527

Sheet Title
CONSTRUCTION DETAILS

Project Name and Address

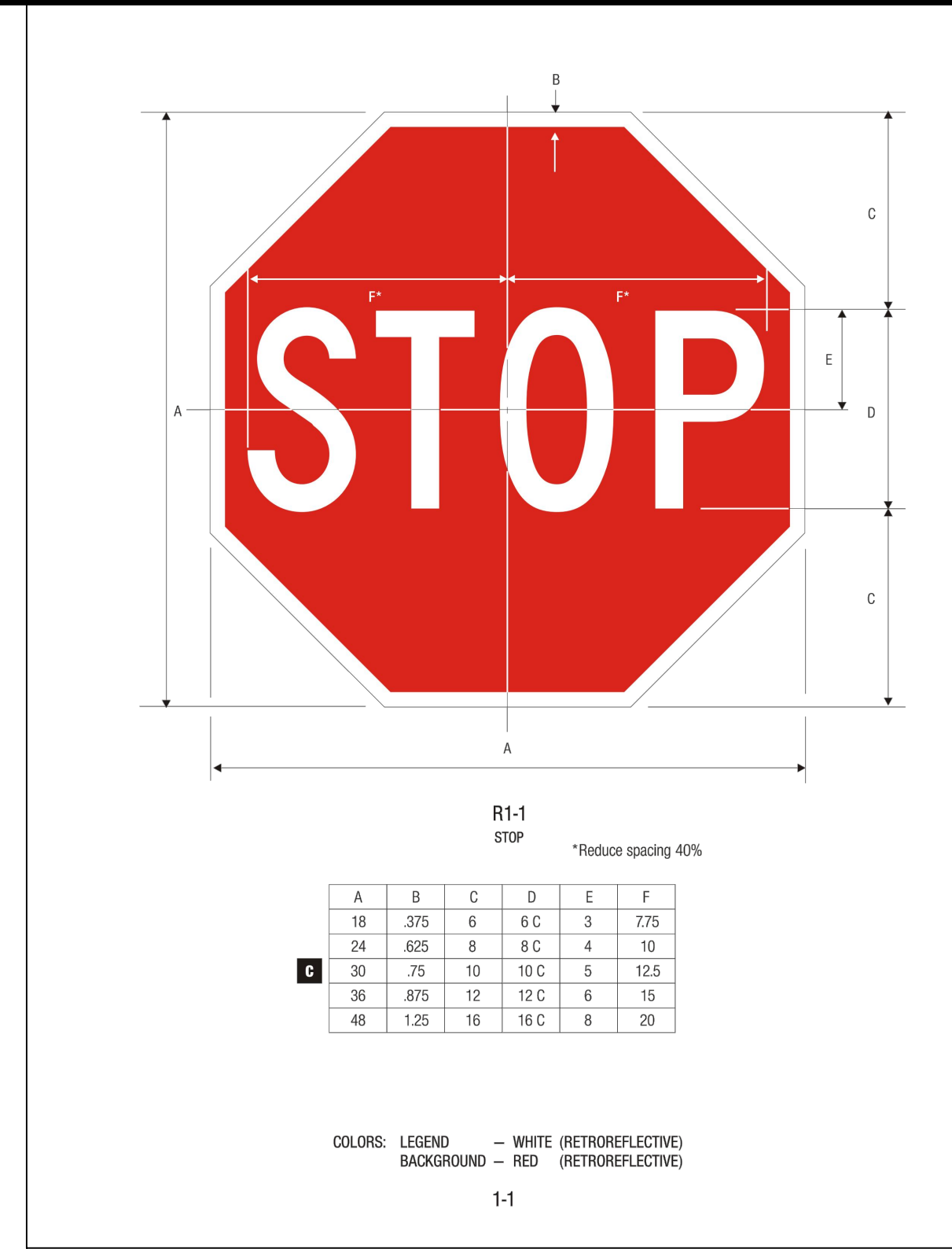
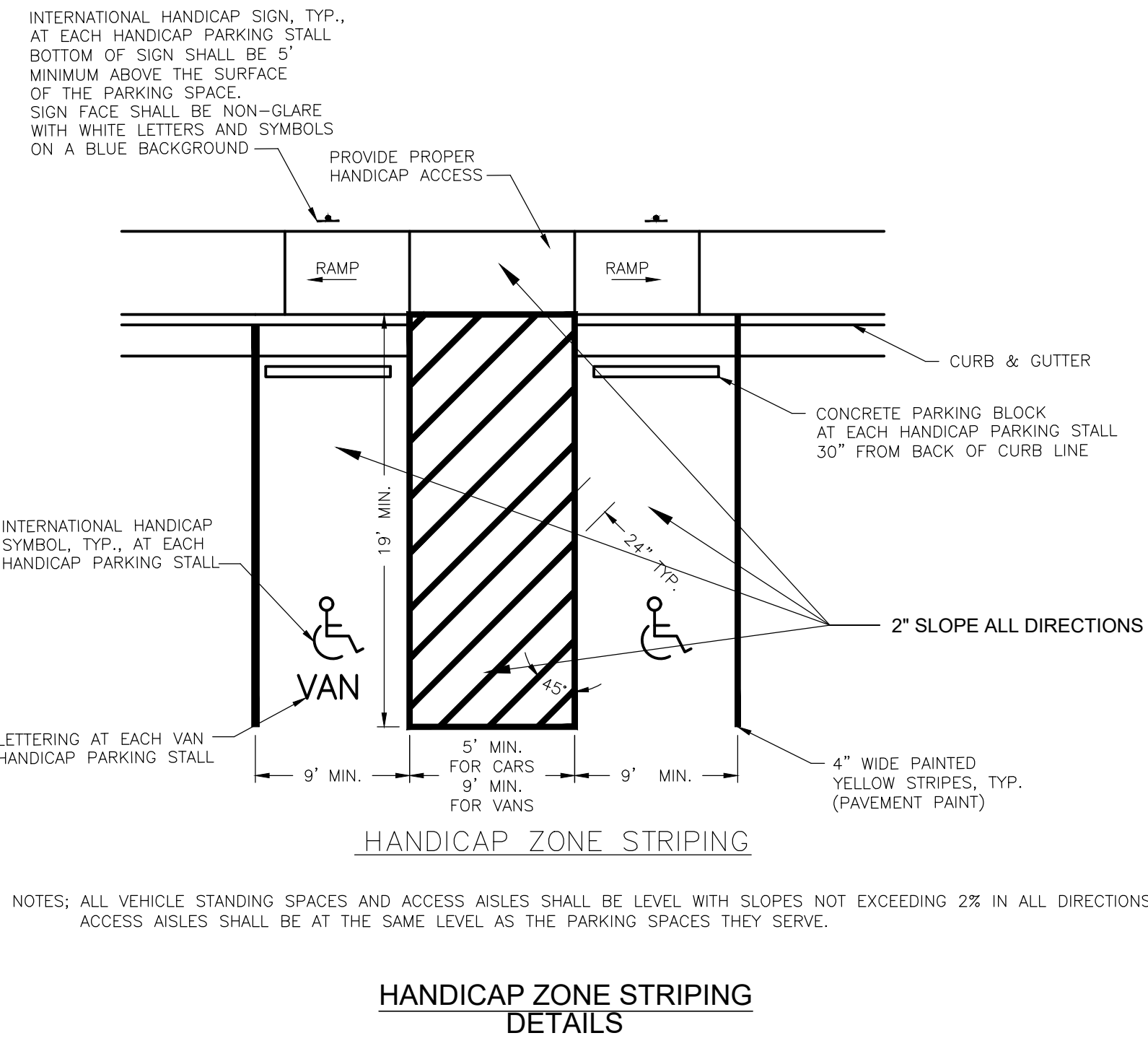
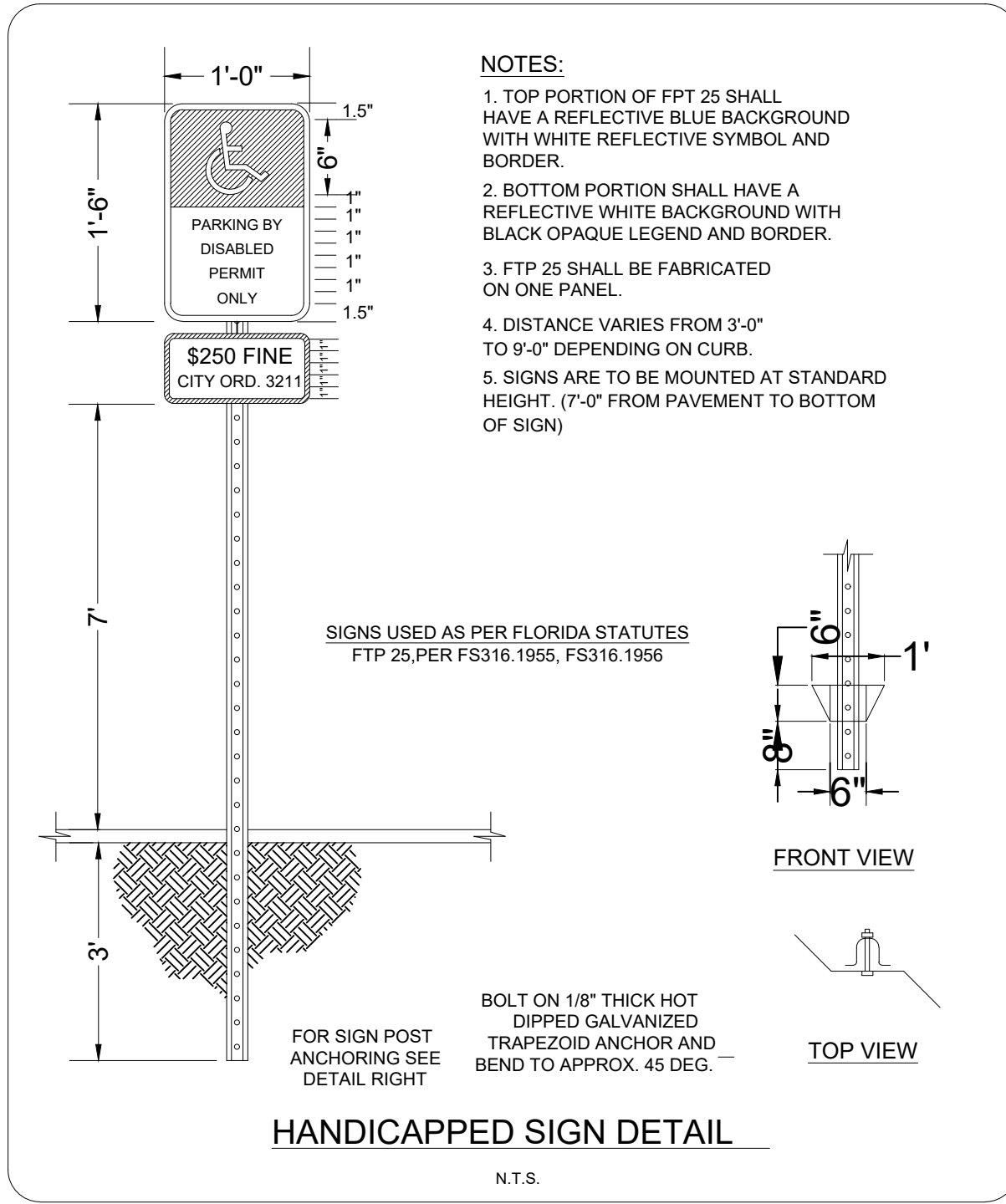
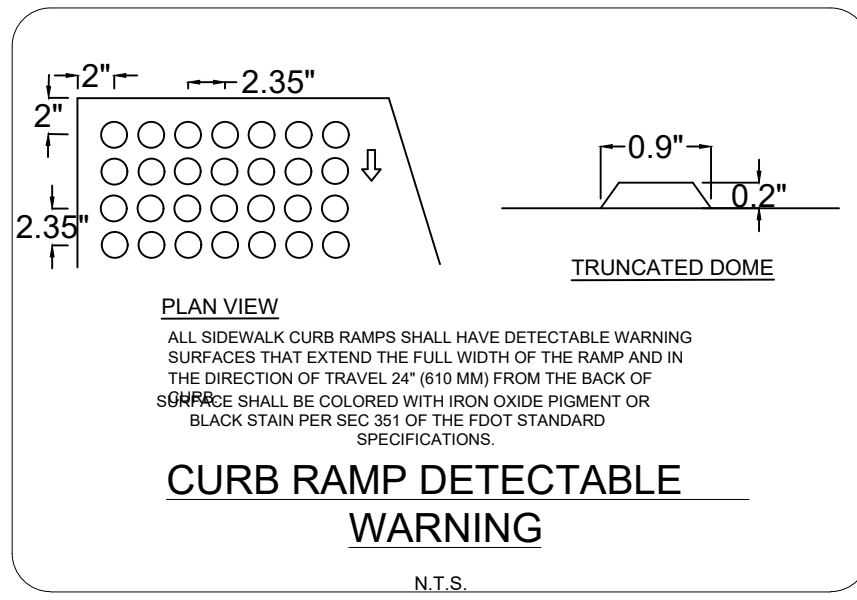
Sheet Title



3/1/2021
Date

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5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
Date 03/06/2020
Scale AS NOTED
Sheet C-26



Traffic Safety Corporation
2708 47th Ave.
Sacramento, CA 95822-3806
Toll Free: 888.446.9255
Tel: 916.394.9884
Fax: 916.394.2809
Email: sales@xwalk.com
Web: www.xwalk.com



TS50 LED Flashing Beacon Systems

General Description

Our TS50 LED Flashing Beacon Systems command the attention of drivers in order to improve compliance with traffic signs. Our beacons feature flashing, high-intensity LEDs that are visible under all weather conditions.

Our Flashing Beacon Systems consists of one or two 12" LED flashing beacons and an optional flashing or unlighted traffic sign. Standard systems operate 24/7. Optional activation methods include a timer, wireless keyfob transmitter, or push-button transmitter.

Applications

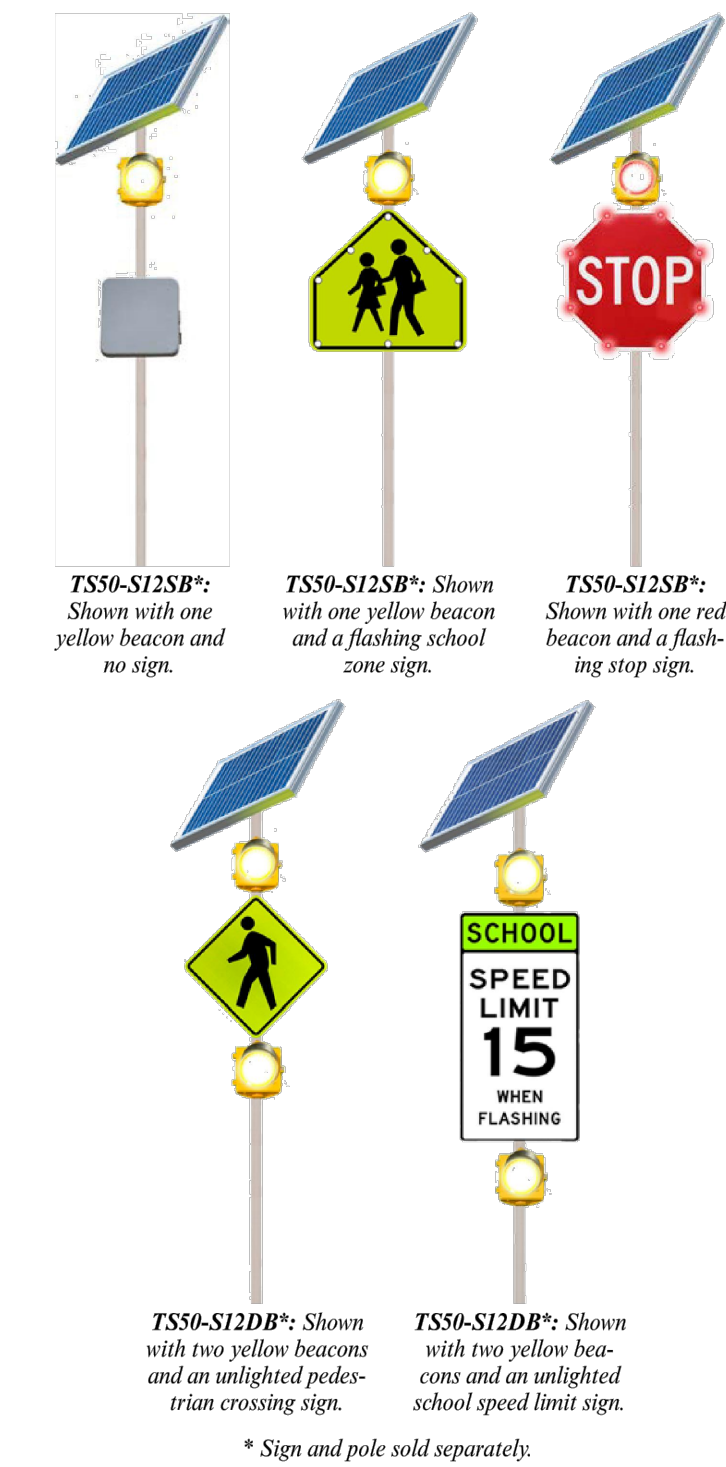
- Pedestrian and school crossings
- School zones
- Intersections with stop signs

Features

- MUTCD Compliant.
- Flash rate per MUTCD guidelines.
- One or two 12" LED yellow or red pixelated beacons with aluminum housings and visors.
- Optional flashing or unlighted traffic sign.
- LED life expectancy over 100,000 hours.
- Solar or AC powered.
- Day and night visibility.
- Standard 24/7 operation.
- Multiple optional activation options.
- Fast, easy installation.
- Keyed on/off switch.
- Easy battery replacement in field.
- Multiple mounting hardware options.

Specifications

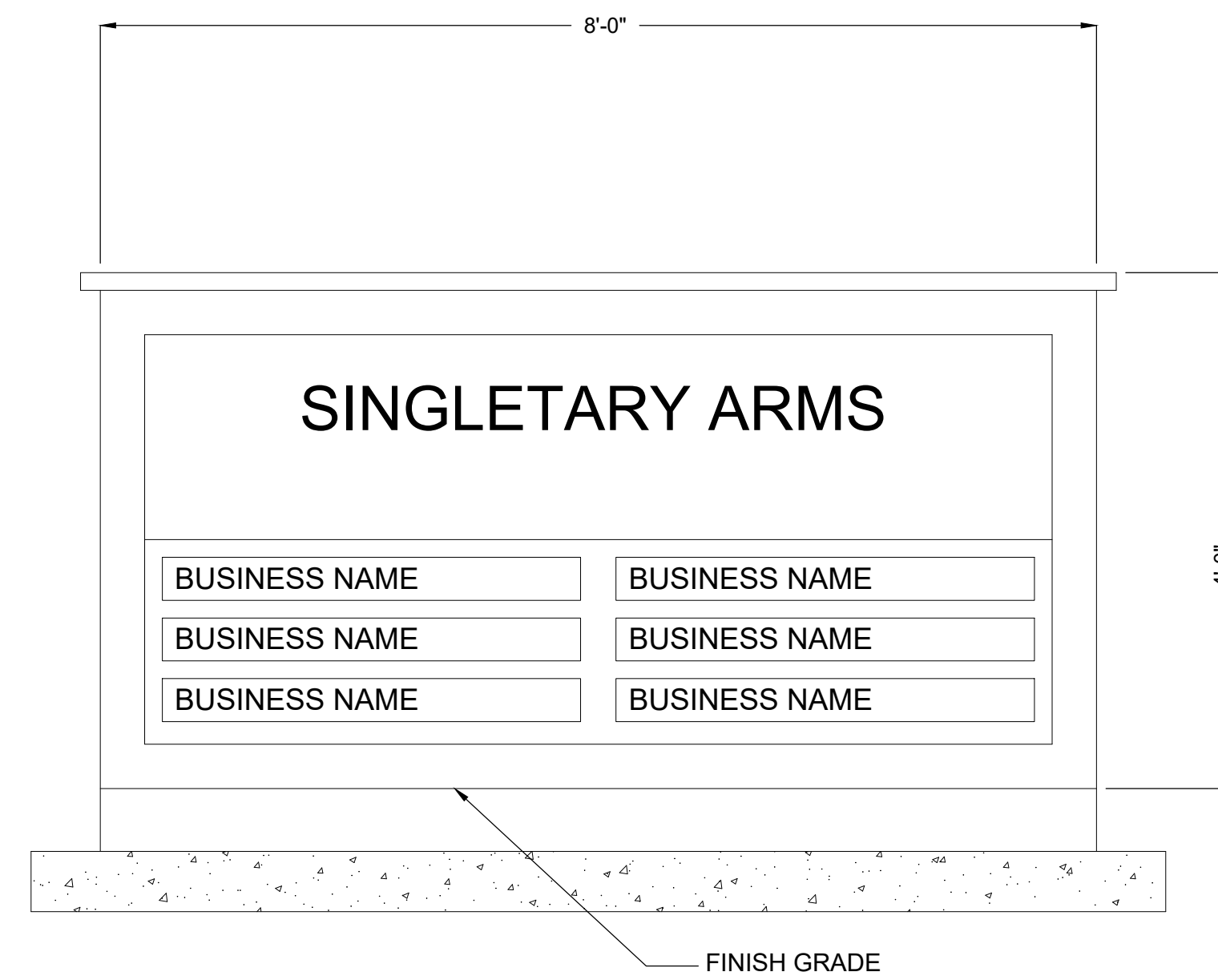
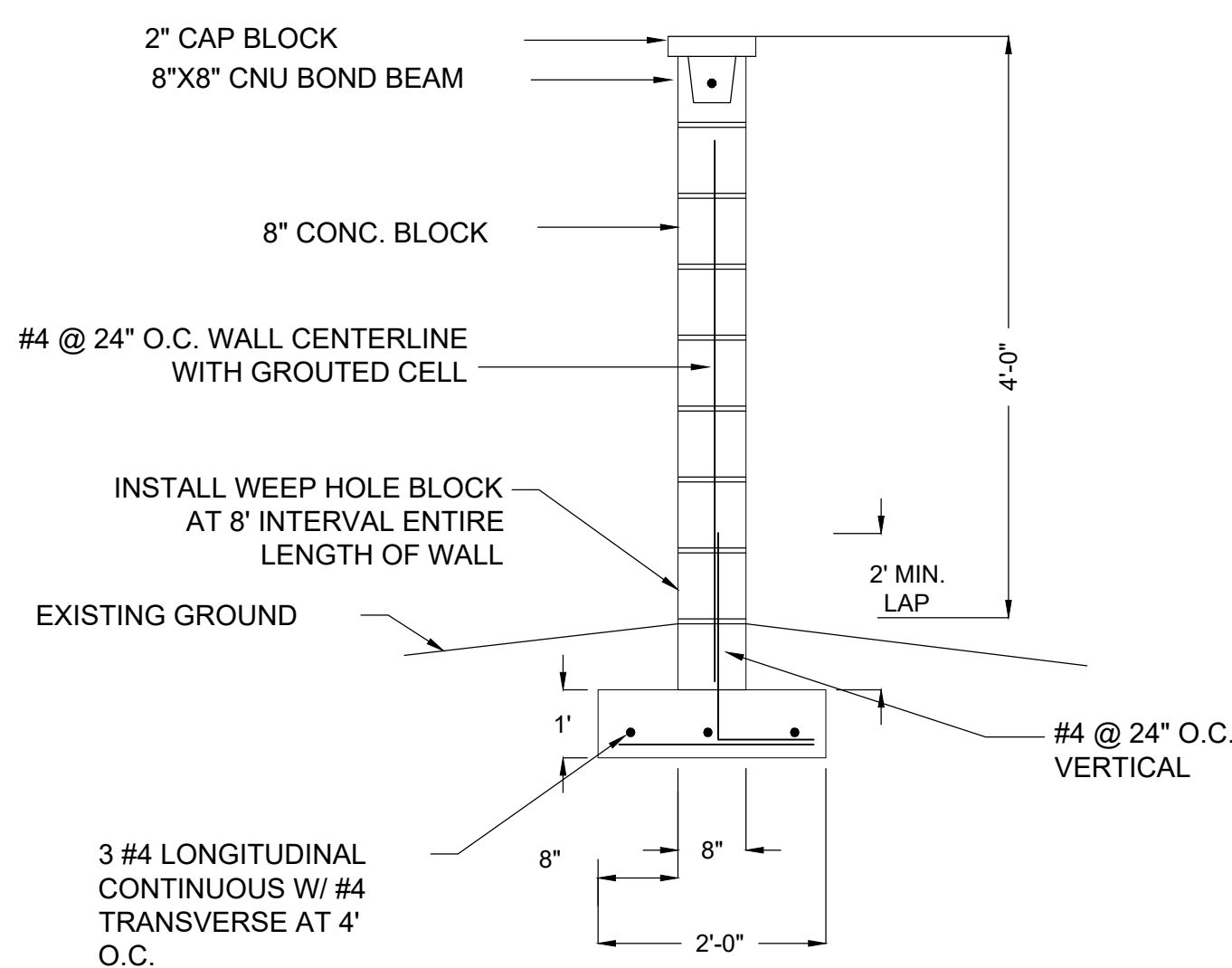
- Beacon: 12" LED yellow or red pixelated. 5W power consumption. Flash in the same color as the sign background.
- Optional Traffic Sign: Lighted with flashing LEDs or unlighted. Type IX reflective sheeting. Highway grade .080 aluminum construction.
- Circuitry Technology: Sealed PCB technology, micro-controller circuitry, 24/7 operation, flash rate 50 to 60 times per minute.
- Solar/AC/Battery Specifications (depending on model): 12 volt polycrystalline solar cell (sized to average activations), 12V 55 Ah SLA battery (2 to 4-year battery life), AC power.
- Optional Activation Methods: Timer, wireless keyfob transmitter, push-button transmitter.
- Aluminum housing surrounding beacon can be yellow or black.
- Fiberglass locking cabinet.
- Optional pole: 2" square Telespar or 4.5" round aluminum.
- Warranty: 10 year solar collector panel, 5 year sign construction, 2 year PCB/LED technology, 1 year battery.



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DS-40
Rev. A, Released 101618

Page 1 of 2



BRANSON SURVEYING & ENGINEERING, LLC
ID No. 001450776
231 ROCKPOINT DRIVE
WALNUT SHADE, MO 65771
417-860-9697

Project Name and Address
SINGLETARY ARMS
115 W MAIN STREET, 119 W MAIN STREET
3 BURBANK STREET, 4 BURBANK STREET
MILLBURY, MA 01527

Sheet Title
CONSTRUCTION DETAILS

TODD M. CHANDLER CIVIL
No. 55647
REGISTERED PROFESSIONAL ENGINEER

3/1/2021
Date

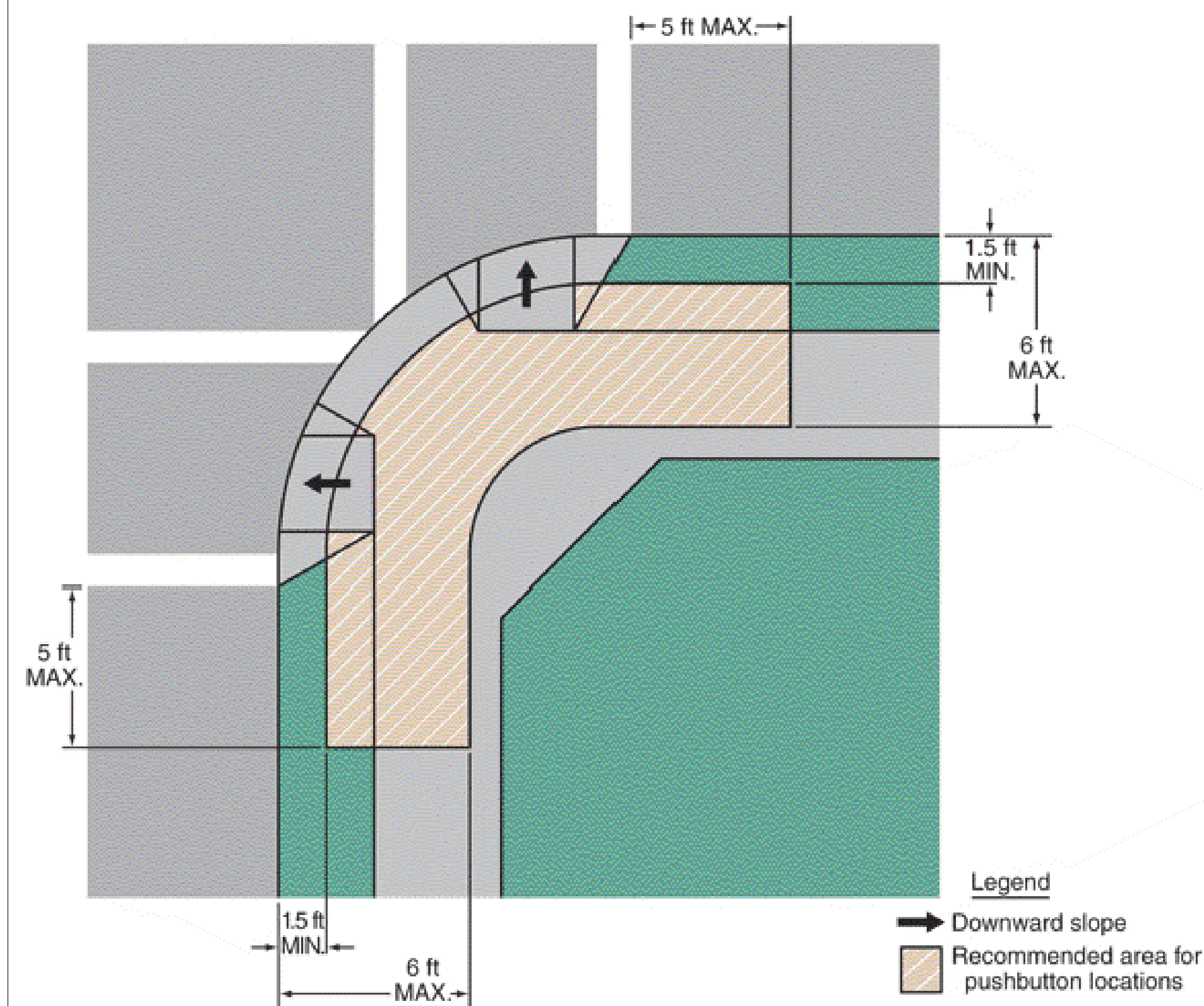
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Project No. ***
Date 03/06/2020
Scale AS NOTED

Sheet C-26.1

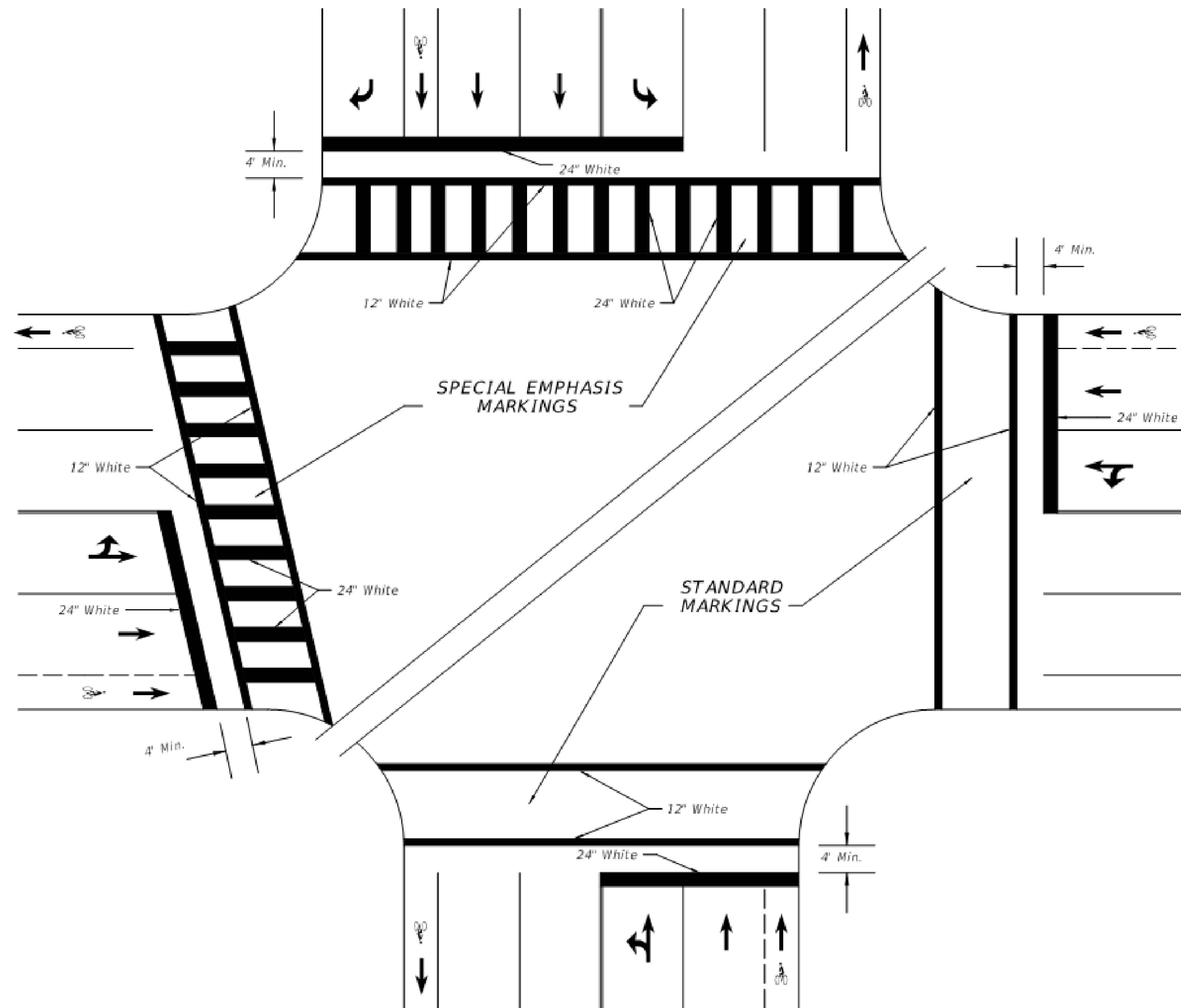
- Richard F Gosselin, Jr Chairman _____
- Paul A Piktelis Vice Chairman _____
- Terry Burke Dotson Member _____
- Francis Desimone Alternate Member _____
- Bruce M Devault Member _____

Figure 4E-3. Pushbutton Location Area



- Notes:
- Where there are constraints that make it impractical to place the pedestrian pushbutton between 1.5 feet and 6 feet from the edge of the curb, shoulder, or pavement, it should not be further than 10 feet from the edge of curb, shoulder, or pavement.
 - Two pedestrian pushbuttons on a corner should be separated by 10 feet.
 - This figure is not drawn to scale.
 - Figure 4E-4 shows typical pushbutton locations.

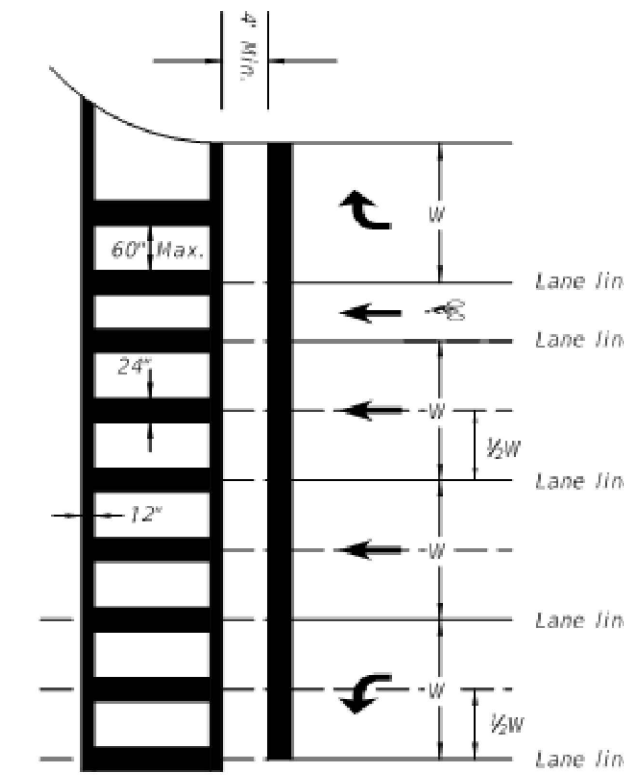
Richard F Gosselin, Jr Chairman _____
 Paul A Pikelis Vice Chairman _____
 Terry Burke Dotson Member _____
 Francis Desimone Alternate Member _____
 Bruce M Devault Member _____



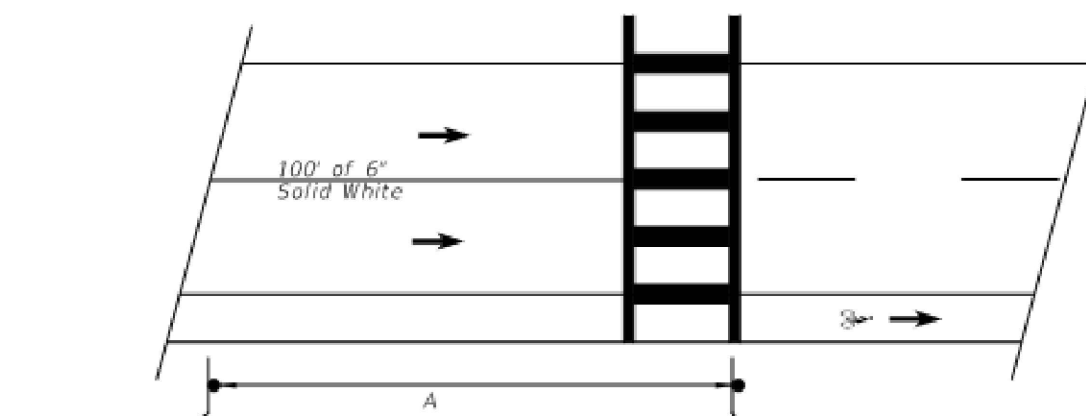
SPECIAL EMPHASIS AND STANDARD CROSSWALKS SIGNALIZED OR STOP SIGN CONTROLLED INTERSECTION

GENERAL NOTES

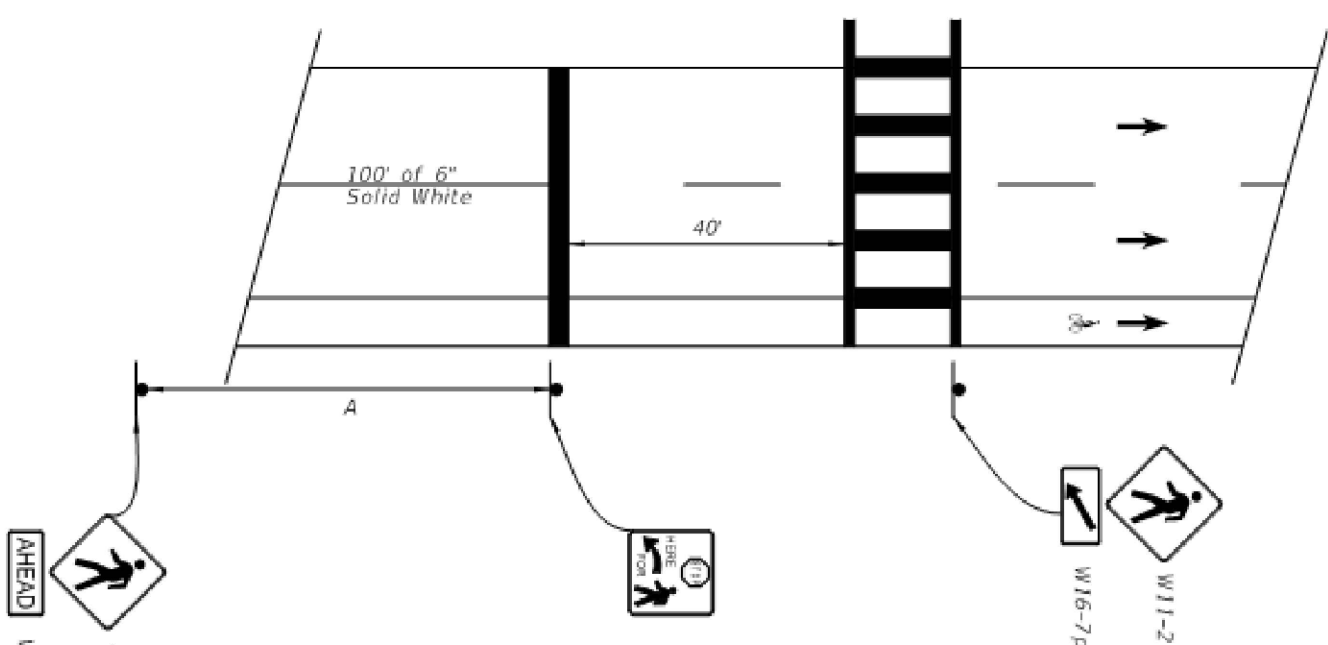
- For traffic and pedestrian signal installation, refer to Index No. 17721 through 17890.
- For public sidewalk curb ramps, refer to Index No. 304.
- For pavement marking and sign installation, refer to Indexes 11200 through 17356.
- Crosswalk minimum widths: Intersection Crosswalk 6', Midblock Crosswalk 10'.
- All crosswalk marking shall be white.
- Longitudinal lines in Special Emphasis Crosswalk shall be 24" wide and spaced to avoid the wheel path of vehicles as shown in detail. The maximum space between markings shall not exceed 60". Additional longitudinal markings shall be placed at the center of each lane (1/2W). Where the Crosswalk is skewed to the lane line, the Special Emphasis longitudinal lines should be parallel to the lane line.



SPECIAL EMPHASIS CROSSWALK MARKING DETAIL

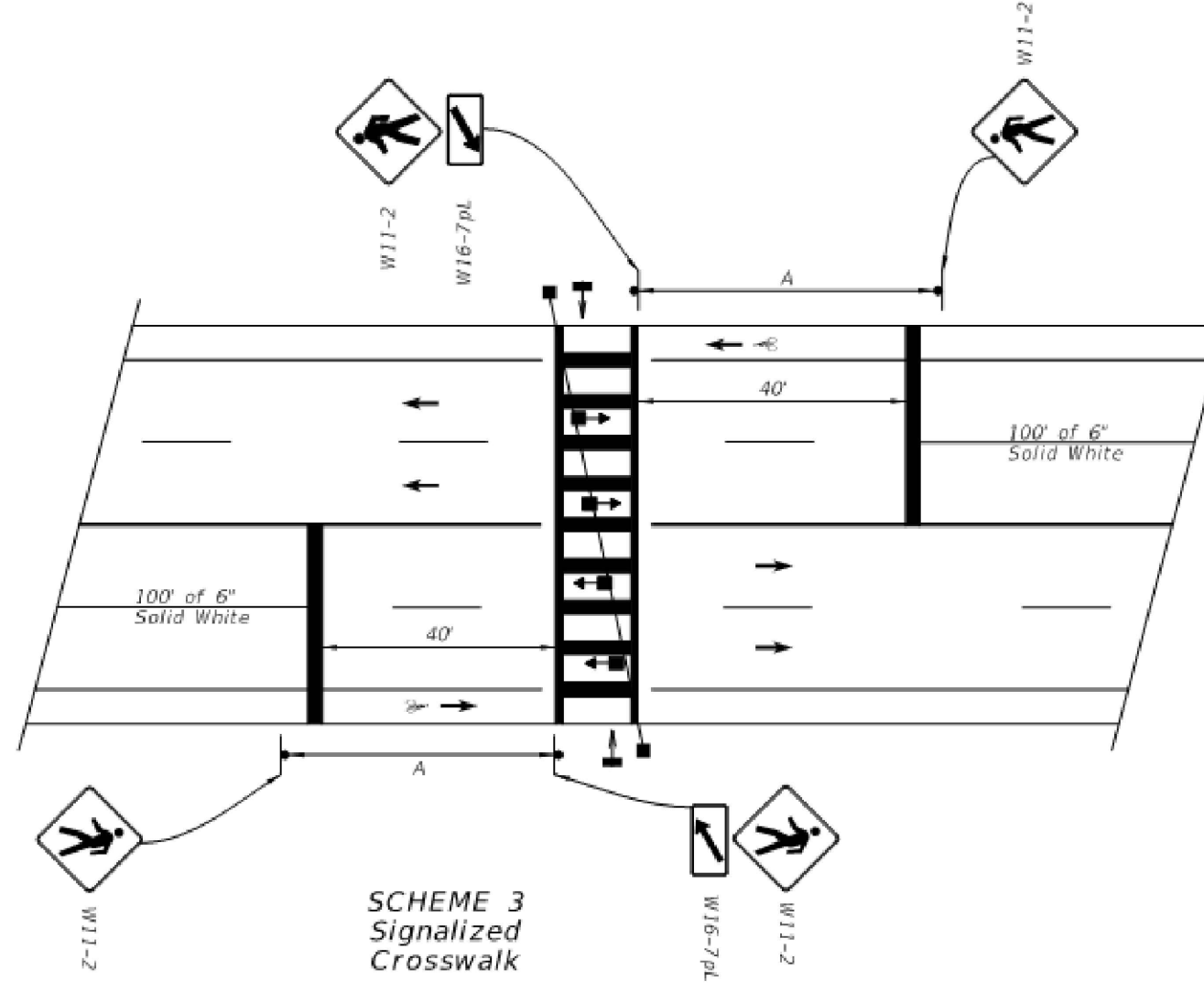


SCHEME 1 Crosswalk with Warning Signage



SCHEME 2 Crosswalk with Stop Signage

APPROACH SPEED MPH	A-SUGGESTED DISTANCE (FT.)
25 Or Less	200
26 To 35	250
36 To 45	300



SCHEME 3 Signalized Crosswalk

- Plans shall indicate which crosswalk scheme is to be used.
- The details shown do not depict the signing and markings for multi-lane roadways with divided medians. For these applications, additional signs shall be installed on the median side. Minimum width of Mid-Block Crosswalks is 10'.
- All mid-block crosswalks shall use special emphasis crosswalk markings.
- Crosswalk marking should utilize preformed marking materials.

BRANSON SURVEYING & ENGINEERING, LLC
 133 No. 00145076
 231 ROCKPOINT DRIVE
 WALNUT SHADE, MO 65771
 417-860-9697

Project Name and Address
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 115 W MAIN STREET, 119 W MAIN STREET
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 MILLBURY, MA 01527

Sheet Title
CONSTRUCTION DETAILS

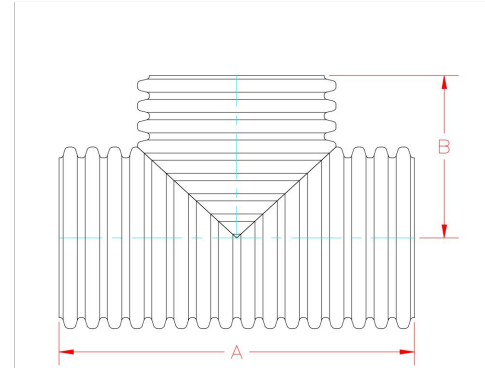


3/1/2021
 Date

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5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
 Date 03/06/2020
 Scale AS NOTED
 Sheet C-26.2


STORMTECH DUAL WALL FABRICATED "SOIL TIGHT" "PLAIN END" SINGLE MANIFOLD
6" - 24" DIAMETER



PART #	PIPE SIZE	CHAMBER SIZE	A	B
0651AN7406	6 in (150 mm)	SC-740	57.0 in (1447 mm)	28.5 in (724 mm)
0851AN7408	8 in (200 mm)	SC-740	56.6 in (1439 mm)	28.3 in (719 mm)
1051AN7410	10 in (250 mm)	SC-740	56.7 in (1440 mm)	28.4 in (720 mm)
1251AN7412	12 in (300 mm)	SC-740	57.6 in (1463 mm)	28.8 in (729 mm)
1551AN7415	15 in (375 mm)	SC-740	57.0 in (1447 mm)	28.5 in (724 mm)
1851AN7418	18 in (450 mm)	SC-740	56.3 in (1433 mm)	28.1 in (715 mm)
2451AN7424	24 in (600 mm)	SC-740	56.7 in (1440 mm)	28.4 in (720 mm)

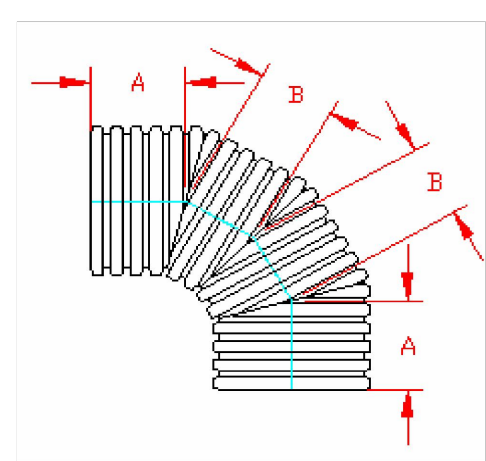
PART #	PIPE SIZE	CHAMBER SIZE	A	B
0651AN3106	6 in (150 mm)	SC-310	39.3 in (997 mm)	19.6 in (499 mm)
0851AN3108	8 in (200 mm)	SC-310	38.4 in (975 mm)	19.7 in (499 mm)
1051AN3110	10 in (250 mm)	SC-310	38.1 in (969 mm)	19.5 in (496 mm)
1251AN3112	12 in (300 mm)	SC-310	40.3 in (1024 mm)	20.2 in (512 mm)

NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY

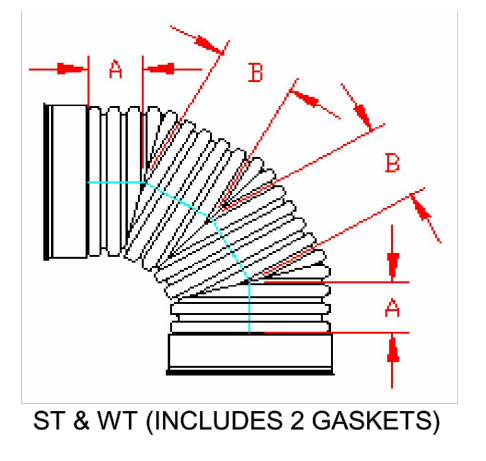


DRAWING #	5000
DRAWN BY	TJR
APPROVED BY	TJR
REVISIONS	

DUAL WALL FABRICATED MITERED 90° BENDS
12" - 18" DIAMETER




PART #	PIPE SIZE	A	B	JOINT
1299AN	12 in (300 mm)	9.4 in (239 mm)	7.8 in (198 mm)	*
1299AN85B	12 in (300 mm)	5.5 in (140 mm)	7.8 in (198 mm)	ST
1299AN65B	12 in (300 mm)	5.5 in (140 mm)	7.8 in (198 mm)	WT
1599AN	15 in (375 mm)	12.1 in (307 mm)	9.3 in (236 mm)	*
1599AN85B	15 in (375 mm)	6.9 in (175 mm)	9.3 in (236 mm)	ST
1599AN65B	15 in (375 mm)	6.9 in (175 mm)	9.3 in (236 mm)	WT
1899AN	18 in (450 mm)	12.2 in (310 mm)	10.0 in (254 mm)	*
1899AN85B	18 in (450 mm)	7.1 in (180 mm)	10.0 in (254 mm)	ST
1899AN65B	18 in (450 mm)	7.1 in (180 mm)	10.0 in (254 mm)	WT



* = PLAIN END
ST = SOIL TIGHT
WT = WATER TIGHT

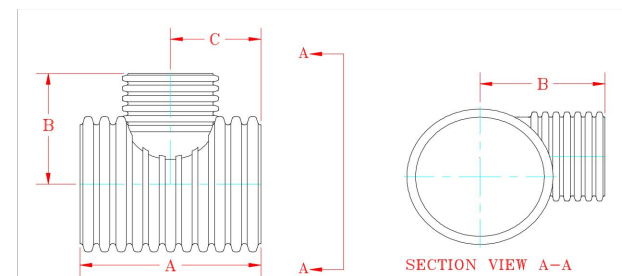
NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY




DRAWING #	2220
DRAWN BY	JCB
APPROVED BY	JCB
REVISIONS	

STORMTECH DUAL WALL FABRICATED "SOIL TIGHT" "PLAIN END" REDUCING SINGLE MANIFOLD
8" - 24" DIAMETER

PART #	PIPE SIZE	CHAMBER SIZE	A	B	C
0851AN3106	8" x 6" in (200 x 150 mm)	SC-310	39.4 in (1000 mm)	11.4 in (289 mm)	19.7 in (500 mm)
1051AN3106	10" x 6" in (250 x 150 mm)	SC-310	39.1 in (992 mm)	12.4 in (315 mm)	19.5 in (496 mm)
1051AN3108	10" x 8" in (250 x 200 mm)	SC-310	38.1 in (969 mm)	13.7 in (348 mm)	19.5 in (496 mm)
1251AN3106	12" x 6" in (300 x 150 mm)	SC-310	40.3 in (1024 mm)	14.4 in (366 mm)	20.2 in (512 mm)
1251AN3108	12" x 8" in (300 x 200 mm)	SC-310	40.3 in (1024 mm)	15.7 in (399 mm)	20.2 in (512 mm)
1251AN3110	12" x 10" in (300 x 250 mm)	SC-310	40.3 in (1024 mm)	16.6 in (421 mm)	20.2 in (512 mm)
1551AN3106	15" x 6" in (375 x 150 mm)	SC-310	38.9 in (988 mm)	13.4 in (341 mm)	19.9 in (504 mm)
1551AN3108	15" x 8" in (375 x 200 mm)	SC-310	38.9 in (988 mm)	15.5 in (394 mm)	19.9 in (504 mm)
1551AN3110	15" x 10" in (375 x 250 mm)	SC-310	38.9 in (988 mm)	16.4 in (415 mm)	19.9 in (504 mm)
1551AN3112	15" x 12" in (375 x 300 mm)	SC-310	38.9 in (988 mm)	18.4 in (467 mm)	19.9 in (504 mm)
1851AN3106	18" x 6" in (450 x 150 mm)	SC-310	40.2 in (1021 mm)	17.4 in (442 mm)	20.1 in (511 mm)
1851AN3108	18" x 8" in (450 x 200 mm)	SC-310	40.2 in (1021 mm)	18.7 in (475 mm)	20.1 in (511 mm)
1851AN3110	18" x 10" in (450 x 250 mm)	SC-310	40.2 in (1021 mm)	19.6 in (497 mm)	20.1 in (511 mm)
1851AN3112	18" x 12" in (450 x 300 mm)	SC-310	40.2 in (1021 mm)	21.6 in (549 mm)	20.1 in (511 mm)
2451AN3106	24" x 6" in (600 x 150 mm)	SC-310	41.0 in (1040 mm)	19.7 in (501 mm)	20.5 in (520 mm)
2451AN3108	24" x 8" in (600 x 200 mm)	SC-310	41.0 in (1040 mm)	22.2 in (563 mm)	20.5 in (520 mm)
2451AN3110	24" x 10" in (600 x 250 mm)	SC-310	41.0 in (1040 mm)	22.6 in (575 mm)	20.5 in (520 mm)
2451AN3112	24" x 12" in (600 x 300 mm)	SC-310	41.0 in (1040 mm)	24.6 in (625 mm)	20.5 in (520 mm)



NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY

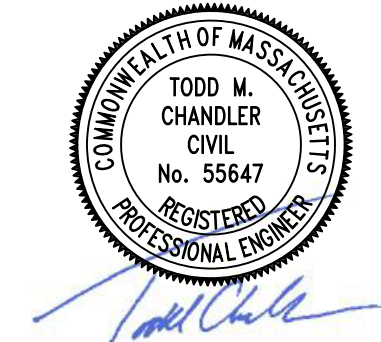


DRAWING #	5000
DRAWN BY	TJR
APPROVED BY	TJR
REVISIONS	

BRANSON SURVEYING & ENGINEERING, LLC
13 No. 80146076
231 ROCKPOINT DRIVE
WALNUT SHADE, MO 65771
417-860-9697

Project Name and Address
SINGLETARY ARMS
115 W MAIN STREET, 119 W MAIN STREET
3 BURBANK STREET, 4 BURBANK STREET
MILLBURY, MA 01527

Sheet Title
CONSTRUCTION DETAILS

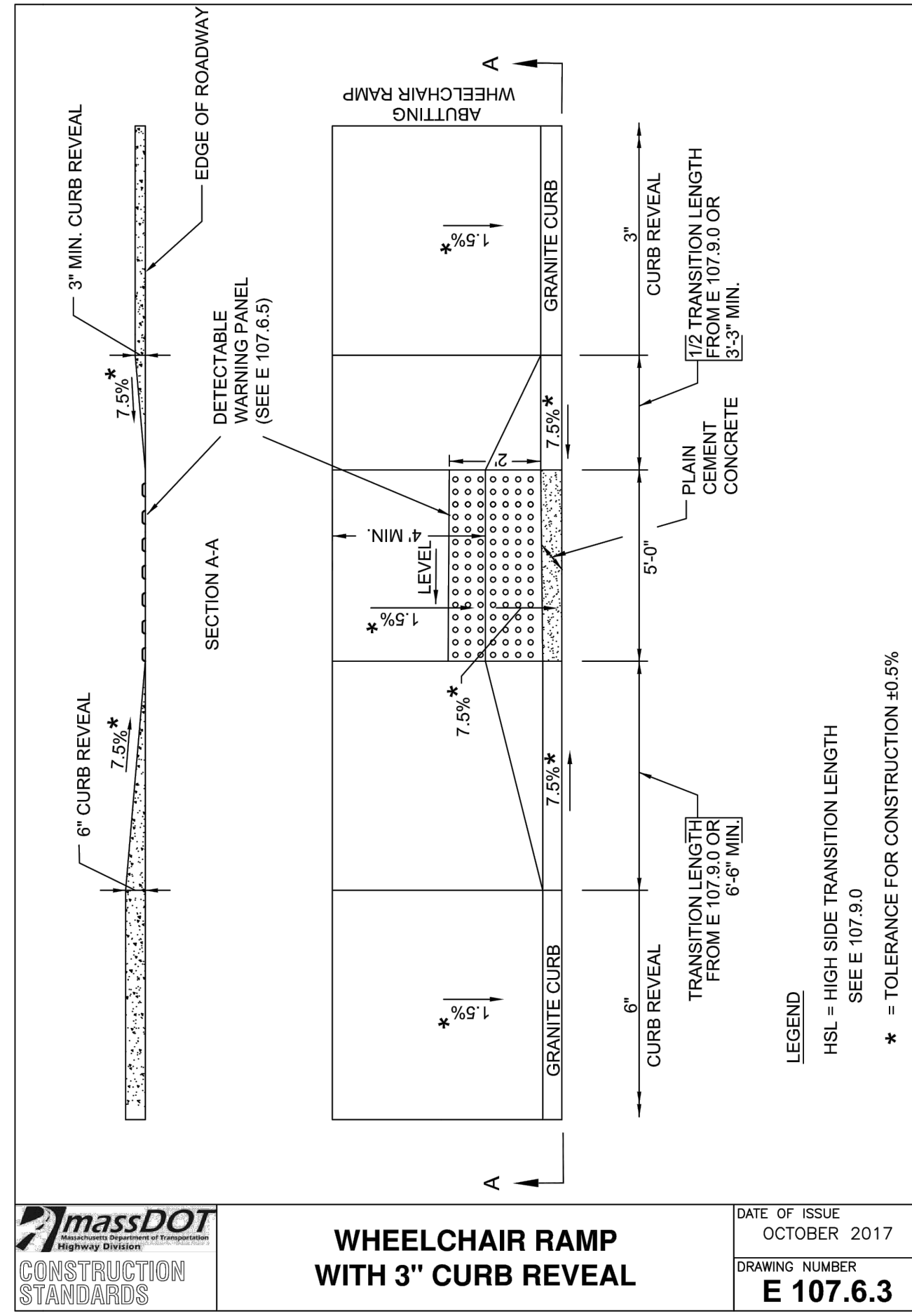
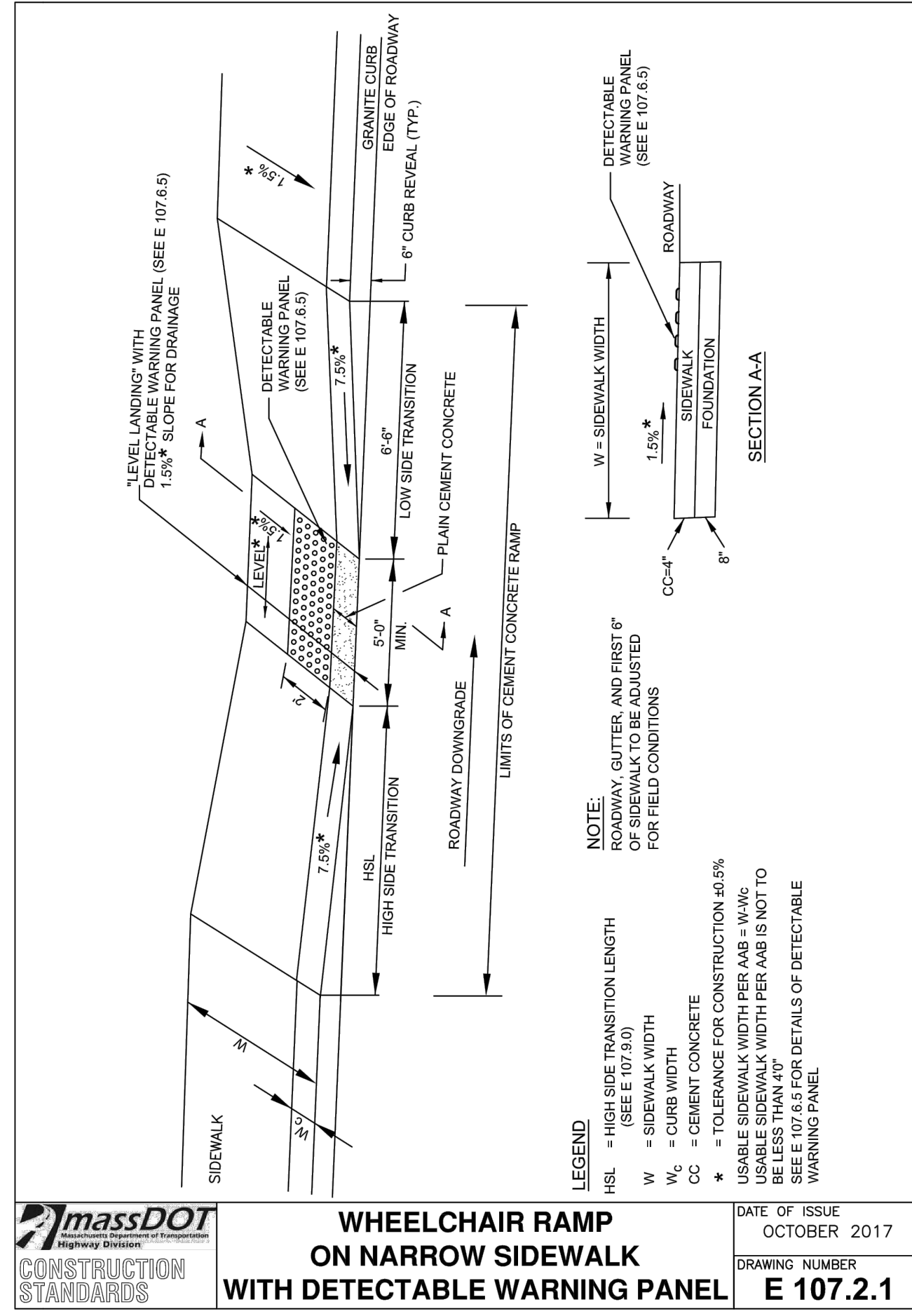
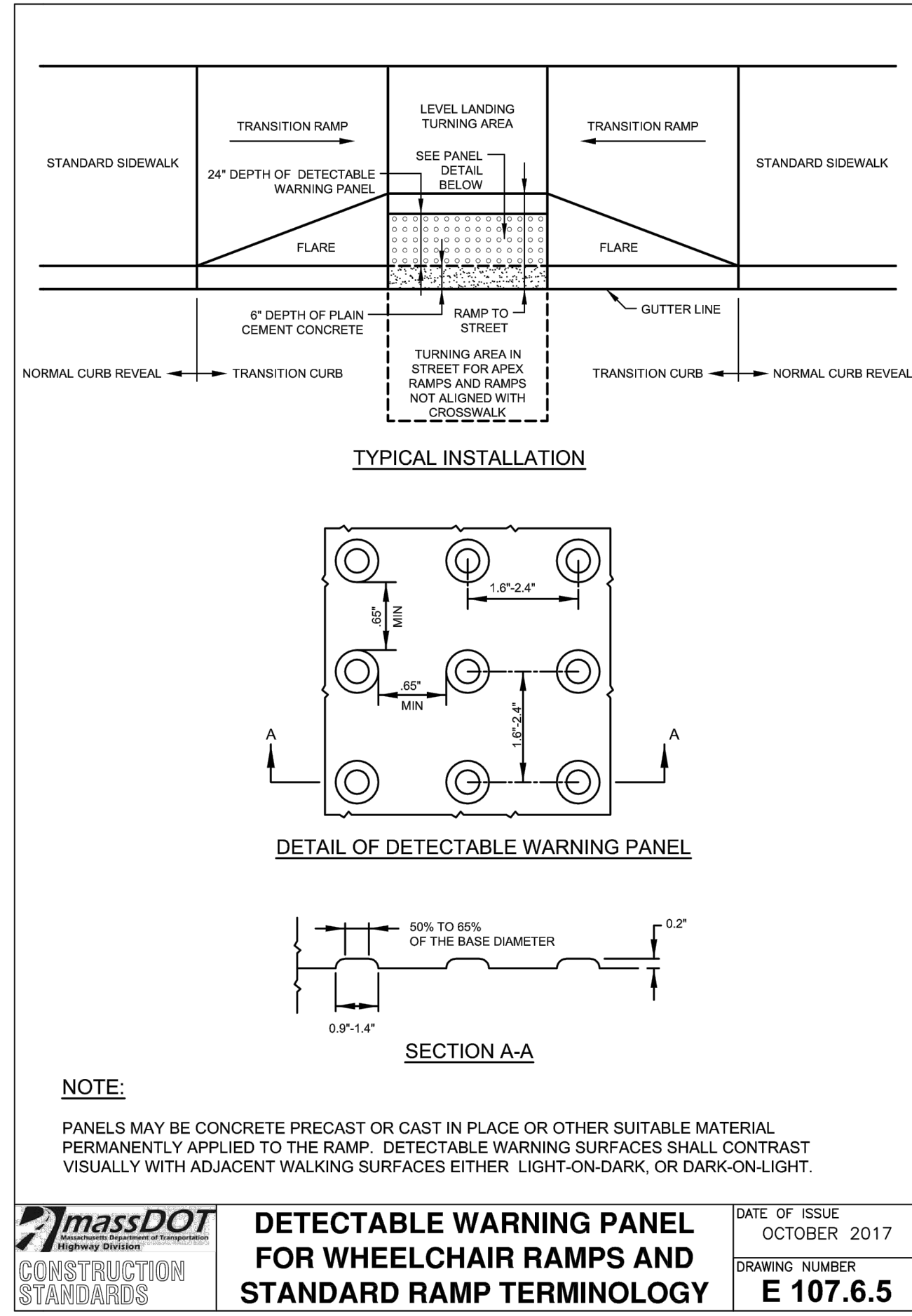
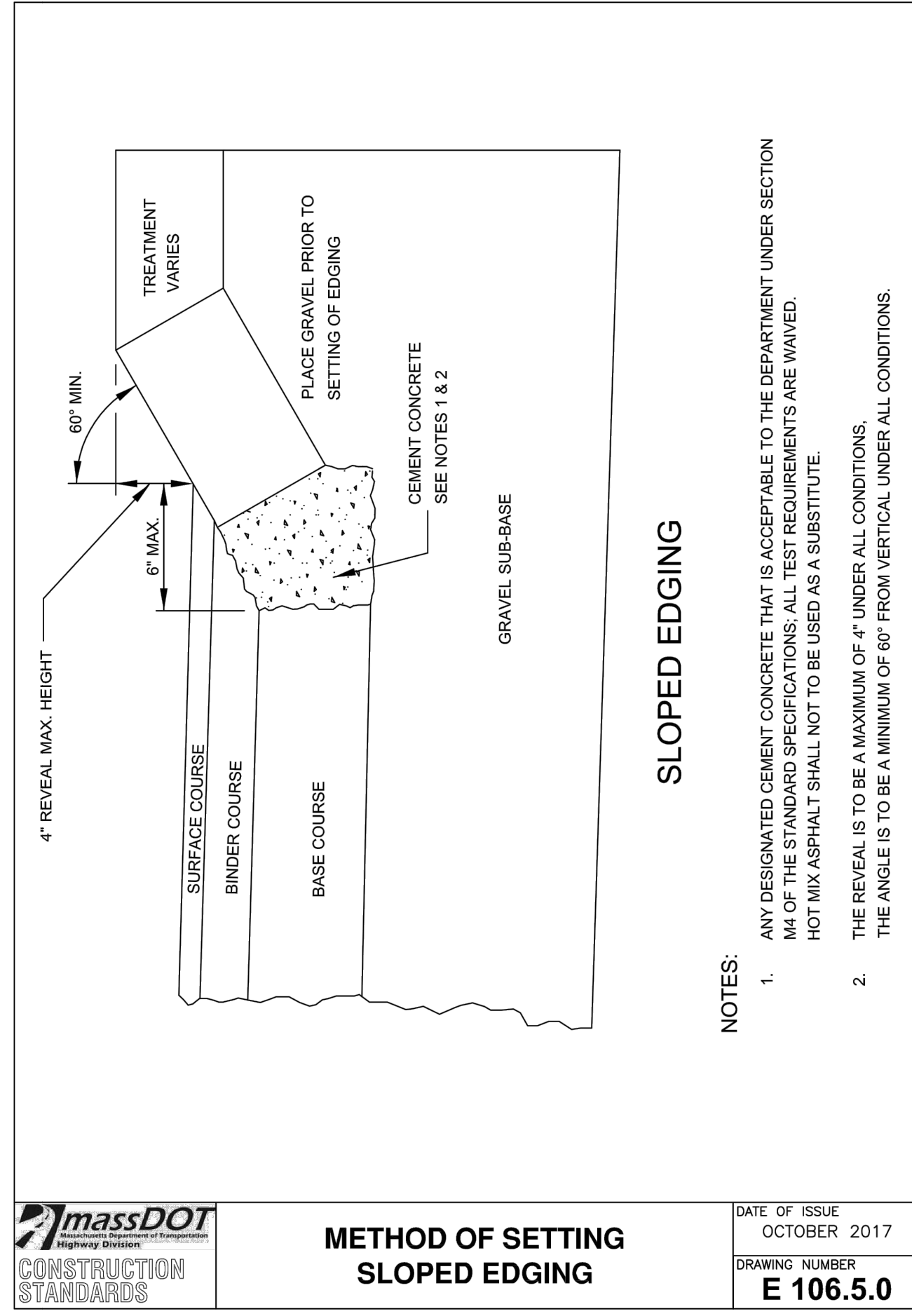
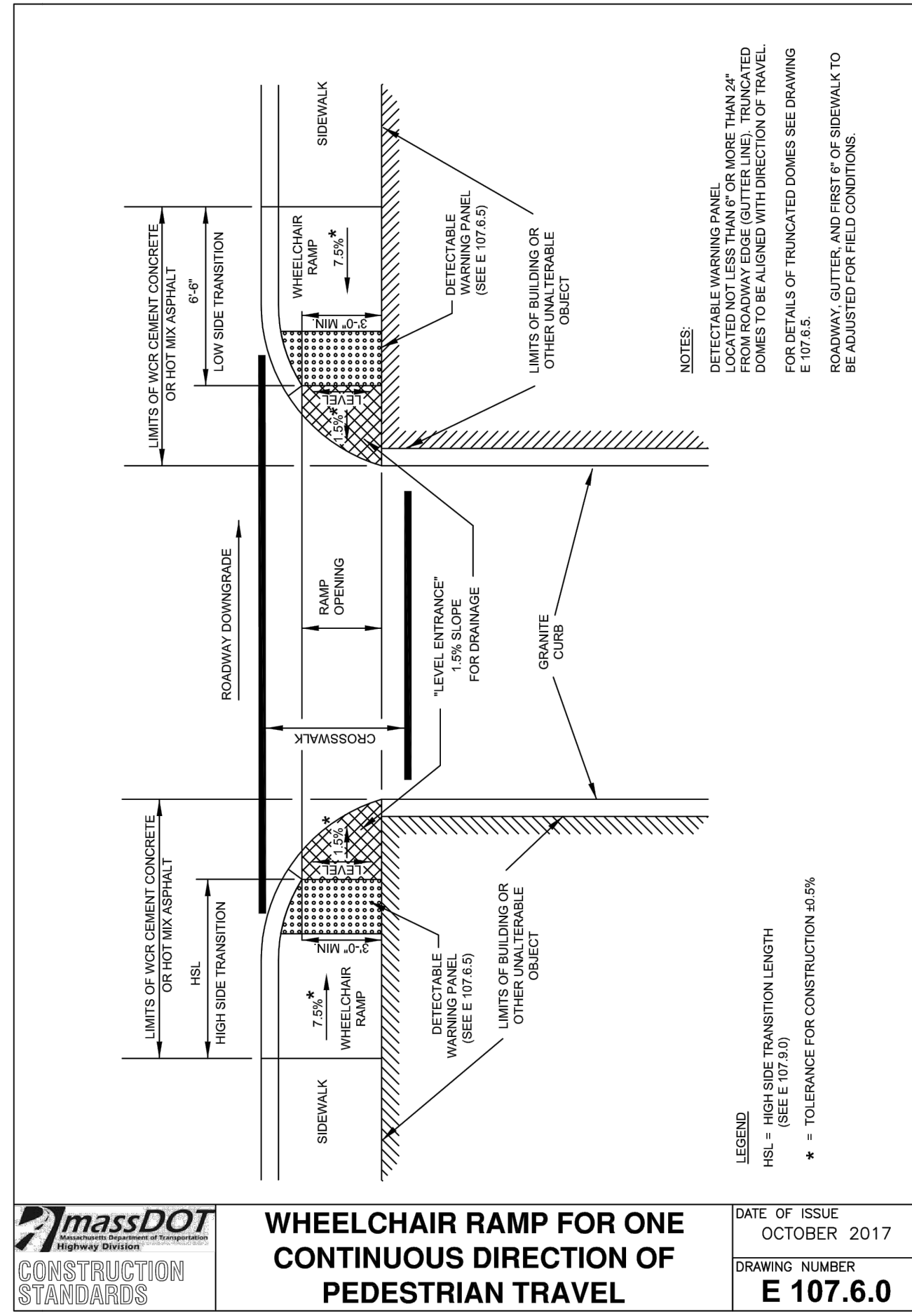
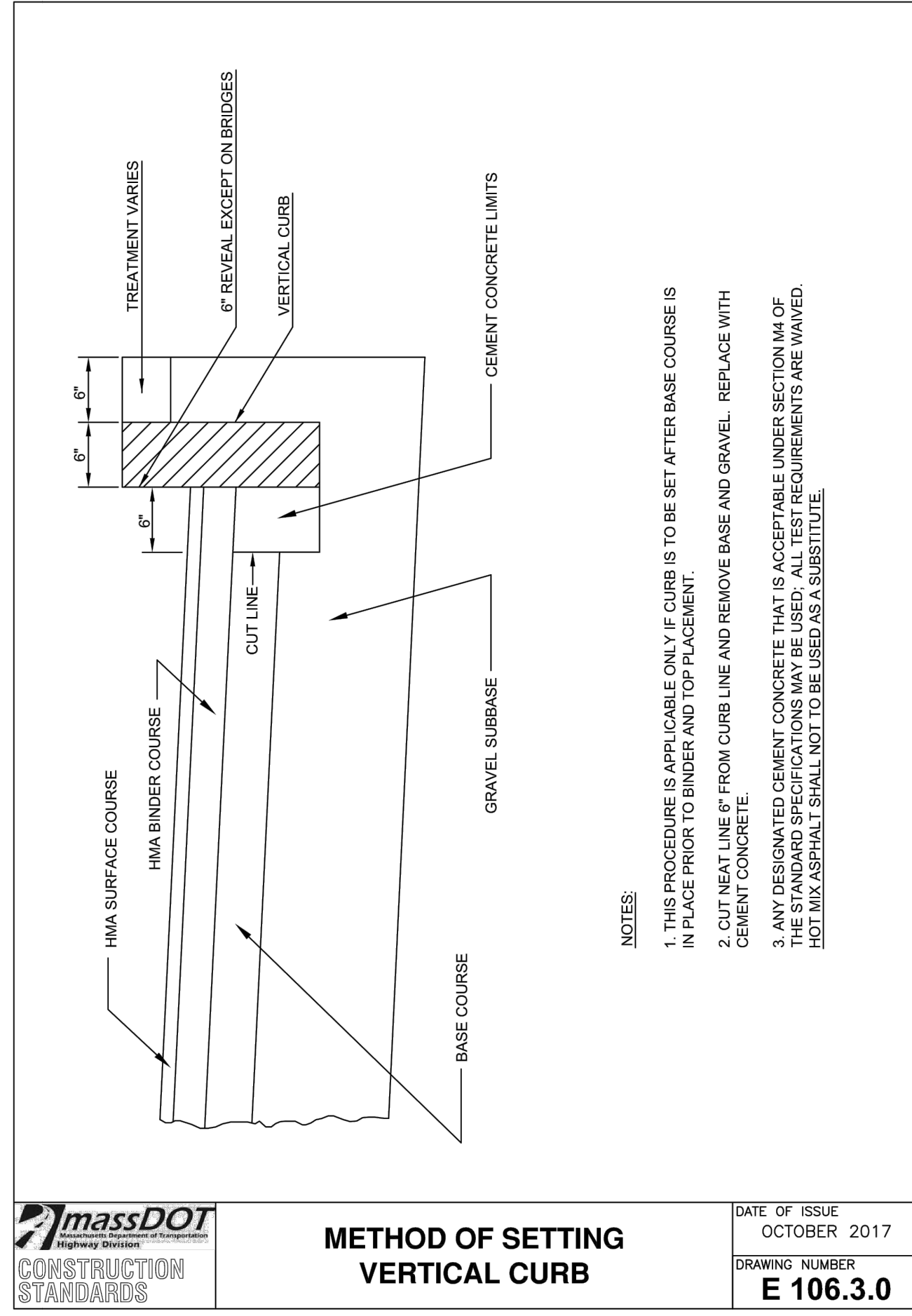


3/1/2021
Date

No.	Revision/Issue	Date
1	RESPONSE TO CITY/STANTEC COMMENTS	09/28/2020
2	RESPONSE TO CITY/STANTEC COMMENTS	10/22/2020
3	RESPONSE TO CITY/STANTEC COMMENTS	12/09/2020
4	RESPONSE TO CITY/STANTEC COMMENTS	01/20/2021
5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

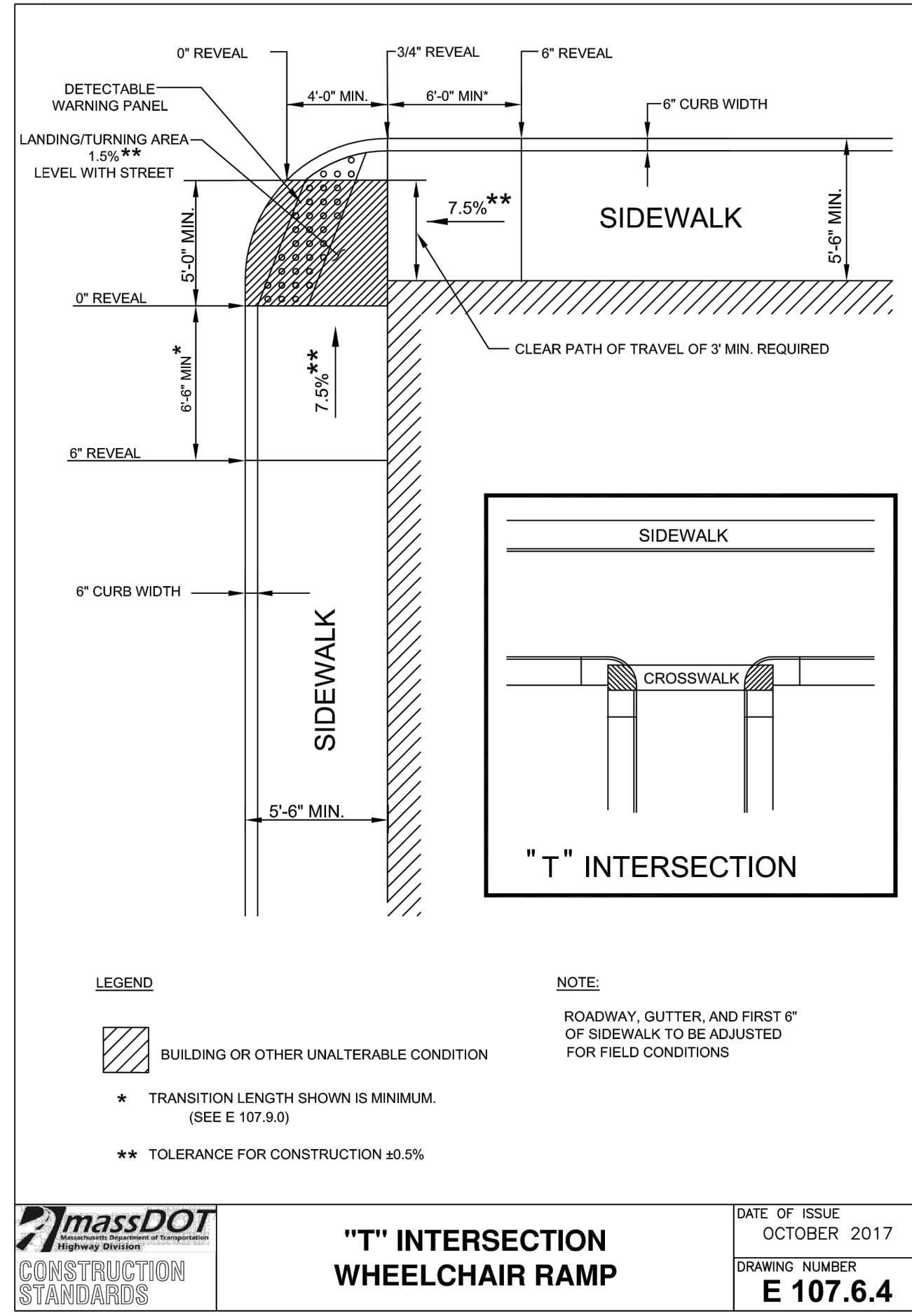
Richard F Gosselin, Jr Chairman _____
Paul A Pikelis Vice Chairman _____
Terry Burke Dotson Member _____
Francis Desimone Alternate Member _____
Bruce M Devault Member _____

Project No. ***
Date 03/06/2020
Scale AS NOTED
Sheet C-26.3



ROADWAY PROFILE GRADE	ENGLISH UNITS
%	6'-6"
=0%	7'-8"
>0% TO 1%	9'-0"
>1% TO 2%	11'-0"
>2% TO 3%	14'-0"
>3% TO 4%	15'-0" Max

NOTE:
 * BASED ON A DESIGN SLOPE OF 7.5% AND A REVEAL OF 6".

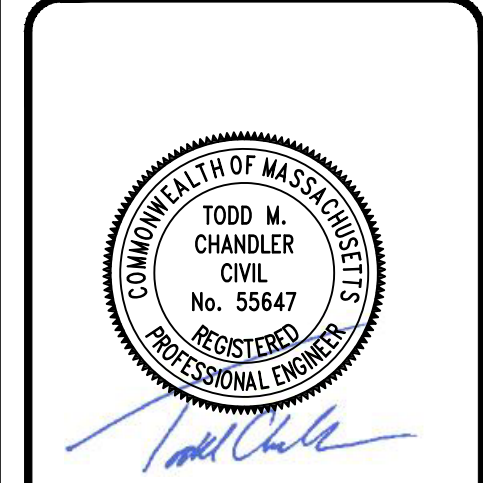


- Richard F Gosselin, Jr Chairman _____
- Paul A Pikelis Vice Chairman _____
- Terry Burke Dotson Member _____
- Francis Desimone Alternate Member _____
- Bruce M Devault Member _____

BRANSON SURVEYING & ENGINEERING, LLC
 133 N. 901.54577
 231 ROCKPOINT DRIVE
 WALNUT SHADE, MO 65771
 417-860-9697

Project Name and Address
SINGLETARY ARMS
 115 W MAIN STREET, 119 W MAIN STREET
 3 BURBANK STREET, 4 BURBANK STREET
 MILLBURY, MA 01527

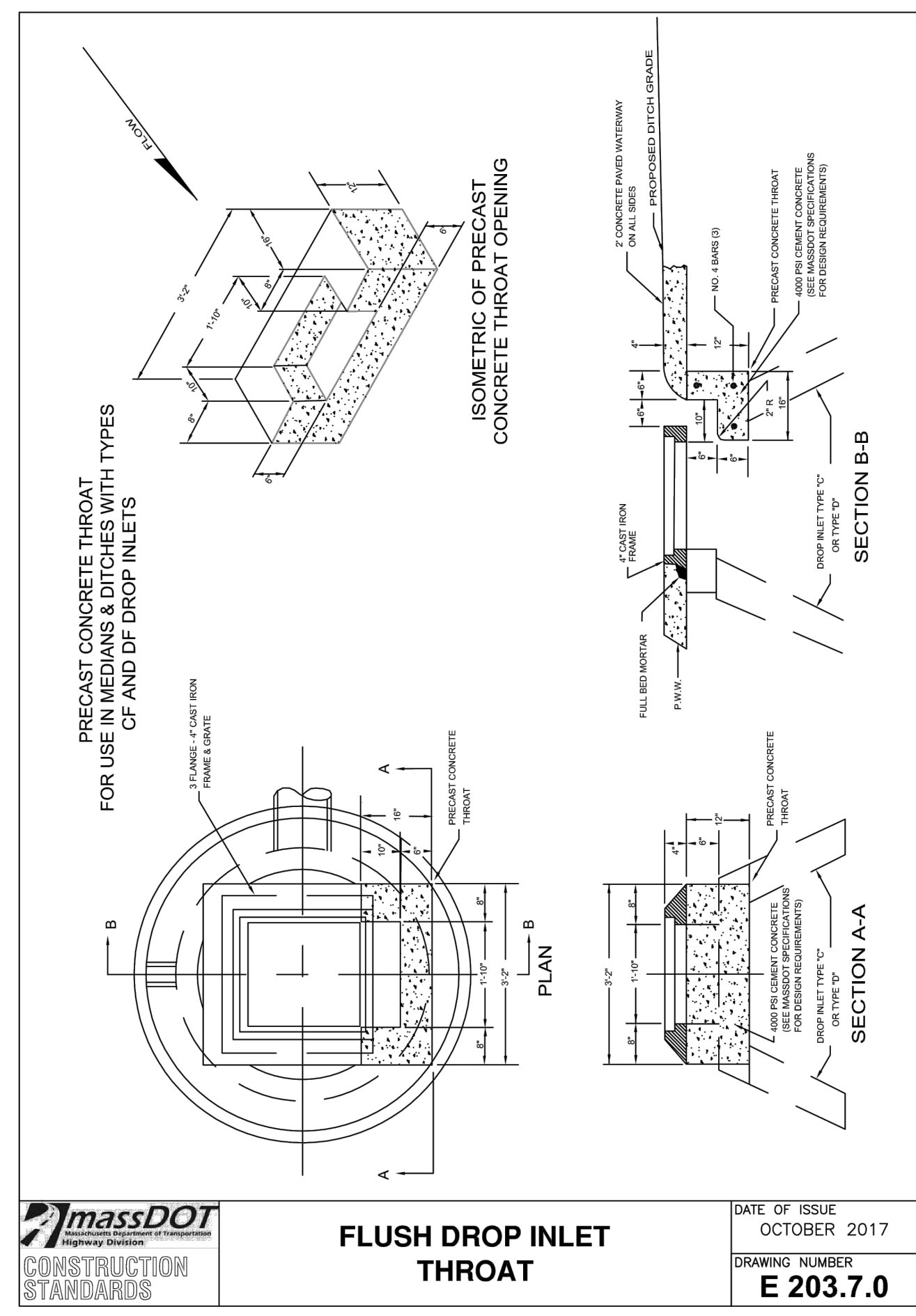
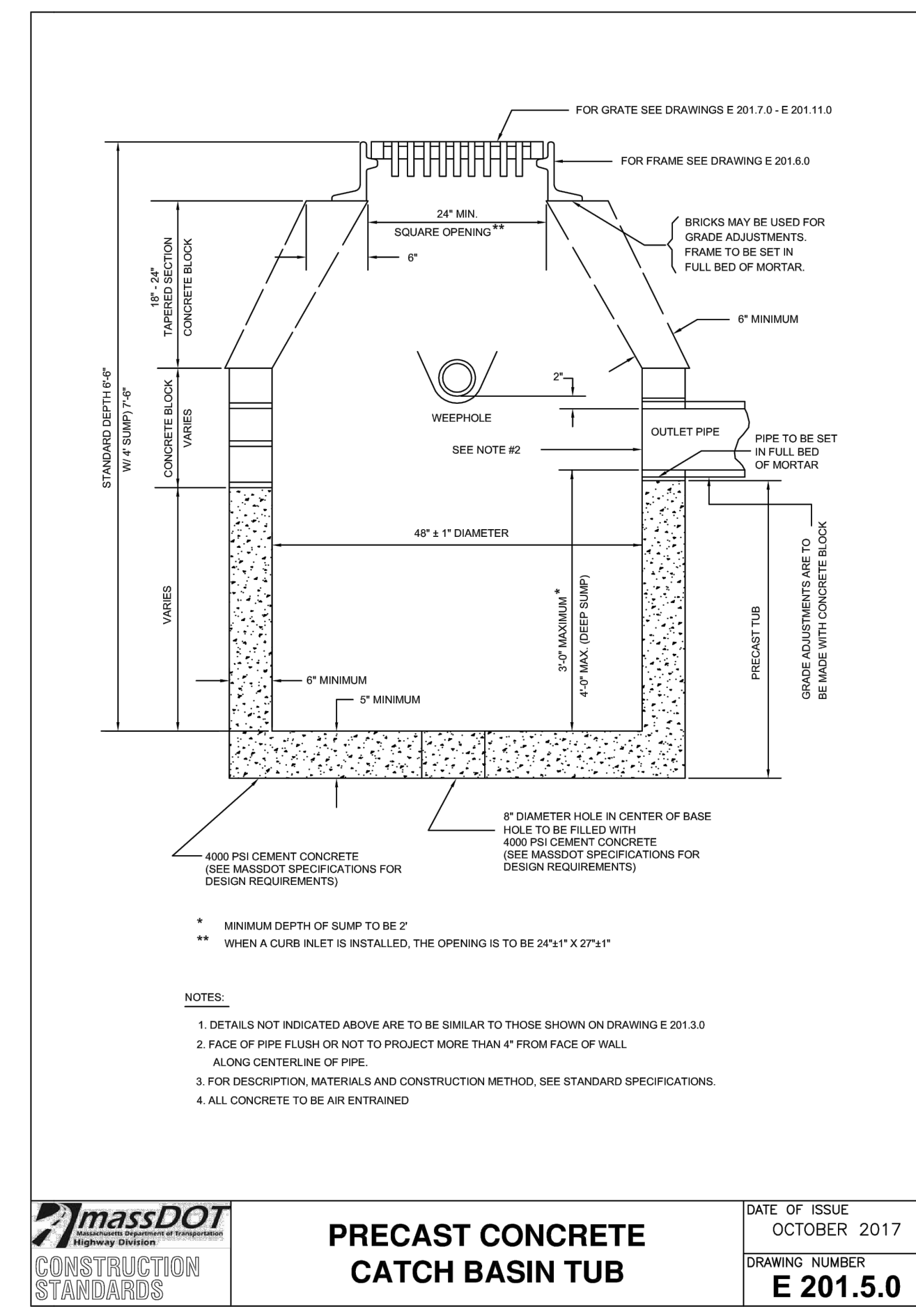
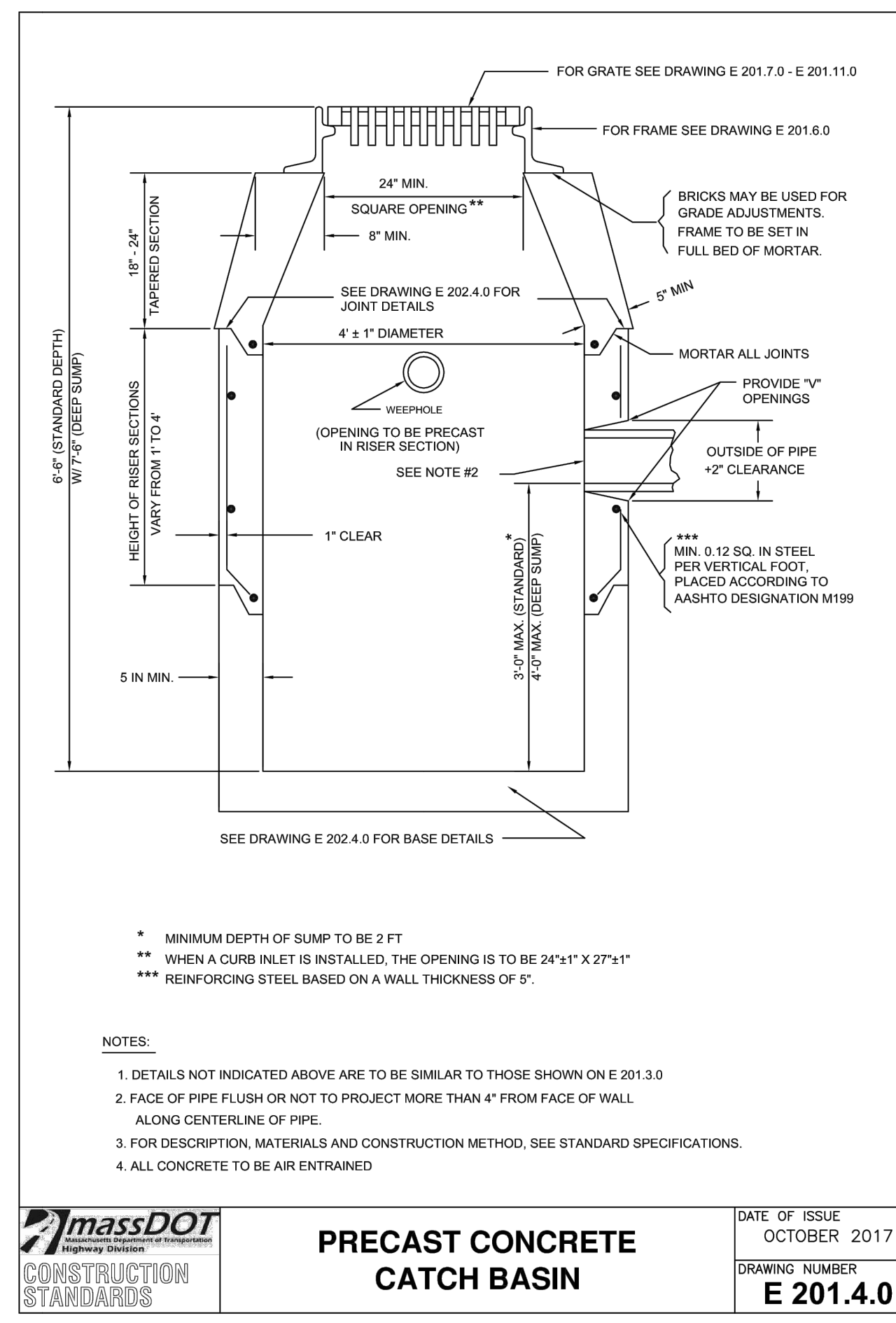
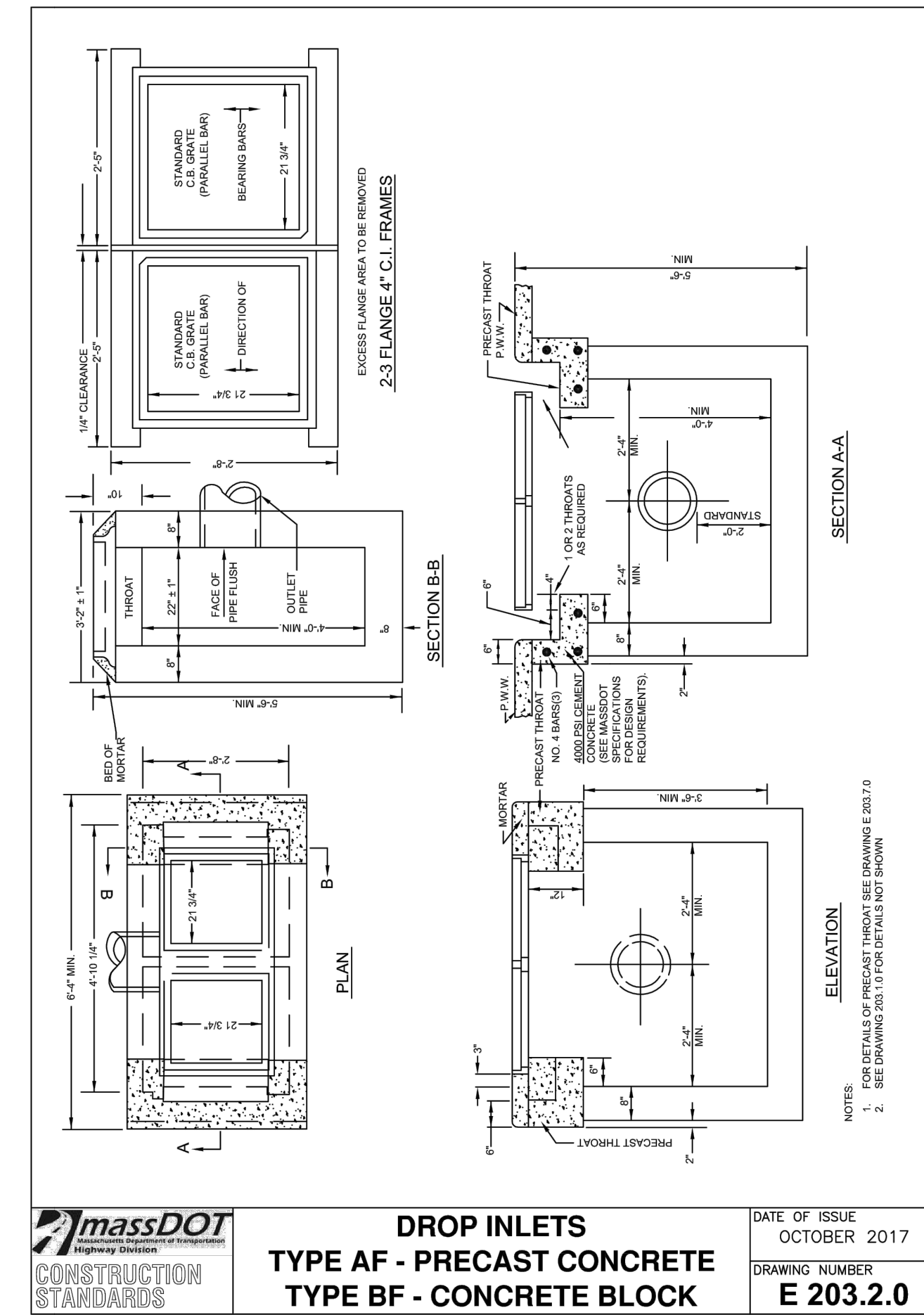
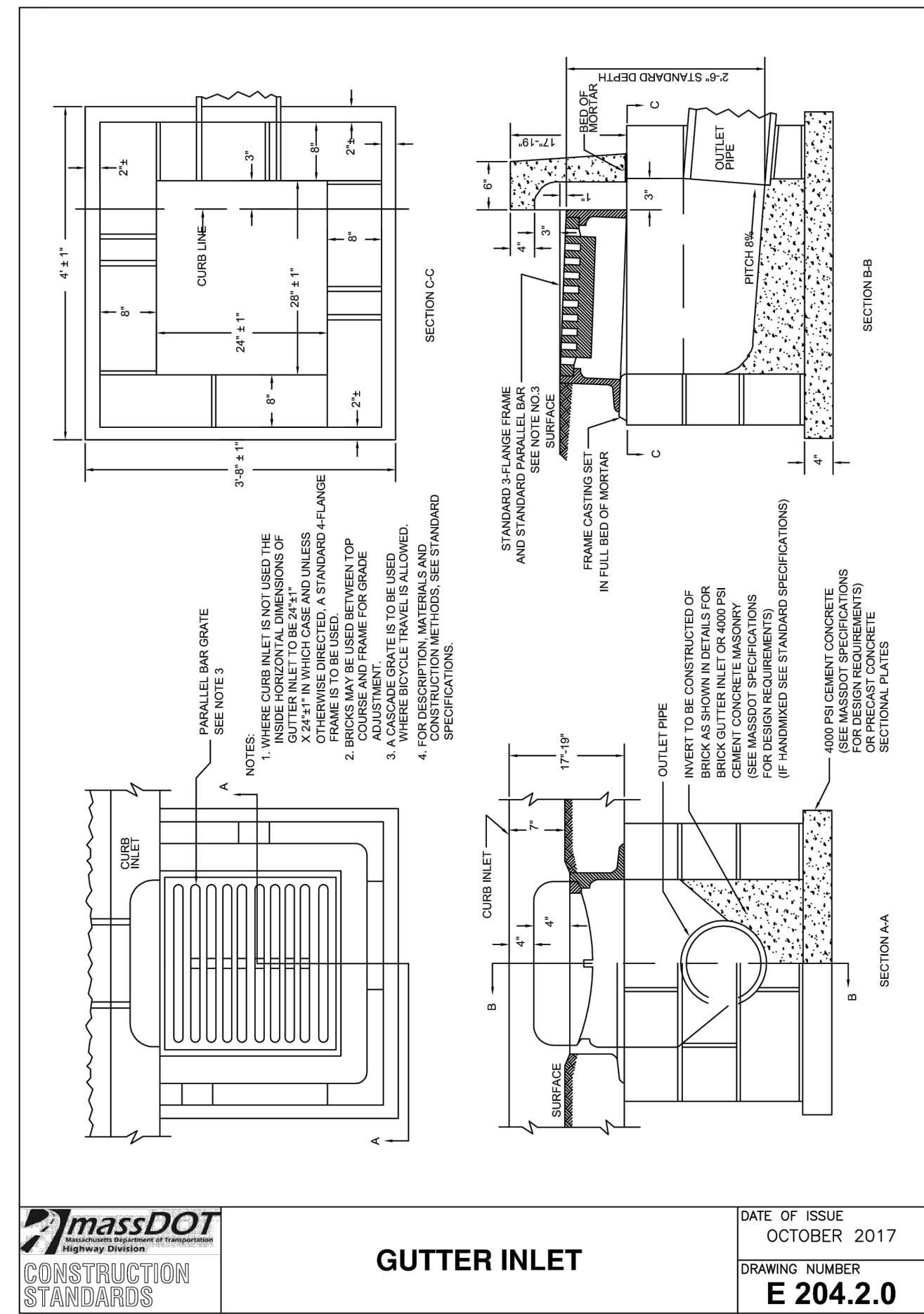
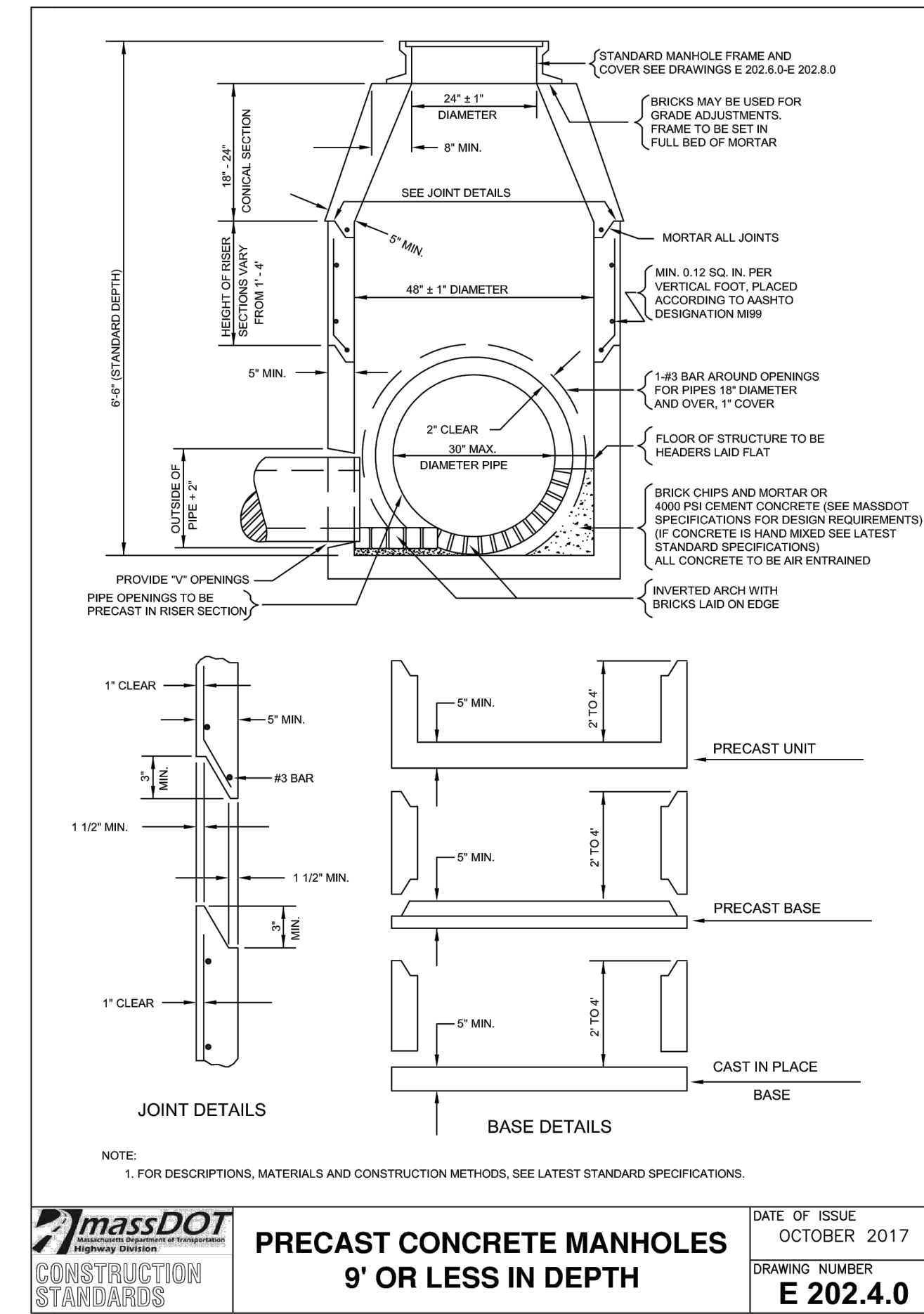
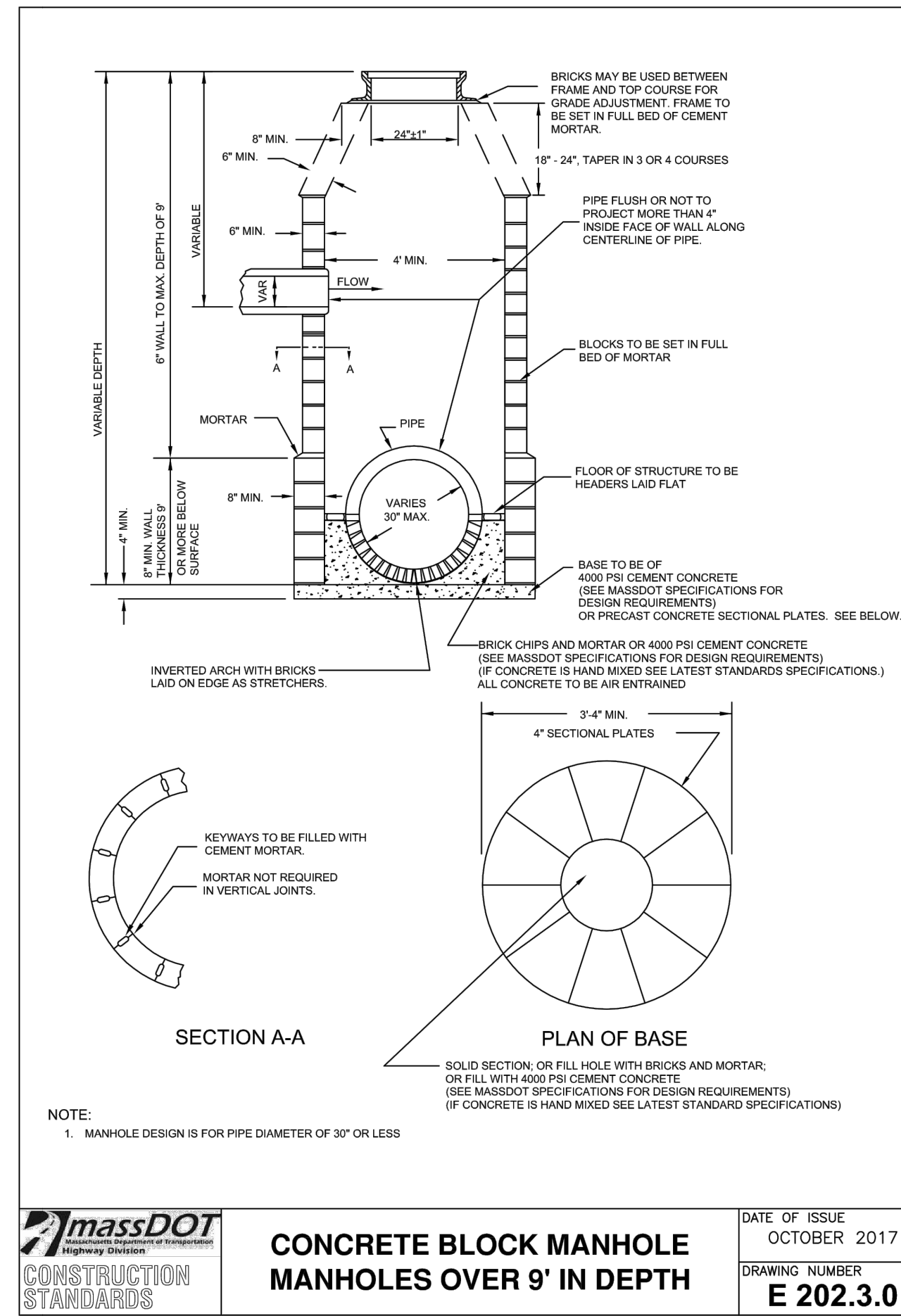
Sheet Title
CONSTRUCTION DETAILS



3/1/2021
 Date

No.	Revision/Issue	Date
1	RESPONSE TO CITY/STANTEC COMMENTS	09/28/2020
2	RESPONSE TO CITY/STANTEC COMMENTS	10/22/2020
3	RESPONSE TO CITY/STANTEC COMMENTS	12/09/2020
4	RESPONSE TO CITY/STANTEC COMMENTS	01/20/2021
5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

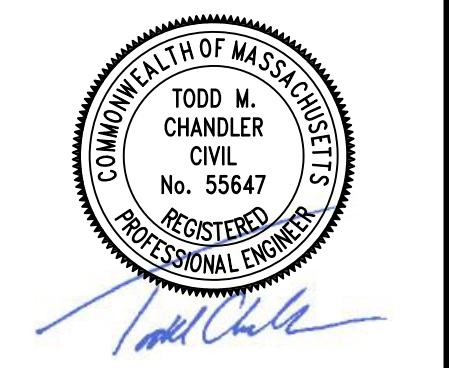
Project No. ***
 Date 03/06/2020
 Scale AS NOTED
 Sheet C-27



BRANSON SURVEYING & ENGINEERING, LLC
133 N. 801.50776
231 ROCKPOINT DRIVE
WALNUT SHADE, MO 65771
417-860-9697

Project Name and Address
SINGLETARY ARMS
115 W MAIN STREET, 119 W MAIN STREET
3 BURBANK STREET, 4 BURBANK STREET
MILLBURY, MA 01527

Sheet Title
CONSTRUCTION DETAILS

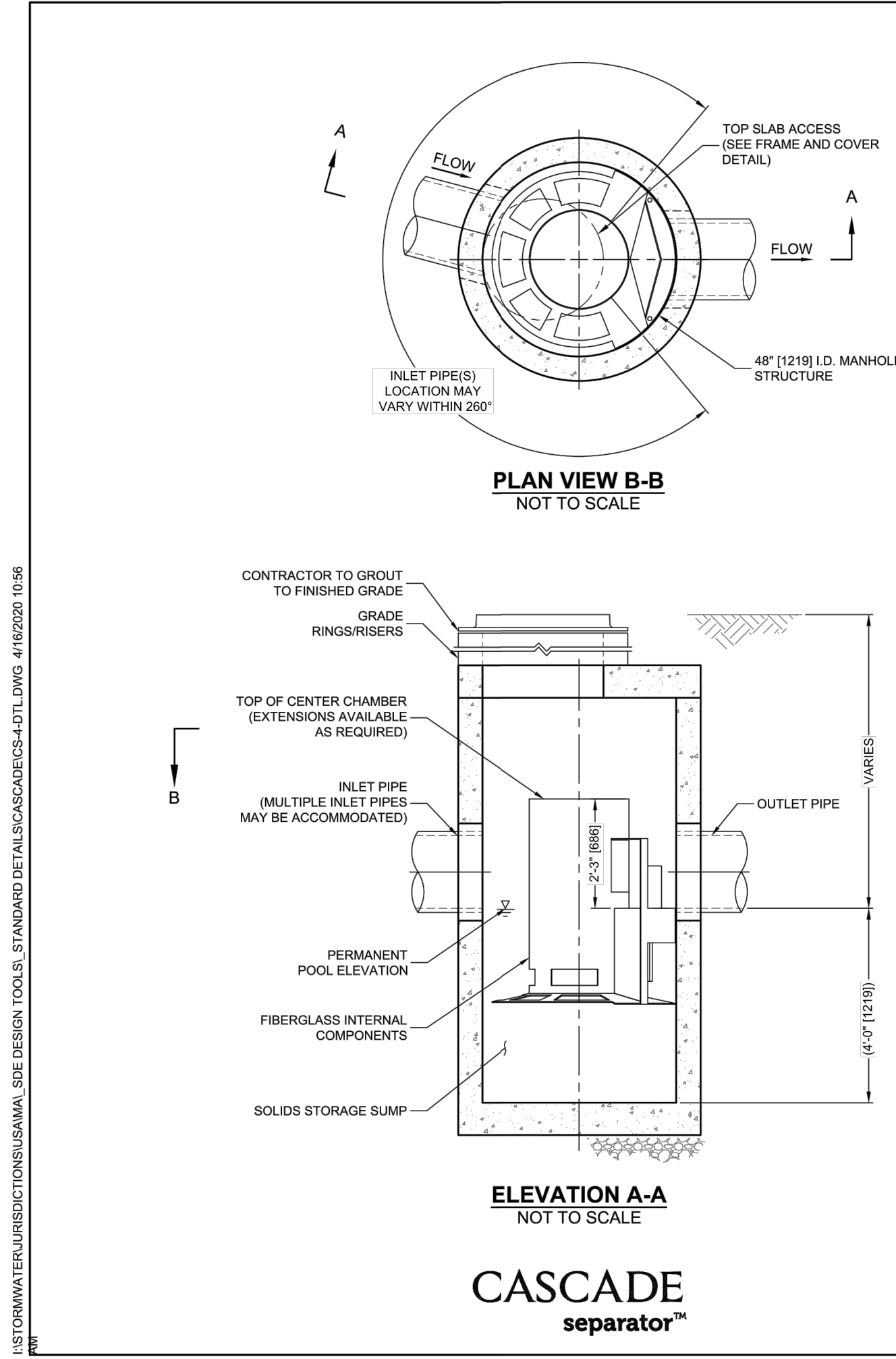


3/1/2021
Date

No.	Revision/Issue	Date
1	RESPONSE TO CITY/STANTEC COMMENTS	09/28/2020
2	RESPONSE TO CITY/STANTEC COMMENTS	10/22/2020
3	RESPONSE TO CITY/STANTEC COMMENTS	12/09/2020
4	RESPONSE TO CITY/STANTEC COMMENTS	01/20/2021
5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No.	Sheet
03/06/2020	C-28

Richard F Gosselin, Jr Chairman _____
Paul A Pikelis Vice Chairman _____
Terry Burke Dotson Member _____
Francis Desimone Alternate Member _____
Bruce M Devault Member _____



CASCADe SEPARATOR DESIGN NOTES

CS-4 RATED TREATMENT CAPACITY IS 2.0 CFS, OR PER LOCAL REGULATIONS. THE STANDARD CS-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION

GRATED INLET ONLY (NO INLET PIPE)

GRATED INLET WITH INLET PIPE OR PIPES

CURB INLET ONLY (NO INLET PIPE)

CURB INLET WITH INLET PIPE OR PIPES

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (cfs [L/s])	
PEAK FLOW RATE (cfs [L/s])	
RETURN PERIOD OF PEAK FLOW (yrs)	
RIM ELEVATION	
PIPE DATA:	
INLET PIPE 1	
INLET PIPE 2	
OUTLET PIPE	
NOTES/SPECIAL REQUIREMENTS:	

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
- CASCADe SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- CASCADe SEPARATOR STRUCTURE SHALL MEET AASHTO M308 LOAD RATING, ASSUMING EARTH COVER OF 0'-2' (610) AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M308 AND BE CAST WITH THE CONTECH LOGO.
- CASCADe SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
- ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADe SEPARATOR MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC

www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45399
800-338-1122 513-645-7000 513-645-7993 FAX

CS-4 CASCADe SEPARATOR STANDARD DETAIL

Estimated Net Annual Solids Load Reduction
Based on the Rational Rainfall Method

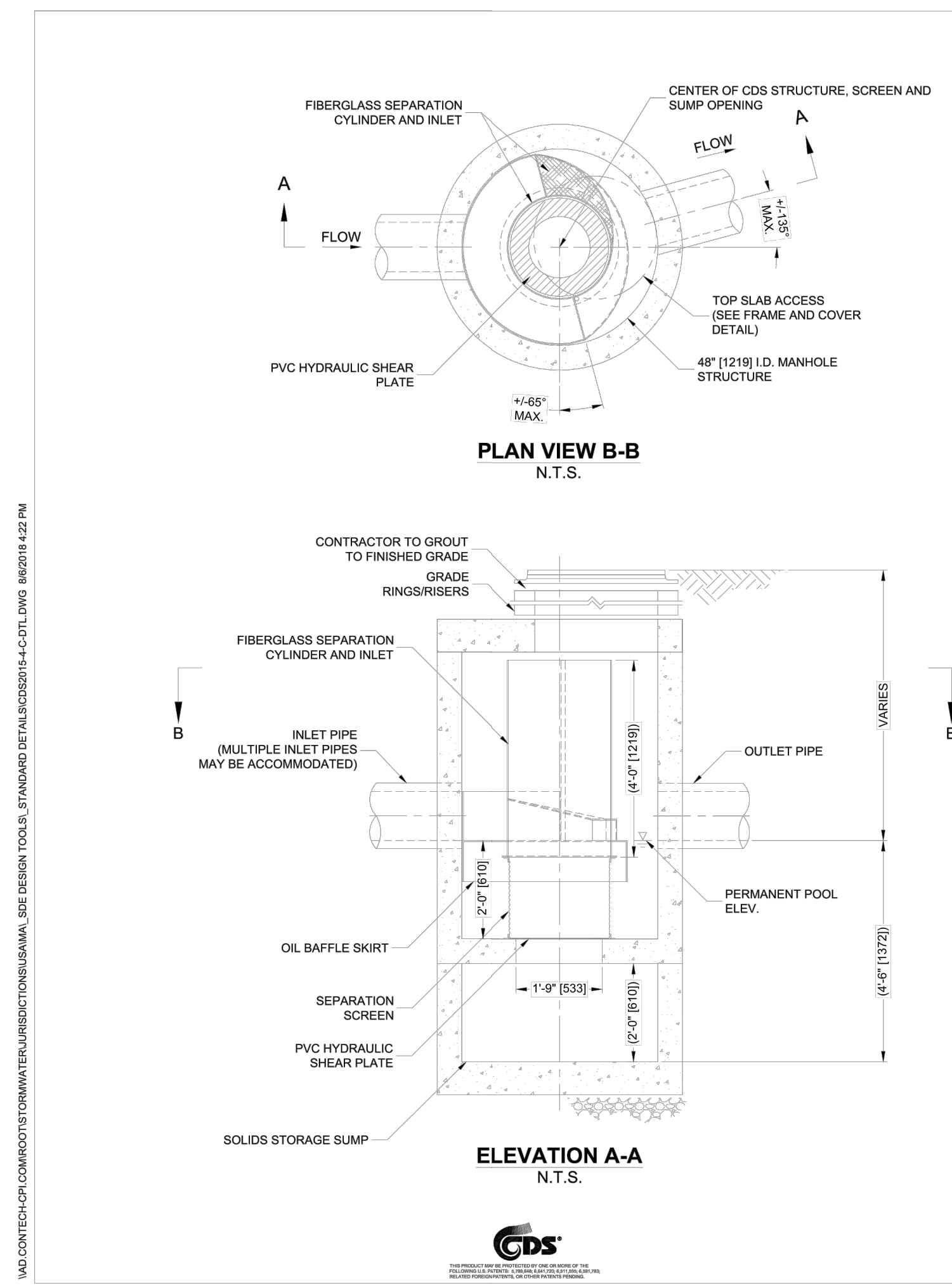
CONTECH ENGINEERED SOLUTIONS **SINGLETARY ARMS** **CASCADe separator™**
MILLBURY, MA
WQS 1

AREA 1.38 acres CASCADE MODEL CS-4
WEIGHTED C 0.95
TC 6.00 minutes RAINFALL STATION 70

Rainfall Intensity ¹ (in/hr)	Percent Rainfall Volume ¹	Hydraulic Loading Rate (gpm/ft ²)	Removal Efficiency (%)	Incremental Removal (%)
0.04	15.1%	1.87	100.0	15.1
0.08	24.6%	3.75	100.0	24.6
0.12	13.7%	5.62	100.0	13.7
0.16	9.4%	7.49	100.0	9.4
0.20	6.6%	9.36	100.0	6.6
0.24	5.2%	11.24	100.0	5.2
0.28	4.8%	13.11	99.6	4.8
0.32	3.1%	14.98	97.8	3.1
0.36	2.7%	16.86	96.1	2.6
0.40	2.1%	18.73	94.3	2.0
0.48	2.5%	22.48	90.8	2.2
0.56	2.0%	26.22	87.3	1.8
0.64	1.4%	29.97	83.7	1.2
0.72	1.0%	33.71	80.2	0.8
0.80	1.1%	37.46	76.7	0.8
1.00	1.6%	46.82	67.9	1.1
1.20	0.9%	56.19	59.1	0.5
1.40	0.6%	65.55	50.3	0.3
1.60	0.5%	74.92	41.5	0.2
1.80	0.5%	76.08	36.5	0.2
				96.3
Removal Efficiency Adjustment ² =				0.0%
Predicted % Annual Rainfall Treated =				99.5%
Predicted Net Annual Load Removal Efficiency =				96.3%

1 - Based on 14 years of 15-minute rainfall data from NCDC Station 2107, East Brimfield Lake, Worcester County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

Richard F Gosselin, Jr Chairman _____
Paul A Piktels Vice Chairman _____
Terry Burke Dotson Member _____
Francis Desimone Alternate Member _____
Bruce M Devault Member _____



CDS2015-4-C DESIGN NOTES

CDS2015-4-C RATED TREATMENT CAPACITY IS 1.4 CFS, OR PER LOCAL REGULATIONS. THE STANDARD CDS2015-4-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION

GRATED INLET ONLY (NO INLET PIPE)

GRATED INLET WITH INLET PIPE OR PIPES

CURB INLET ONLY (NO INLET PIPE)

CURB INLET WITH INLET PIPE OR PIPES

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (CFS OR L/s)	
PEAK FLOW RATE (CFS OR L/s)	
RETURN PERIOD OF PEAK FLOW (YRS)	
SCREEN APERTURE (2400 OR 4700)	
PIPE DATA:	
INLET PIPE 1	
INLET PIPE 2	
OUTLET PIPE	
RIM ELEVATION	
ANTI-FLOTATION BALLAST	
WIDTH	
HEIGHT	
NOTES/SPECIAL REQUIREMENTS:	
* PER ENGINEER OF RECORD	

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
- CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- STRUCTURE SHALL MEET AASHTO M308 LOAD RATING, ASSUMING EARTH COVER OF 0'-2' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M308 AND BE CAST WITH THE CONTECH LOGO.
- IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
- CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC

www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45399
800-338-1122 513-645-7000 513-645-7993 FAX

CDS2015-4-C ONLINE CDS STANDARD DETAIL

CONTECH ENGINEERED SOLUTIONS **CDS**

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD

SINGLETARY ARMS
MILLBURY, MA

Area 1.03 ac Unit Site Designation CDS #2
Weighted C 0.9 Rainfall Station # 70
t_c 6 min
CDS Model 2015-4 CDS Treatment Capacity 1.4 cfs

Rainfall Intensity ¹ (in/hr)	Percent Rainfall Volume ¹	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.04	15.1%	15.1%	0.04	0.04	15.1
0.08	24.6%	39.7%	0.07	0.07	24.3
0.12	13.7%	53.4%	0.11	0.11	13.4
0.16	9.4%	62.8%	0.15	0.15	9.1
0.20	6.6%	69.5%	0.19	0.19	6.3
0.24	5.2%	74.7%	0.22	0.22	4.9
0.28	4.8%	79.5%	0.26	0.26	4.4
0.32	3.1%	82.6%	0.30	0.30	2.9
0.36	2.7%	85.3%	0.33	0.33	2.4
0.40	2.1%	87.4%	0.37	0.37	1.9
0.48	2.5%	89.9%	0.44	0.44	2.1
0.56	2.0%	91.9%	0.52	0.52	1.7
0.64	1.4%	93.3%	0.59	0.59	1.2
0.72	1.0%	94.3%	0.67	0.67	0.8
0.80	1.1%	95.4%	0.74	0.74	0.8
1.00	1.6%	97.1%	0.93	0.93	1.2
1.20	0.9%	98.0%	1.11	1.11	0.6
1.40	0.6%	98.6%	1.30	1.30	0.3
1.60	0.5%	99.1%	1.48	1.40	0.2
1.80	0.5%	99.6%	1.67	1.40	0.2
0.00	0.0%	99.6%	0.00	0.00	0.0
					93.8
Removal Efficiency Adjustment ² =					0.0%
Predicted % Annual Rainfall Treated =					99.5%
Predicted Net Annual Load Removal Efficiency =					93.8%

1 - Based on 14 years of 15-minute rainfall data from NCDC Station 2107, East Brimfield Lake, Worcester County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

BRANSON SURVEYING & ENGINEERING, LLC
133 N. 801/50776
231 ROCKPOINT DRIVE
WALNUT SHADE, MO 65771
417-860-9697

SINGLETARY ARMS
115 W MAIN STREET, 119 W MAIN STREET
3 BURBANK STREET, 4 BURBANK STREET
MILLBURY, MA 01527

DETENTION BASIN DETAILS

Project Name and Address

Sheet Title



3/1/2021
Date

No.	Revision/Issue	Date
1	RESPONSE TO CITY/STANTEC COMMENTS	09/28/2020
2	RESPONSE TO CITY/STANTEC COMMENTS	10/22/2020
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4	RESPONSE TO CITY/STANTEC COMMENTS	01/29/2021
5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
Date 03/06/2020
Scale AS NOTED
Sheet C-29

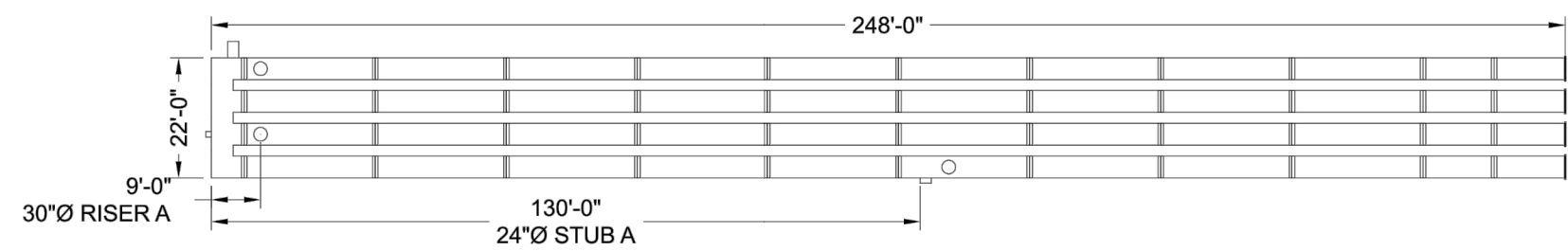
PROJECT SUMMARY

CALCULATION DETAILS
LOADING = HS20 & HS25
APPROX. LINEAR FOOTAGE = 996 ft.

STORAGE SUMMARY
STORAGE VOLUME REQUIRED = 12,541 cf.
PIPE STORAGE VOLUME = 12,541 cf.
BACKFILL STORAGE VOLUME = 0 cf.
TOTAL STORAGE PROVIDED = 12,541 cf.

PIPE DETAILS
DIAMETER = 48 IN.
CORRUIGATION = 2 2/3x12
GAGE = 16
COATING = ALT2
WALL TYPE = Solid
BARRELL SPACING = 24 IN.

BACKFILL DETAILS
WIDTH AT ENDS = 12 IN.
ABOVE PIPE = 0 IN.
WIDTH AT SIDES = 12 IN.
BELOW PIPE = 0 IN.



ASSEMBLY SCALE: 1" = 30'



DYO5635 Singletary Arms Pond 1A Millbury, MA DETENTION SYSTEM

Table with columns: PROJECT No., DESIGNED, CHECKED, SHEET No., SEQ. No., DRAWN, APPROVED, DATE

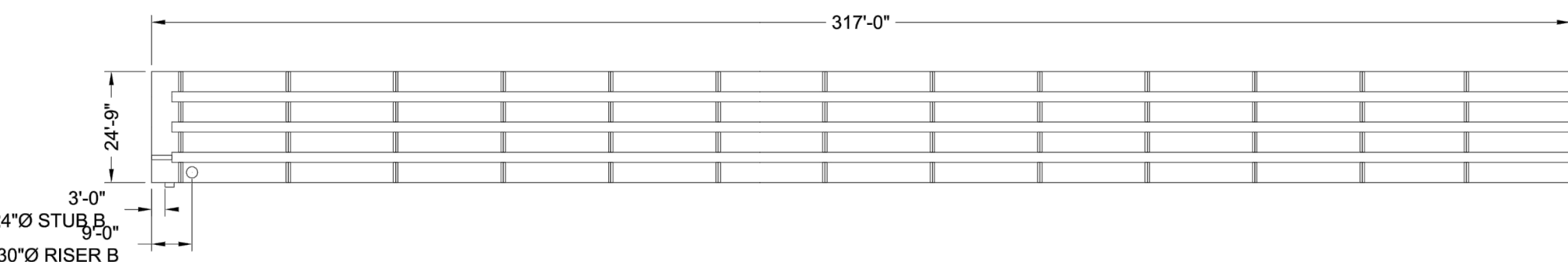
PROJECT SUMMARY

CALCULATION DETAILS
LOADING = HS20 & HS25
APPROX. LINEAR FOOTAGE = 1,275 ft.

STORAGE SUMMARY
STORAGE VOLUME REQUIRED = 20,220 cf.
PIPE STORAGE VOLUME = 20,274 cf.
BACKFILL STORAGE VOLUME = 0 cf.
TOTAL STORAGE PROVIDED = 20,274 cf.

PIPE DETAILS
DIAMETER = 54 IN.
CORRUIGATION = 5x1
GAGE = 16
COATING = ALT2
WALL TYPE = Solid
BARRELL SPACING = 27 IN.

BACKFILL DETAILS
WIDTH AT ENDS = 12 IN.
ABOVE PIPE = 0 IN.
WIDTH AT SIDES = 12 IN.
BELOW PIPE = 0 IN.



ASSEMBLY SCALE: 1" = 30'



DYO5637 Singletary Arms Pond 1B Millbury, MA DETENTION SYSTEM

Table with columns: PROJECT No., DESIGNED, CHECKED, SHEET No., SEQ. No., DRAWN, APPROVED, DATE

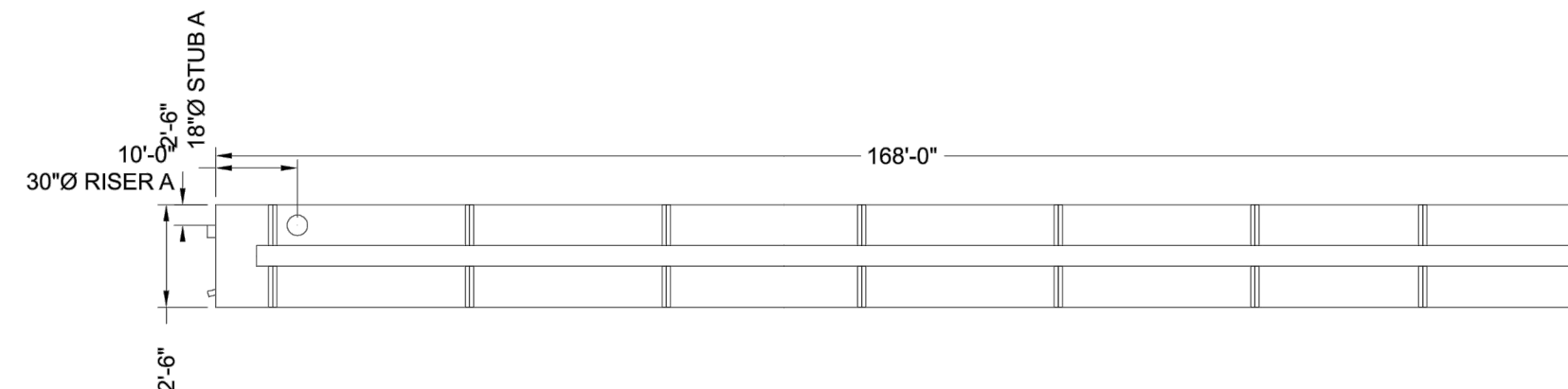
PROJECT SUMMARY

CALCULATION DETAILS
LOADING = HS20 & HS25
APPROX. LINEAR FOOTAGE = 339 ft.

STORAGE SUMMARY
STORAGE VOLUME REQUIRED = N/A
PIPE STORAGE VOLUME = 6,646 cf.
BACKFILL STORAGE VOLUME = 2,271 cf.
TOTAL STORAGE PROVIDED = 8,918 cf.

PIPE DETAILS
DIAMETER = 60 IN.
CORRUIGATION = 5x1
GAGE = 16
COATING = ALT2
WALL TYPE = Perforated
BARRELL SPACING = 30 IN.

BACKFILL DETAILS
WIDTH AT ENDS = 12 IN.
ABOVE PIPE = 0 IN.
WIDTH AT SIDES = 12 IN.
BELOW PIPE = 0 IN.



ASSEMBLY SCALE: 1" = 20'



DYO5638 Singletary Arms Pond 2A Millbury, MA DETENTION SYSTEM

Table with columns: PROJECT No., DESIGNED, CHECKED, SHEET No., SEQ. No., DRAWN, APPROVED, DATE

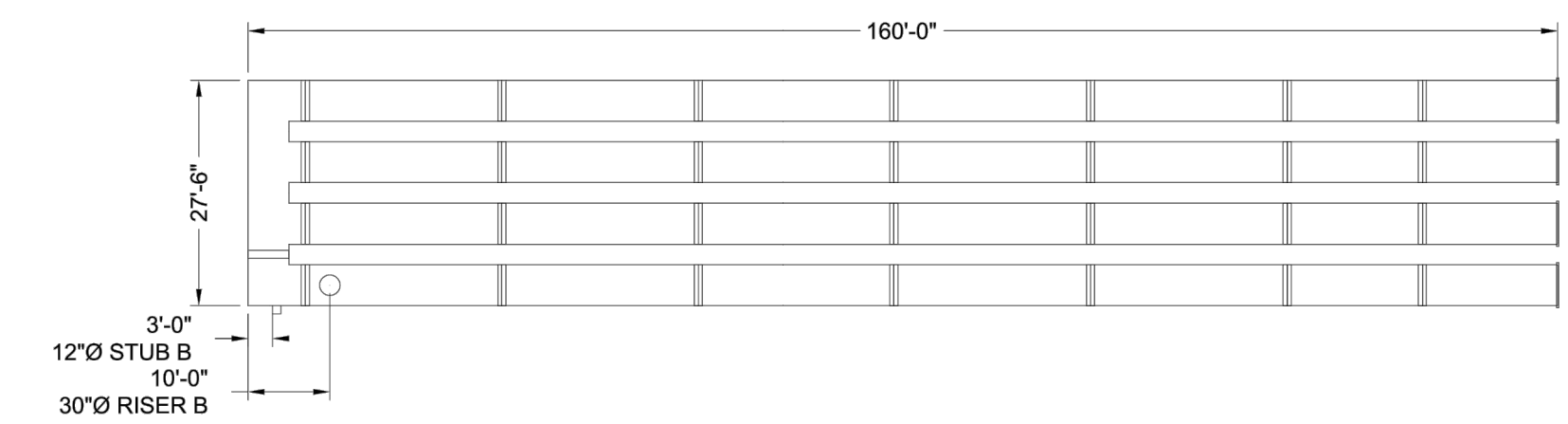
PROJECT SUMMARY

CALCULATION DETAILS
LOADING = HS20 & HS25
APPROX. LINEAR FOOTAGE = 648 ft.

STORAGE SUMMARY
STORAGE VOLUME REQUIRED = N/A
PIPE STORAGE VOLUME = 12,714 cf.
BACKFILL STORAGE VOLUME = 4,473 cf.
TOTAL STORAGE PROVIDED = 17,186 cf.

PIPE DETAILS
DIAMETER = 60 IN.
CORRUIGATION = 5x1
GAGE = 16
COATING = ALT2
WALL TYPE = Perforated
BARRELL SPACING = 30 IN.

BACKFILL DETAILS
WIDTH AT ENDS = 12 IN.
ABOVE PIPE = 0 IN.
WIDTH AT SIDES = 12 IN.
BELOW PIPE = 0 IN.



ASSEMBLY SCALE: 1" = 20'



DYO5645 Singletary Arms Pond 2B Millbury, MA DETENTION SYSTEM

Table with columns: PROJECT No., DESIGNED, CHECKED, SHEET No., SEQ. No., DRAWN, APPROVED, DATE

BRANSON SURVEYING & ENGINEERING, LLC
123 N. 801/5677
231 ROCKPOINT DRIVE
WALNUT SHADE, MO 65771
417-860-9697

SINGLETARY ARMS
115 W MAIN STREET, 119 W MAIN STREET
3 BURBANK STREET, 4 BURBANK STREET
MILLBURY, MA 01527

DETECTION BASIN DETAILS

Project Name and Address

Sheet Title



3/1/2021 Date

Table with columns: No., Revision/Issue, Date

Project No. ***
Date 03/06/2020
Scale AS NOTED
Sheet C-30

- Richard F Gosselin, Jr Chairman
Paul A Pikelis Vice Chairman
Terry Burke Dotson Member
Francis Desimone Alternate Member
Bruce M Devault Member

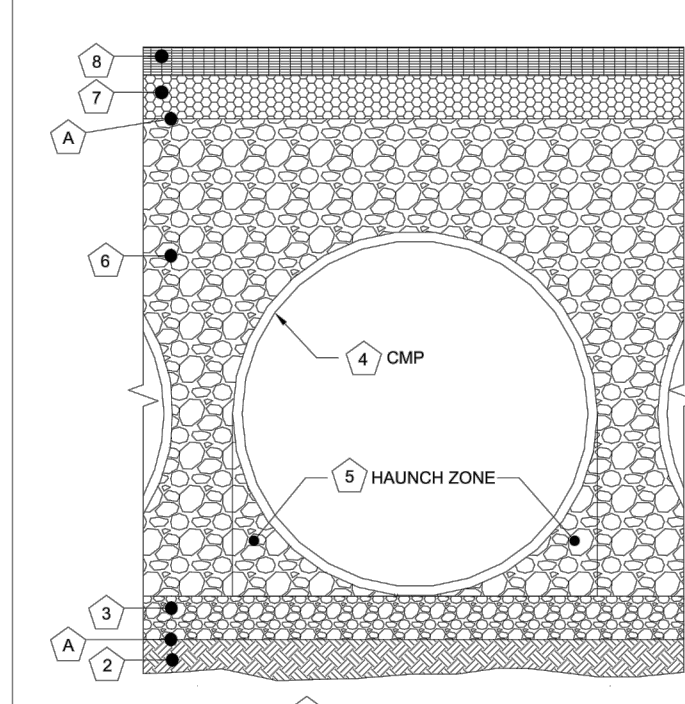
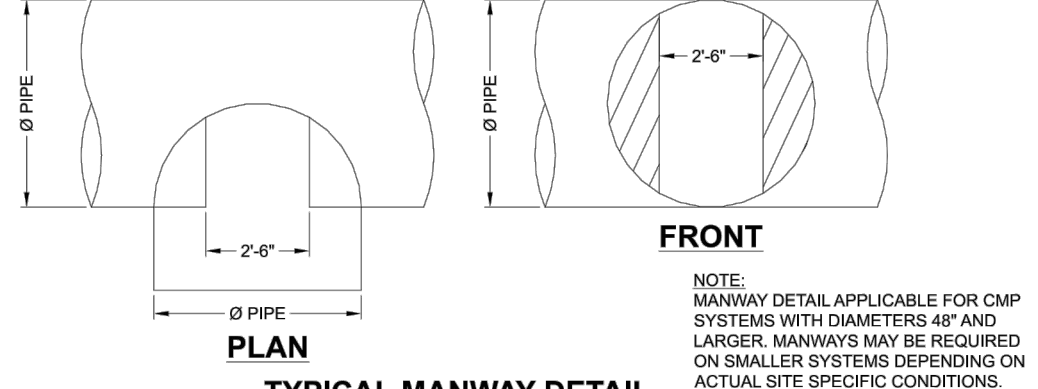
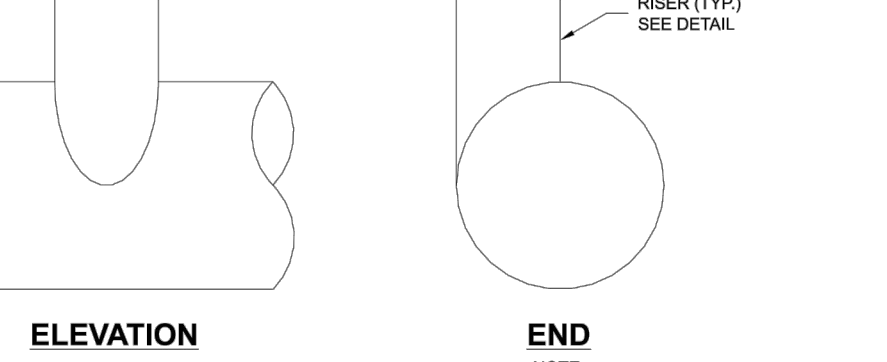


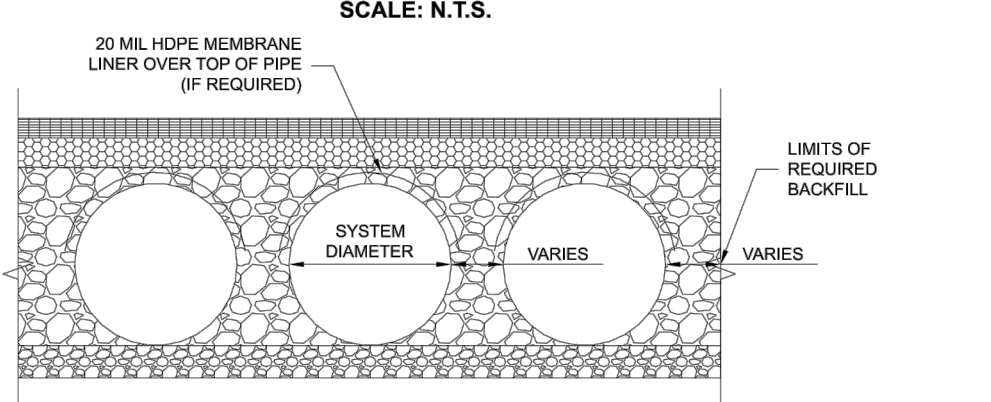
Table with columns: Material Location, Description, Material Designation, Designation. Lists materials like Geotextile Layer, Backfill, Bedding Stone, and Geotextile Layer.



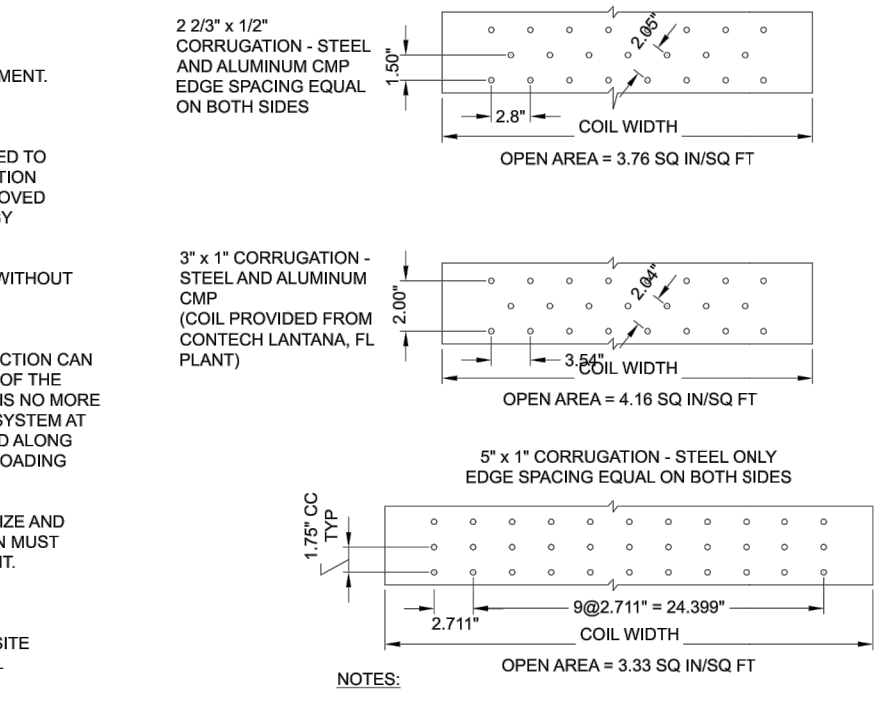
TYPICAL MANWAY DETAIL SCALE: N.T.S.



TYPICAL RISER DETAIL SCALE: N.T.S.



TYPICAL SECTION VIEW SCALE: N.T.S.



TYPICAL PERFORATION DETAIL SCALE: N.T.S.

Table with columns: MARK, DATE, REVISION DESCRIPTION, BY. Includes project name and drawing title.

CONTECH ENGINEERS SOLUTIONS LLC logo and contact information.

CONTECH CMP DETENTION SYSTEMS logo and contact information.

Project information: DY05645 Singletary Arms Pond 2B Millbury, MA DETENTION SYSTEM.

CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE...

IN-SITU TRENCH WALL

IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHARES AS THE SYSTEM IS LOADED...

WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATION

TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT...

CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

BACKFILL PLACEMENT

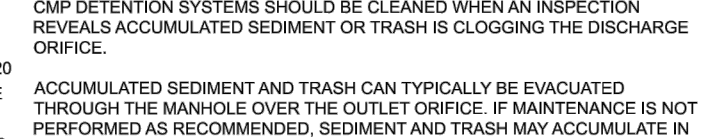
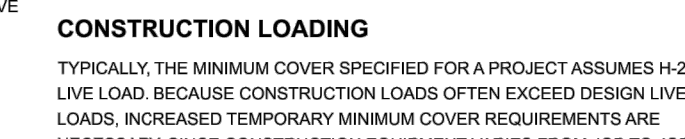
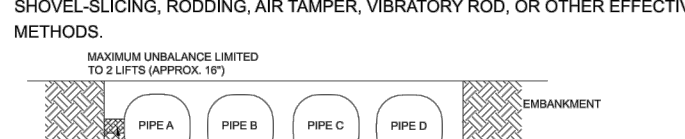
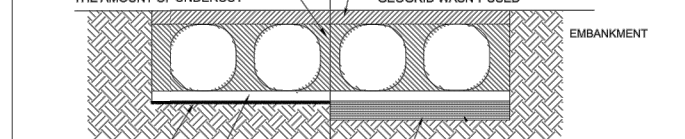
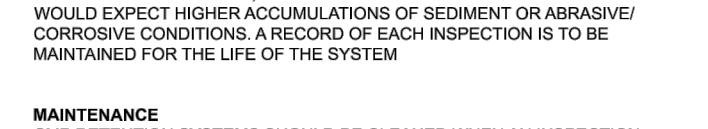
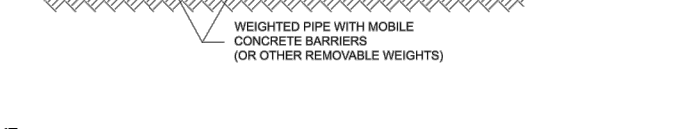
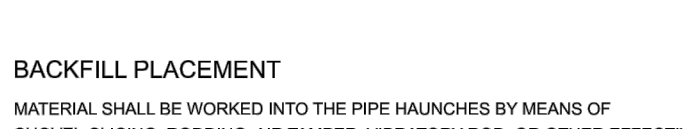
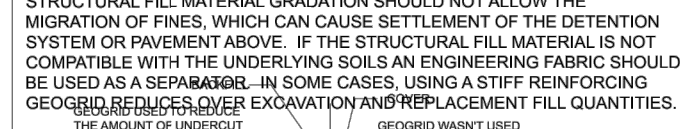
MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL, SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H=20 LIVE LOAD, BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS...

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION, POTENTIALLY CAUSING FLOATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES...



GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS...

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL...

IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD OR REPRESENTATIVE THEREOF IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY OVER THE BACKFILL TO BE COMPLETELY BACKFILLED...

GEOMEMBRANE BARRIER A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DEICING AGENTS...

THE PROJECT'S ENGINEER OF RECORD IS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIS/HER BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PREVENTIVE MEASURES ARE REQUIRED BELOW A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING POTENTIAL REGULAR INSPECTION AND MAINTENANCE PRACTICES, INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

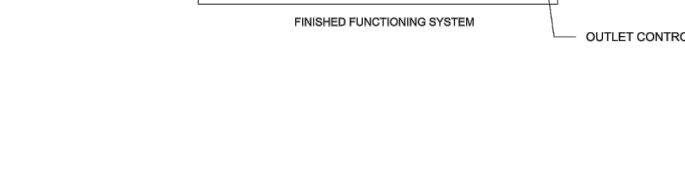
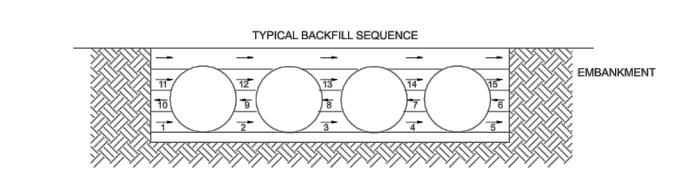
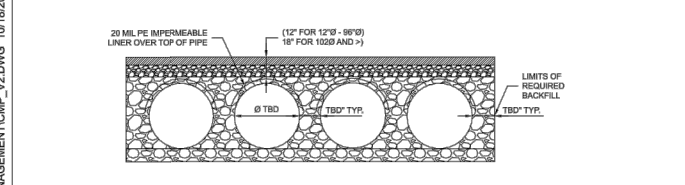
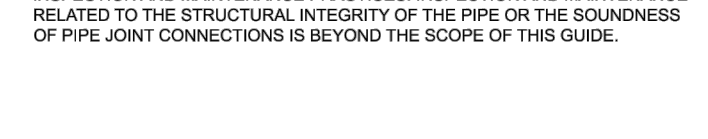
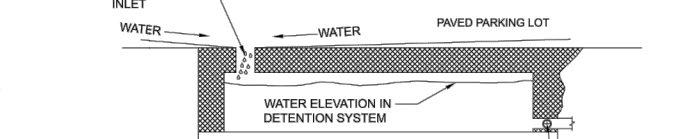
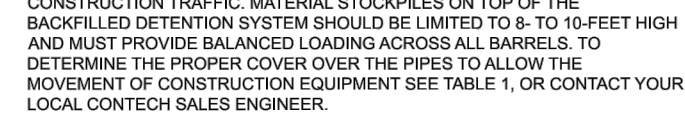
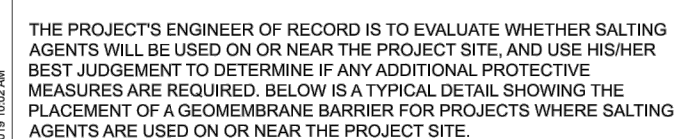
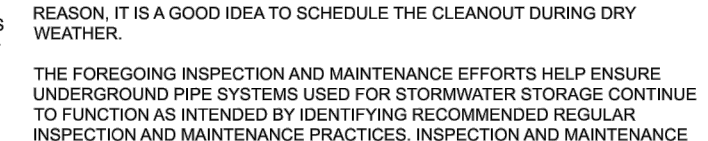
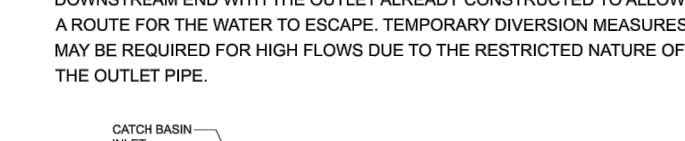
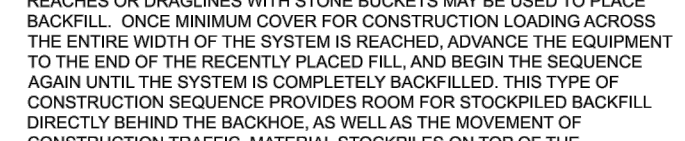
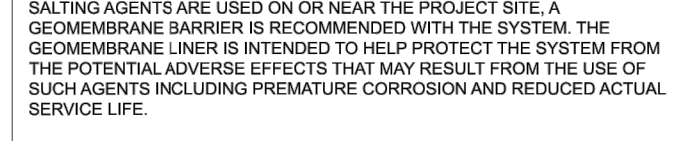


Table with columns: MARK, DATE, REVISION DESCRIPTION, BY. Includes project name and drawing title.

CONTECH ENGINEERS SOLUTIONS LLC logo and contact information.

CONTECH CMP DETENTION SYSTEMS logo and contact information.

Project information: DY05645 Singletary Arms Pond 2B Millbury, MA DETENTION SYSTEM.

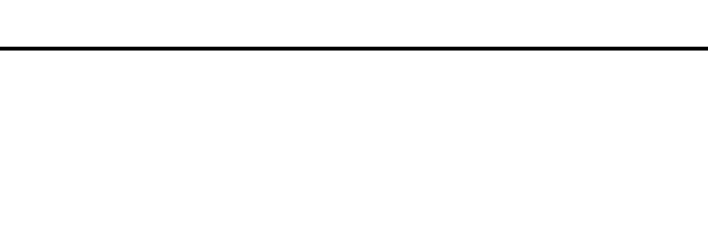
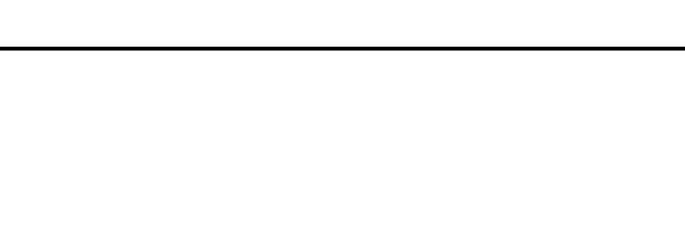
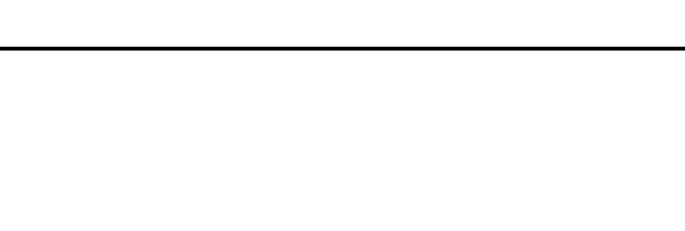
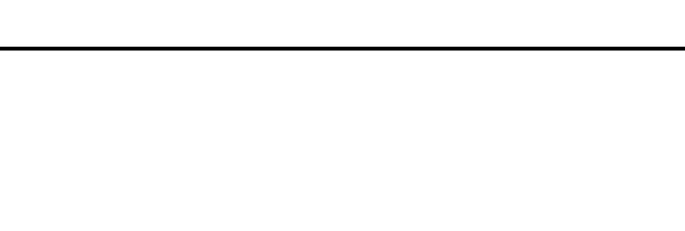
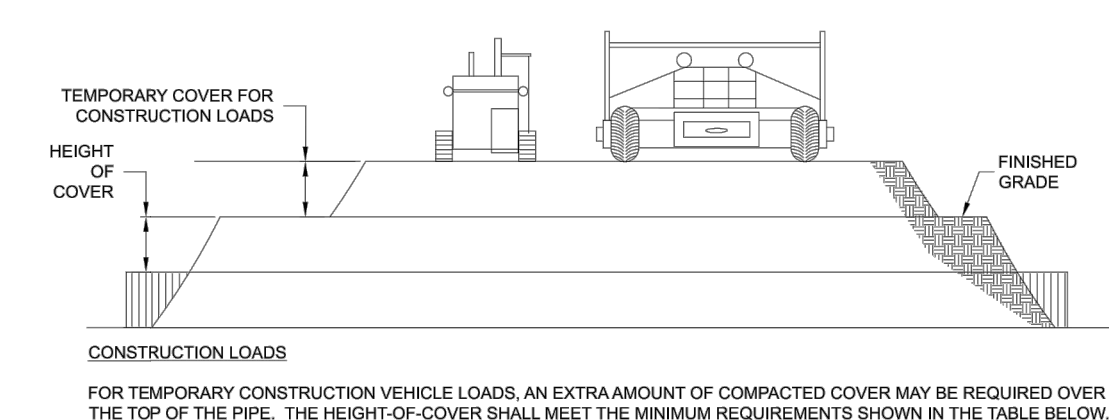
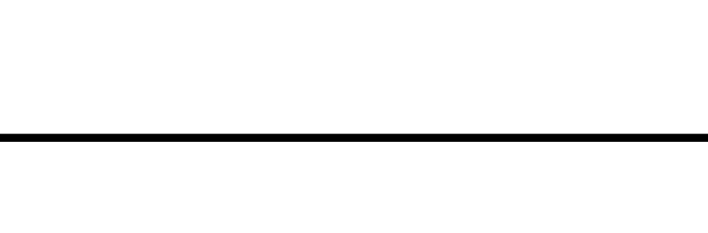
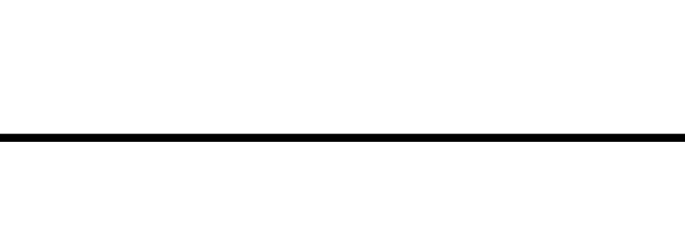
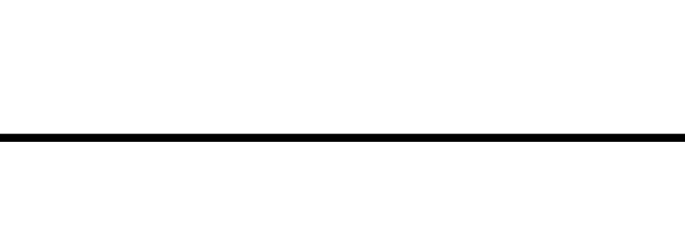
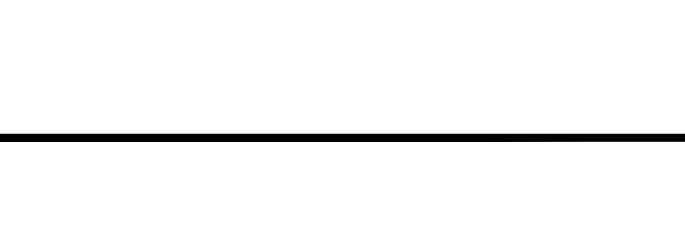


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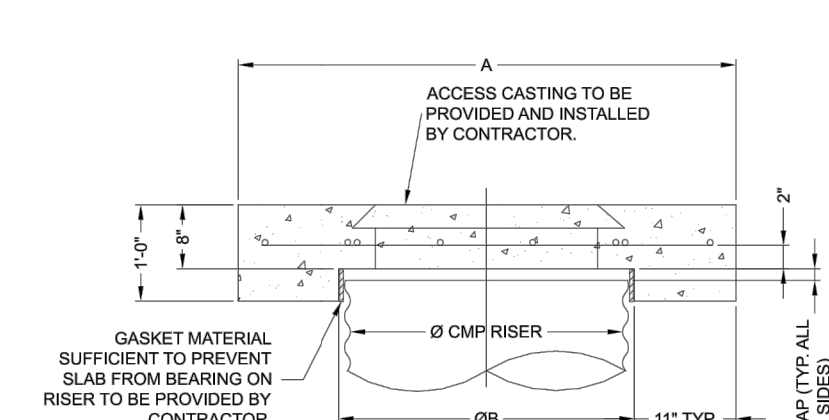
CONTECH ENGINEERS SOLUTIONS LLC logo and contact information.

CONTECH CMP DETENTION SYSTEMS logo and contact information.

Project information: DY05645 Singletary Arms Pond 2B Millbury, MA DETENTION SYSTEM.



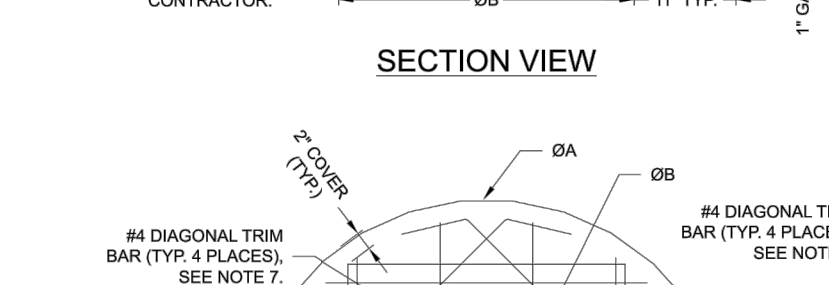
CONSTRUCTION LOADING DIAGRAM SCALE: N.T.S.



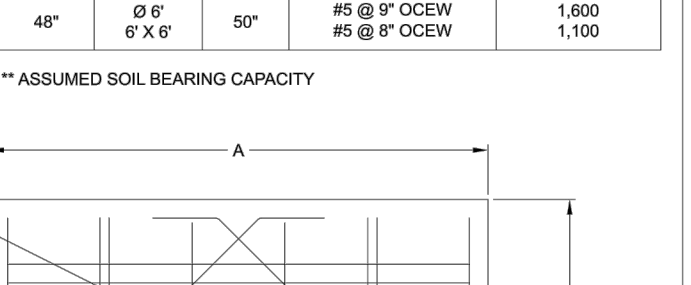
SECTION VIEW

REINFORCING TABLE with columns: Ø CMP RISER, A, Ø B, REINFORCING, **BEARING PRESSURE (PSF).

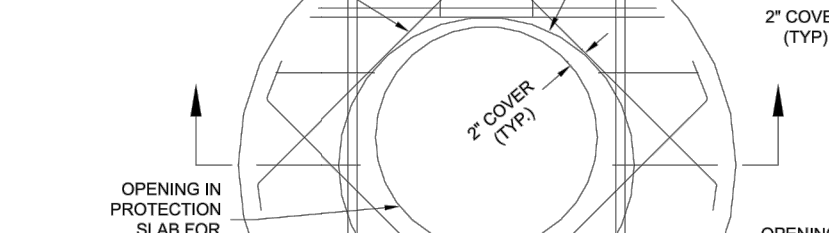
** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW



MANHOLE CAP DETAIL SCALE: N.T.S.

Table with columns: PIPE SPAN, INCHES, AXLE LOADS (kips), MINIMUM COVER (FT).

CONSTRUCTION LOADING DIAGRAM SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM: THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW.

SCOPE: THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL: ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-24 OR ASTM A-42.

CONSTRUCTION LOADS: CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURERS OR NCSPP GUIDELINES.

NOTES: THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

NOTES: 1. DESIGN IN ACCORDANCE WITH AASHTO, 17TH EDITION. 2. DESIGN LOAD HS20. 3. EARTH COVER = 1' MAX.

NOTES: 4. CONCRETE STRENGTH = 3,000 psi. 5. REINFORCING STEEL = ASTM A-615, GRADE 60. 6. PROVIDE ADDITIONAL BEARING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.

NOTES: 7. TRIM OPENING WITH DIAGONAL #4 BARS. EXTEND BARS 18" BEYOND OPENING. BEND BARS AS REQUIRED TO MAINTAIN BAR COVER. 8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR. 9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

NOTES: 10. ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA REGULATIONS FOR SAFE PRACTICES.

Table with columns: MARK, DATE, REVISION DESCRIPTION, BY. Includes project name and drawing title.

CONTECH ENGINEERS SOLUTIONS LLC logo and contact information.

CONTECH CMP DETENTION SYSTEMS logo and contact information.

Project information: DY05645 Singletary Arms Pond 2B Millbury, MA DETENTION SYSTEM.

BRANSON SURVEYING & ENGINEERING, LLC 133 N. 801 (Rte 77) 231 ROCKPOINT DRIVE WALNUT SHADE, MO 65771 417-860-9697

SINGLETARY ARMS 115 W MAIN STREET, 119 W MAIN STREET 3 BURBAN STREET, 4 BURBAN STREET MILLBURY, MA 01527

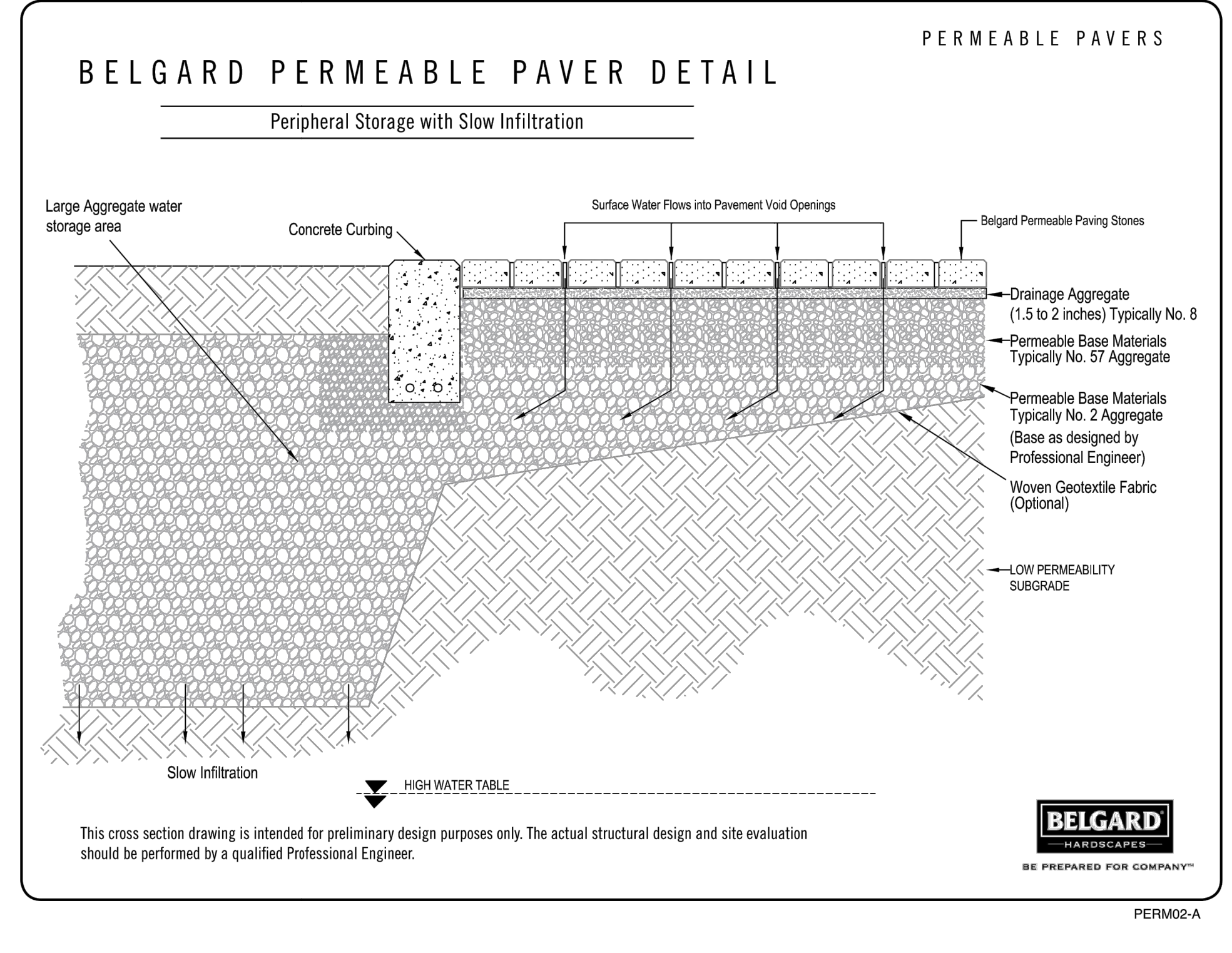
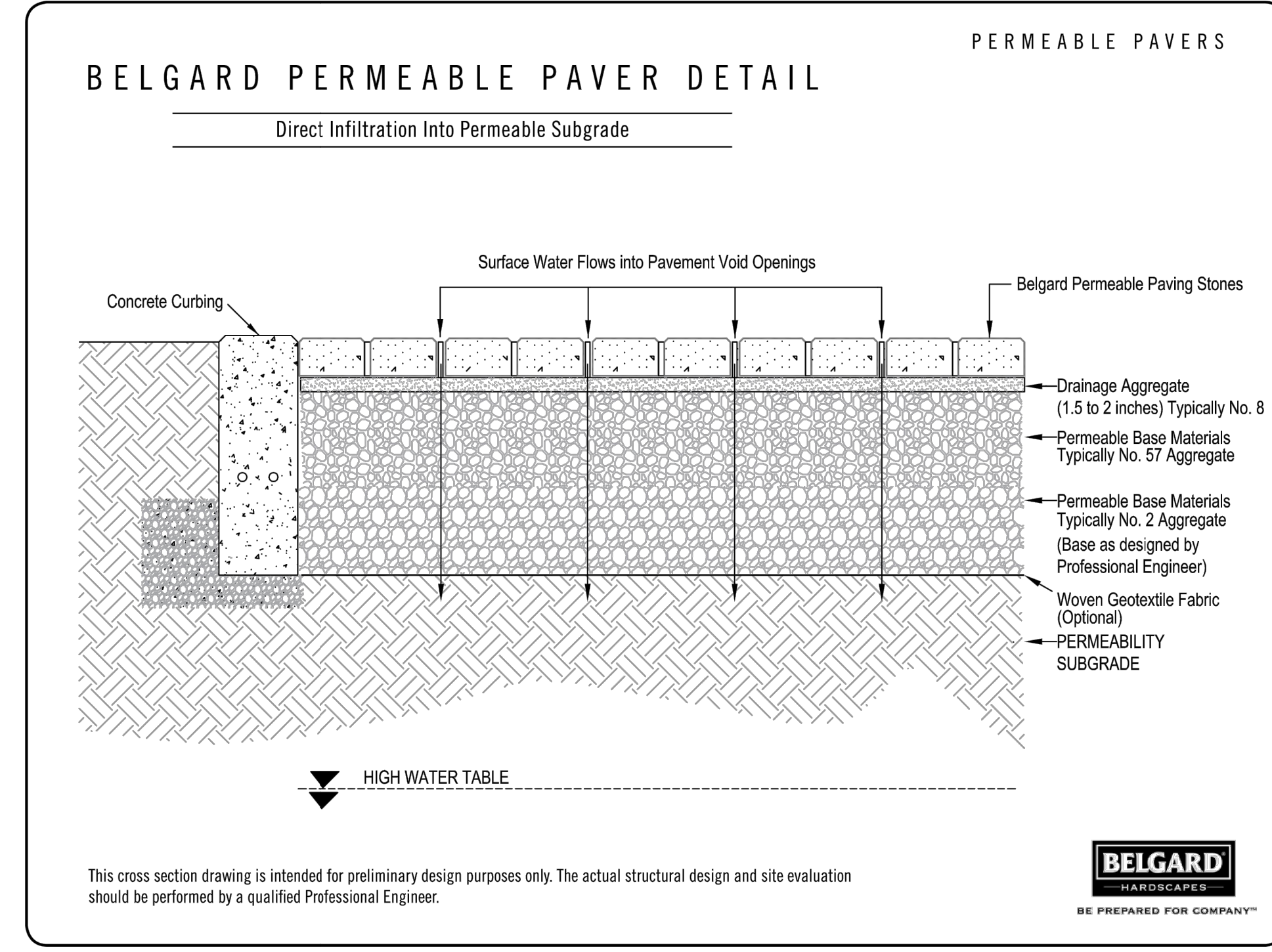
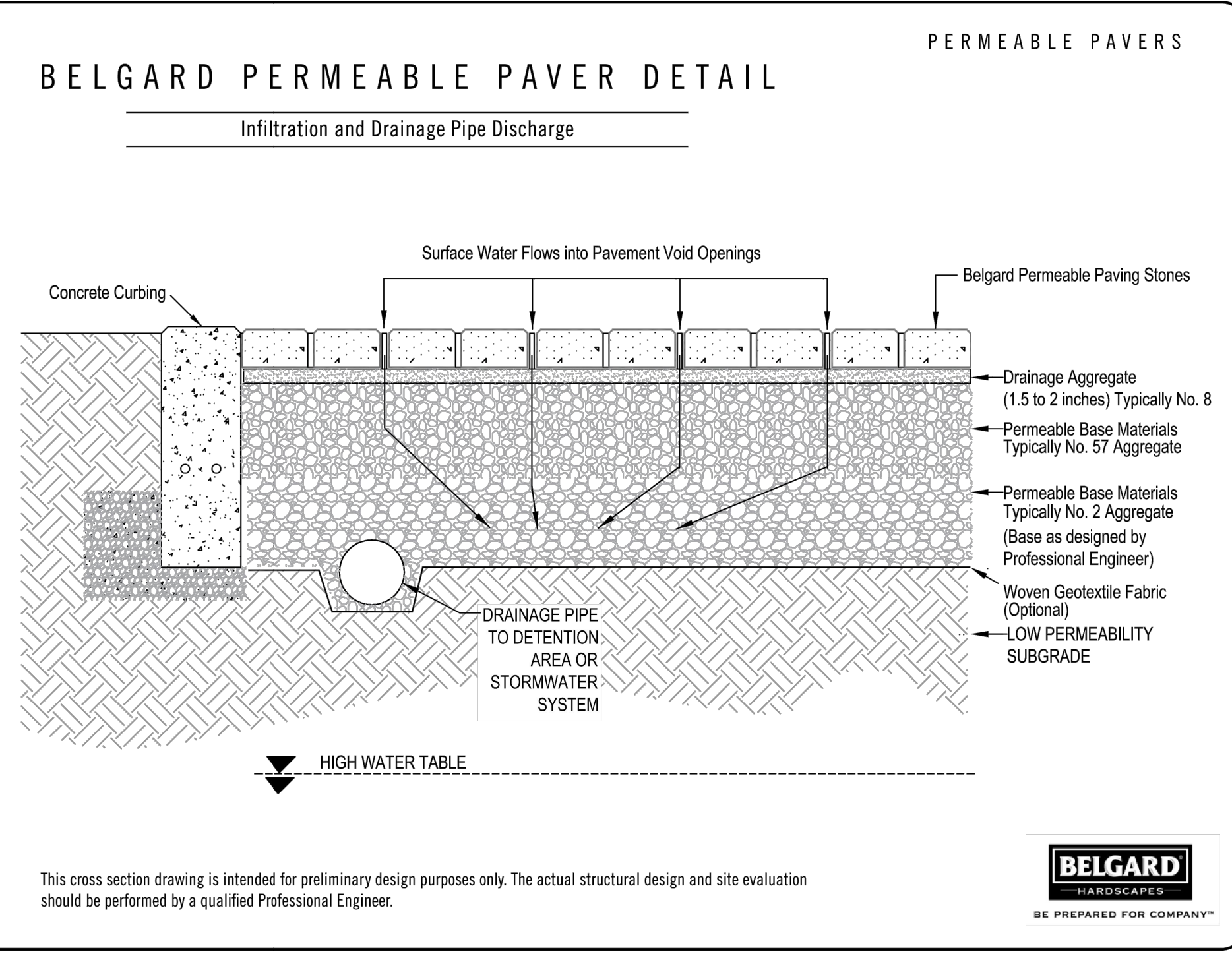
Project Name and Address, Sheet Title

Professional Engineer Seal for Todd M. Chandler, No. 55647, State of Massachusetts.

3/1/2021 Date

Table with columns: No., Revision/Issue, Date. Includes revision history.

Project No. 03/06/2020, Sheet C-30.1



BRANSON SURVEYING & ENGINEERING, LLC
ID No. 001450776
231 ROCKPOINT DRIVE
WALNUT SHADE, MO 65771
417-860-9697

Project Name and Address
SINGLETARY ARMS
115 W MAIN STREET, 119 W MAIN STREET
3 BURBANK STREET, 4 BURBANK STREET
MILLBURY, MA 01527

Sheet Title
PERVIOUS PAVER DETAILS



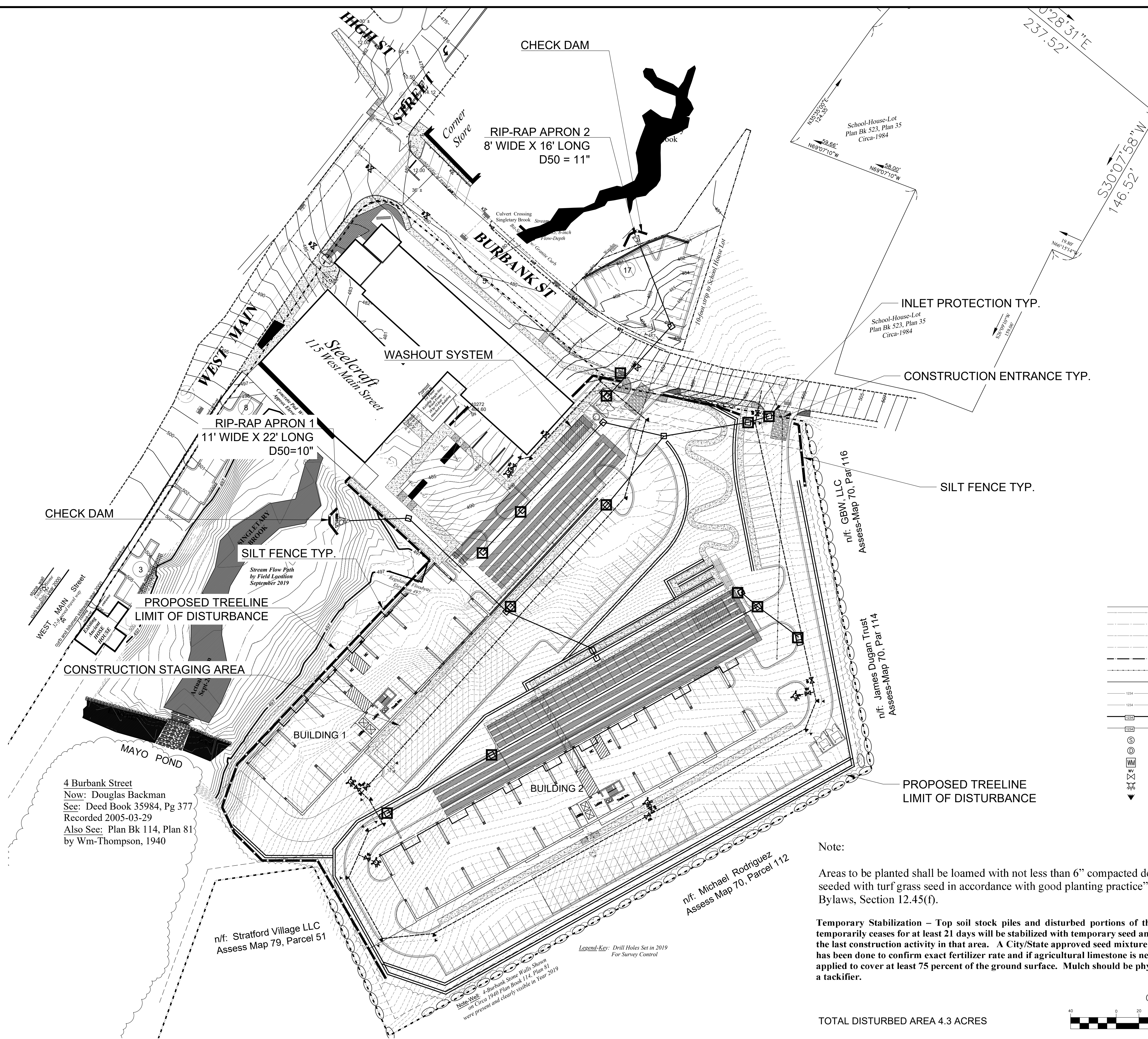
3/1/2021
Date

No.	Revision/Issue	Date
1	RESPONSE TO CITY/STANTEC COMMENTS	09/28/2020
2	RESPONSE TO CITY/STANTEC COMMENTS	10/22/2020
3	RESPONSE TO CITY/STANTEC COMMENTS	12/09/2020
4	RESPONSE TO CITY/STANTEC COMMENTS	01/29/2021
5	RESPONSE TO CITY/STANTEC COMMENTS	02/01/2021

Richard F Gosselin, Jr Chairman _____
 Paul A Pikelis Vice Chairman _____
 Terry Burke Dotson Member _____
 Francis Desimone Alternate Member _____
 Bruce M Devault Member _____

Project No. ***
 Date 03/06/2020
 Scale AS NOTED

Sheet
C-31



4 Burbank Street
 Now: Douglas Backman
 See: Deed Book 35984, Pg 377
 Recorded 2005-03-29
 Also See: Plan Bk 114, Plan 81
 by Wm-Thompson, 1940

n/f: Stratford Village LLC
 Assess Map 79, Parcel 51

Legend-Key: Drill Holes Set in 2019
 For Survey Control
 Note: Well 1-Burbank Stone Walls Shown
 on Circa 1940 Plan Book 114, Plan 81
 were present and clearly visible in Year 2019

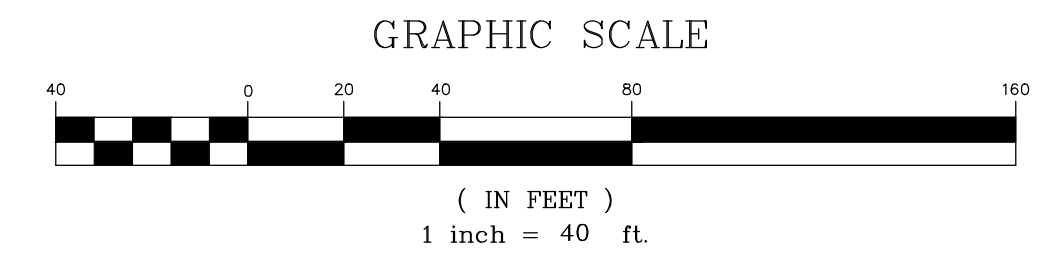
n/f: Michael Rodriguez
 Assess Map 70, Parcel 112

Note:
 Areas to be planted shall be loamed with not less than 6" compacted depth of good quality loam and seeded with turf grass seed in accordance with good planting practice" in accordance with Zoning Bylaws, Section 12.45(f).

Temporary Stabilization - Top soil stock piles and disturbed portions of the site where construction activity temporarily ceases for at least 21 days will be stabilized with temporary seed and mulch no later than 14 days from the last construction activity in that area. A City/State approved seed mixture should be applied after the soil test has been done to confirm exact fertilizer rate and if agricultural limestone is needed. After seeding, mulch must be applied to cover at least 75 percent of the ground surface. Mulch should be physically anchored or tied down with a tackifier.

TOTAL DISTURBED AREA 4.3 ACRES

- LEGEND**
- RIGHT OF WAY LINE
 - EXISTING WATER LINE
 - EXISTING SANITARY SEWER LINE
 - EXISTING STORM SEWER LINE
 - WATER LINE
 - SANITARY SEWER LINE
 - STORM SEWER LINE
 - EXISTING CONTOURS MAJOR
 - EXISTING CONTOURS MINOR
 - PROPOSED CONTOURS MAJOR
 - PROPOSED CONTOURS MINOR
 - ⊙ SANITARY SEWER MANHOLE
 - ⊙ STORM SEWER MANHOLE
 - ⊙ WATER METER
 - ⊙ WATER VALVE
 - ⊙ FIRE HYDRANT
 - ▼ THRUST BLOCK



BRANSON SURVEYING &
 ENGINEERING, LLC
 ID No. 001456776
 231 ROCKPOINT DRIVE
 WALNUT SHADE, MO 65771
 417-860-9697

Project Name and Address
SINGLETARY ARMS
 115 W MAIN STREET, 119 W MAIN STREET
 3 BURBANK STREET, 4 BURBANK STREET
 MILLBURY, MA 01527

Sheet Title
SEDIMENT CONTROL PLAN



3/1/2021
 Date

No.	Revision/Issue	Date
1	RESPONSE TO CITY/STANTEC COMMENTS	10/01/2020
2	RESPONSE TO CITY/STANTEC COMMENTS	11/29/2020
3	RESPONSE TO CITY/STANTEC COMMENTS	01/11/2021
4	RESPONSE TO CITY/STANTEC COMMENTS	02/15/2021
5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
 Date 03/06/2020
 Scale AS NOTED
 Sheet C-32

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION & SEDIMENT CONTROL MEASURES AND PRACTICES THROUGHOUT THE PROJECT. ANY AND ALL FINES ASSOCIATED WITH EROSION CONTROL VIOLATIONS WILL BE THE CONTRACTOR'S RESPONSIBILITY.
2. EROSION CONTROL IS THE CONTRACTOR'S RESPONSIBILITY. THIS PLAN SHOULD BE USED AS A GUIDE AND REPRESENTS THE MINIMUM EROSION CONTROL DEVICES REQUIRED.
3. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. ADDITIONAL EROSION & SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTION.
4. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL EROSION & SEDIMENT CONTROL DEVICES AFTER EACH RAINFALL EVENT.
5. THE CONTRACTOR SHALL PROVIDE ANY FURTHER EROSION CONTROL MEASURES IN ADDITION TO THOSE LISTED TO ENSURE THAT SILT WILL NOT LEAVE THE PROJECT CONFINES.
6. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION & SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED WITH A HEALTHY STAND OF PERMANENT VEGETATION.
7. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SILT FROM SITE IF NOT REUSABLE ON-SITE AND ASSURING PLAN ALIGNMENT AND GRADE IN ALL DITCHES AT COMPLETION OF CONSTRUCTION.
8. THE CONTRACTOR SHALL ENSURE THAT ALL DRAINAGE STRUCTURES, FLUMES, PIPES, ETC. ARE CLEANED OUT AND WORKING PROPERLY AT TIME OF ACCEPTANCE.
9. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY STABILIZATION AS REQUIRED.
10. THE CONTRACTOR SHALL PROVIDE A TEMPORARY CONSTRUCTION ENTRANCE FOR VEHICULAR TRAFFIC AT LOCATION SHOWN.
11. ALL EROSION CONTROL DEVICES SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE STANDARD SPECIFICATIONS AND DESIGN CRITERIA OF THE DEPARTMENT OF PUBLIC WORKS, MILLBURY, MA.
12. THE CONTRACTOR WILL BE REQUIRED TO CLEAN THE STREETS OF DEPOSITED MUD AS FREQUENTLY AS NEEDED AS DETERMINED BY THE ENGINEER IN ORDER TO KEEP THEM USABLE AND TO CONTROL DUST.
13. SEE TEMPORARY VEGETATION REQUIREMENT NOTES ON THIS SHEET FOR EXPOSED SOIL WHERE NO ACTIVITY WILL OCCUR FOR MORE THAN 14 DAYS.
14. CONTRACTOR IS RESPONSIBLE FOR PHASED INSTALLATION OF EROSION CONTROL BMP'S IN ORDER TO PREVENT SEDIMENT FROM BREACHING THE LIMITS OF DISTURBANCE.

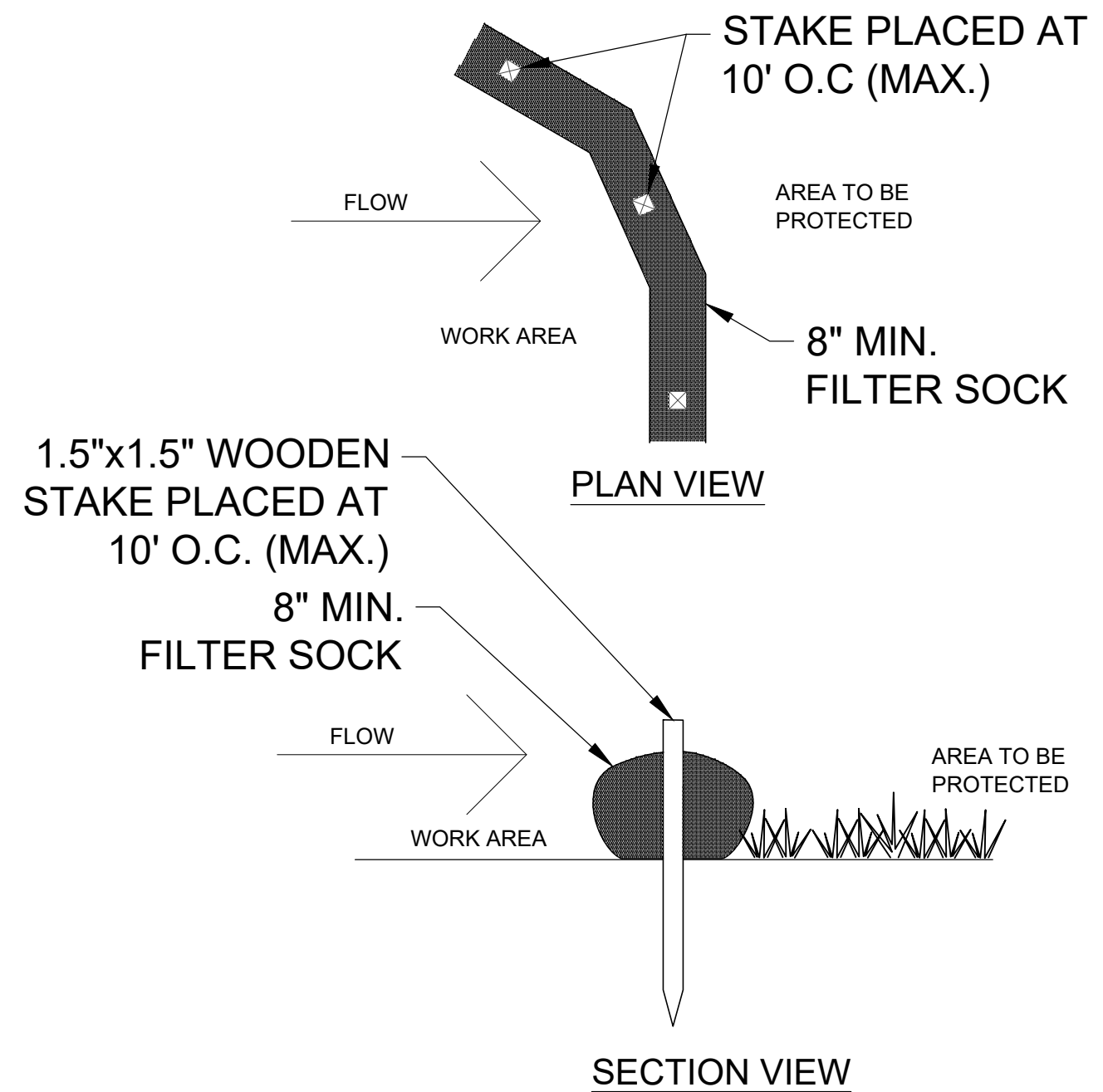
POLLUTION PREVENTION PROCEDURE NOTES:

1. HANDLING AND DISPOSAL OF HAZARDOUS MATERIALS:
 - SHALL: PREVENT SPILLS
USE PRODUCTS UP
FOLLOW LABEL DIRECTIONS FOR DISPOSAL
REMOVE LIDS FROM EMPTY BOTTLES AND CANS WHEN DISPOSING TRASH
RECYCLE WASTES WHENEVER POSSIBLE
 - SHALL NOT: POUR WASTE INTO SEWERS OR WATERWAYS ON THE GROUND
POUR WASTE DOWN THE SINK, FLOOR DRAIN OR SEPTIC TANKS
BURY CHEMICALS OR CONTAINERS, OR DISPOSE OF THEM WITH OTHER WASTE
BURN OR MIX CHEMICALS OR CONTAINERS
WASH SEDIMENT DOWN STORM SEWER INLETS
2. CONTAINERS SHALL BE PROVIDED FOR COLLECTION OF ALL WASTE MATERIAL INCLUDING CONSTRUCTION DEBRIS, TRASH, PETROLEUM PRODUCTS AND ANY HAZARDOUS MATERIALS TO BE USED ONSITE. ALL WASTE MATERIAL SHALL BE DISPOSED OF AT FACILITIES APPROVED FOR THAT MATERIAL.
3. NO WASTE MATERIALS SHALL BE BURIED ON-SITE.
4. MIXING, PUMPING, TRANSFERRING OR OTHERWISE HANDLING CONSTRUCTION CHEMICALS SUCH AS FERTILIZER, LIME, ASPHALT, CONCRETE DRYING COMPOUNDS, AND ALL OTHER POTENTIALLY HAZARDOUS MATERIALS SHALL BE PERFORMED IN AN AREA AWAY FROM ANY WATERCOURSE, DITCH OR STORM DRAIN.
5. EQUIPMENT FUELING AND MAINTENANCE, OIL CHANGING, ETC., SHALL BE PERFORMED ONLY IN AN AREA DESIGNATED FOR THAT PURPOSE. THE DESIGNATED AREA SHALL BE EQUIPPED FOR RECYCLING OIL AND CATCHING SPILLS.
6. CONCRETE WASH WATER SHALL NOT BE ALLOWED TO FLOW DIRECTLY TO STORM SEWERS, STREAMS, DITCHES, LAKES, ETC WITHOUT BEING TREATED. A CONCRETE WASHOUT AREA SHALL BE PROVIDED. SEE DETAIL ON THIS SHEET.
7. ALL PAINT, SOLVENTS, PETROLEUM PRODUCTS AND PETROLEUM WASTE PRODUCTS, AND STORAGE CONTAINERS (SUCH AS DRUMS, CANS, OR CARTONS) SHALL BE STORED ACCORDING TO BMPs. THE MATERIALS EXPOSED TO PRECIPITATION SHALL BE STORED IN WATERTIGHT, STRUCTURALLY SOUND, CLOSED CONTAINERS. ALL CONTAINERS SHALL BE INSPECTED FOR LEAKS OR SPILLAGE DURING THE ONCE PER WEEK INSPECTION OF BMPs. IF SUBSTANCES SUCH AS OIL, DIESEL FUEL, HYDRAULIC FLUID, ANTIFREEZE, ETC. ARE SPILLED, LEAKED, OR RELEASED ONTO SOIL, THE SOIL SHALL BE DUG UP AND PROPERLY DISPOSED OF. SPILLS ON PAVEMENT SHALL BE ABSORBED WITH SAWDUST, KITTY LITTER OR PRODUCT DESIGNED FOR THAT PURPOSED AND DISPOSED OF AT A LICENSED SANITARY LANDFILL. HAZARDOUS OR INDUSTRIAL WASTES SUCH AS MOST SOLVENTS, GASOLINE, OIL-BASED PAINTS, AND CEMENT CURING COMPOUNDS REQUIRE SPECIAL HANDLING. THESE MATERIALS WILL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH MoDNR REQUIREMENTS.
8. STATE LAW REQUIRES THE PARTY RESPONSIBLE FOR A PETROLEUM PRODUCT SPILL IN EXCESS OF 50 GALLONS TO REPORT THE SPILL TO MASSDEQ AS SOON AS PRACTICAL AFTER DISCOVERY. FEDERAL LAW REQUIRES THE RESPONSIBLE PARTY TO REPORT ANY RELEASE OF OIL IF IT REACHES OR THREATENS A SEWER, LAKE, CREEK, STREAM, RIVER, GROUNDWATER, WETLAND, OR AREA, LIKE A ROAD DITCH, THAT DRAINS INTO ONE OF THE ABOVE.
9. SUFFICIENT TEMPORARY TOILET FACILITIES TO SERVE THE NUMBER OF WORKERS ON THE SITE SHALL BE PROVIDED. THE FACILITIES SHALL BE SERVICED FREQUENTLY TO MAINTAIN SANITARY CONDITIONS.
10. STREET SWEEPING SHALL BE DONE MONTHLY WITH A HIGH EFFICIENCY VACUUM SWEEPER.

TEMPORARY & PERMANENT VEGETATION REQUIREMENTS:

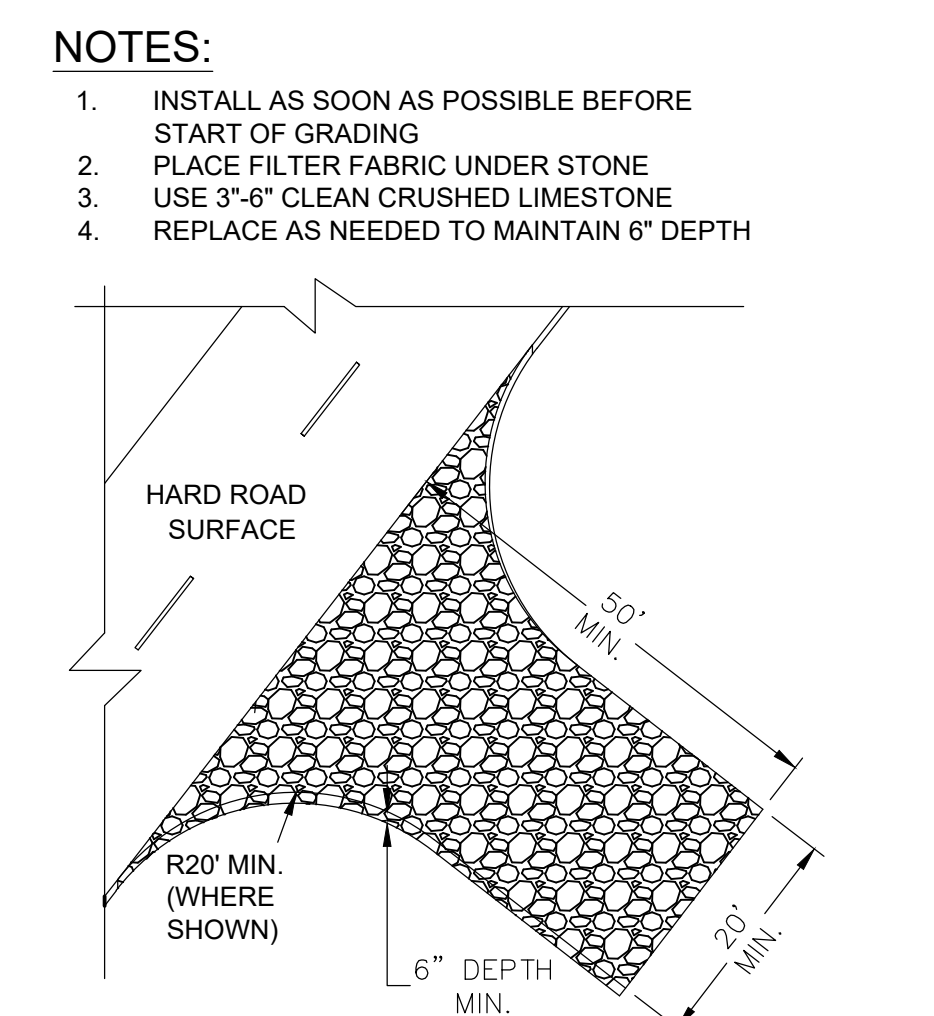
- TOPSOIL REQUIREMENTS:**
- PERMANENT AND TEMPORARY SEEDING - LOOSEN COMPACTED SOILS TO A DEPTH OF 4 INCHES. IF RAINFALL CAUSES THE SURFACE TO BECOME SEALED OR CRUSTED, LOOSEN IT JUST PRIOR TO SEEDING. SLOPES STEEPER THAN 33 PERCENT (3:1) GRADE SHOULD BE GROOVED OR FURROWED ON THE CONTOUR BEFORE SEEDING. A GOOD SEEDBED IS WELL PULVERIZED, LOOSE, AND UNIFORM.
- PERMANENT SEEDING - A MINIMUM OF 4 INCHES OF LOOSE TOPSOIL SHOULD BE SPREAD ON AREAS TO BE SEEDED.
- LIME REQUIREMENTS:**
- PERMANENT AND TEMPORARY SEEDING - LIME SHOULD BE APPLIED ACCORDING TO SOIL TEST RECOMMENDATIONS. IF THE PH OF THE SOIL IS UNKNOWN, LIME SHALL BE INCORPORATED INTO THE TOP 4 INCHES OF SOIL AT THE RATE OF 1500 POUNDS EFFECTIVE NEUTRALIZING MATERIAL (ENM) PER ACRE. SOILS WITH A PH OF SIX OR HIGHER NEED NOT BE LIMED.
- FERTILIZER REQUIREMENTS:**
- PERMANENT SEEDING - FERTILIZER SHOULD BE APPLIED BASED ON SOIL TESTS. WHEN THESE ARE NOT POSSIBLE, A 13-13-13 GRADE FERTILIZER SHALL BE INCORPORATED INTO THE TOP 4 INCHES OF SOIL AT THE RATE OF 500 POUNDS PER ACRE.
- TEMPORARY SEEDING - FERTILIZER SHOULD BE APPLIED BASED ON SOIL TESTS. WHEN THESE ARE NOT POSSIBLE, A 10-10-10 GRADE FERTILIZER SHALL BE INCORPORATED INTO THE TOP 4 INCHES OF SOIL AT THE RATE OF 200 POUNDS PER ACRE.
- SEED REQUIREMENTS:**
- PERMANENT SEEDING - SEED MIX SHALL CONSIST OF NINETY PERCENT (90%) TALL FESCUE AND TEN PERCENT (10%) ANNUAL RYEGRASS. SEED MIXTURE SHALL BE APPLIED AT A RATE OF 400 POUNDS PER ACRE.
- TEMPORARY SEEDING - SEED MIX SHALL CONSIST OF ANY COMBINATION OF TALL FESCUE, ANNUAL RYEGRASS, SUDAN, MILLET, WHEAT, OR OATS. SEED MIXTURE SHALL BE APPLIED AT A RATE OF 200 POUNDS PER ACRE.
- DORMANT SEASON SEEDING - SEED MIX SHALL CONSIST OF 80 PERCENT (80%) TALL FESCUE, TEN PERCENT (10%) ANNUAL RYEGRASS, AND TEN PERCENT (10%) SPRING OATS. SEED MIXTURE SHALL BE APPLIED AT A RATE OF 600 POUNDS PER ACRE.
- MULCH REQUIREMENTS:**
- PERMANENT AND TEMPORARY SEEDING - WHERE SLOPES ARE LESS THAN 25 PERCENT (4:1) GRADE, CEREAL GRAIN MULCH IS REQUIRED AT THE RATE OF 100 POUNDS PER 1,000 SQUARE FEET (4,500 LBS/ACRE). CEREAL GRAIN MULCH SHALL MEET THE REQUIREMENTS OF SECTION 802 OF THE MISSOURI STATE SPECIFICATIONS FOR HIGHWAY CONSTRUCTION FOR TYPE 1 MULCH. WHERE SLOPES ARE 25 PERCENT (4:1) OR GREATER GRADE, TYPE 3 MULCH ("HYDROMULCH") MEETING THE REQUIREMENTS OF SECTION 802 OF THE STATE SPECIFICATIONS SHALL BE USED. TYPE 3 MULCH SHALL BE APPLIED AT A MINIMUM RATE OF 2,000 LBS/ACRE.
- DATES FOR SEEDING:**
- PERMANENT SEEDING - MARCH 1 TO JUNE 1 AND AUGUST 15 TO NOVEMBER 1
TEMPORARY SEEDING - CAN OCCUR DURING ANY SEASON, HOWEVER WINTER IS THE LEAST TOLERANT.
DORMANT SEASON SEEDING - DECEMBER 15 TO FEBRUARY 29

NOTE:
SEE LANDSCAPE PLAN SHEETS FOR ADDITIONAL DETAILS ON LOAMING, SEEDING, AND PLANTING.

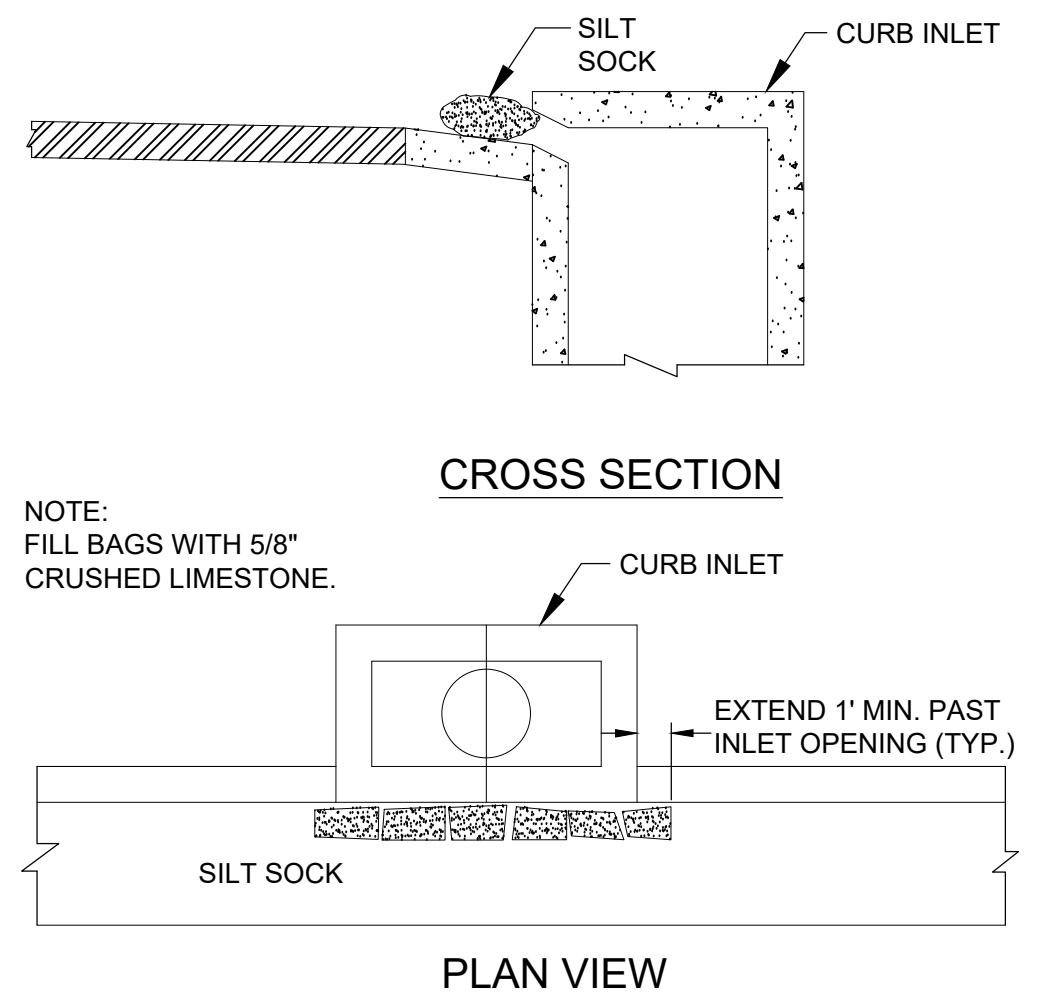


- NOTES:**
1. COMPOST FILTER SOCK SHALL MEET THE REQUIREMENTS OF MoDOT SECTION 806.8.6.4.8. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL BEFORE INSTALLING SOCK.
 2. FILTER SOCK DEPICTED IS FOR MINIMUM SLOPES. GREATER SLOPES MAY REQUIRE LARGER SOCKS PER ENGINEER.
 3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

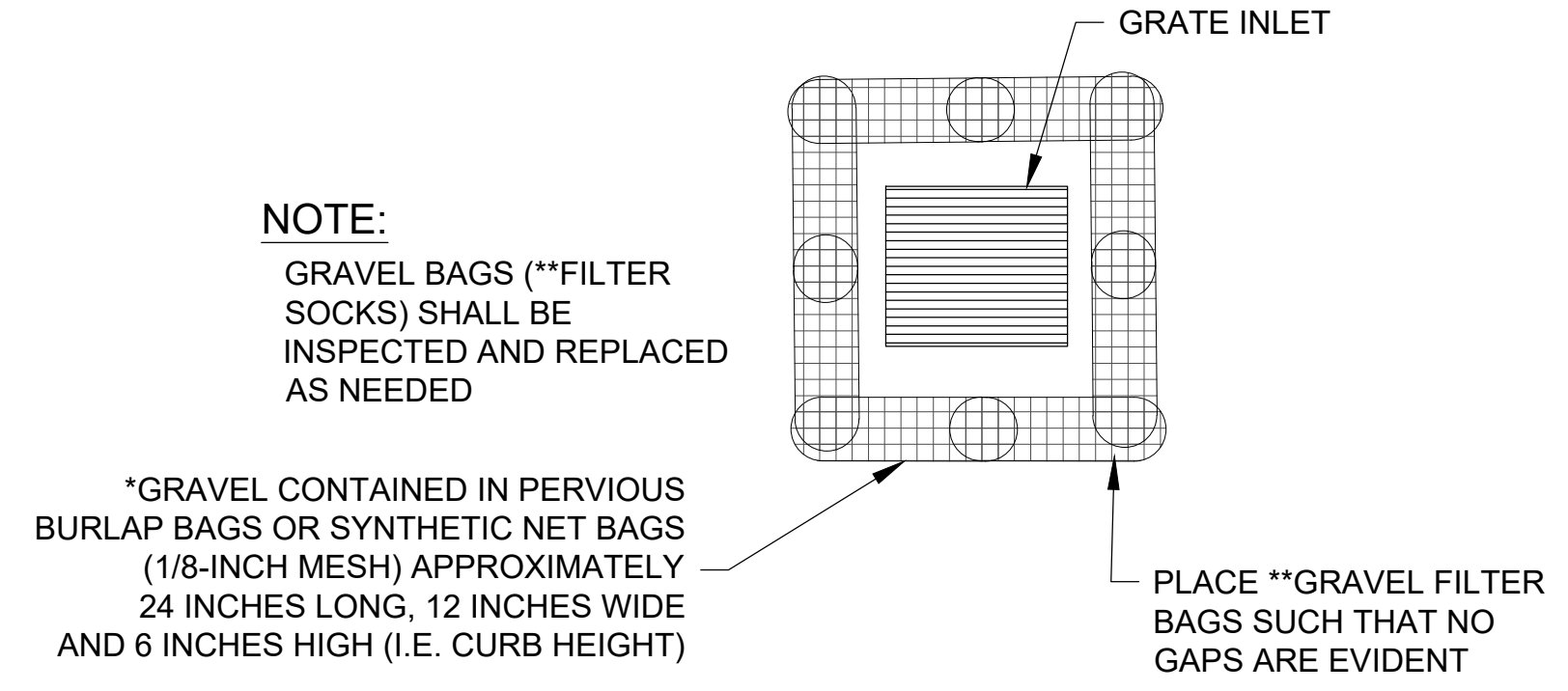
COMPOST FILTER SOCK DETAILS
NOT TO SCALE



GRAVEL CONSTRUCTION ENTRANCE / EXIT
NOT TO SCALE



SILT SOCK SEDIMENT TRAP FOR CURB INLETS
NOT TO SCALE



GRATE INLET PROTECTION DETAIL
NOT TO SCALE

BRANSON SURVEYING & ENGINEERING, LLC
13 No. 80156776
231 ROCKPOINT DRIVE
WALNUT SHADE, MO 65771
417-860-9697

Project Name and Address
SINGLETARY ARMS
115 W MAIN STREET, 119 W MAIN STREET
3 BURBANK STREET, 4 BURBANK STREET
MILLBURY, MA 01527

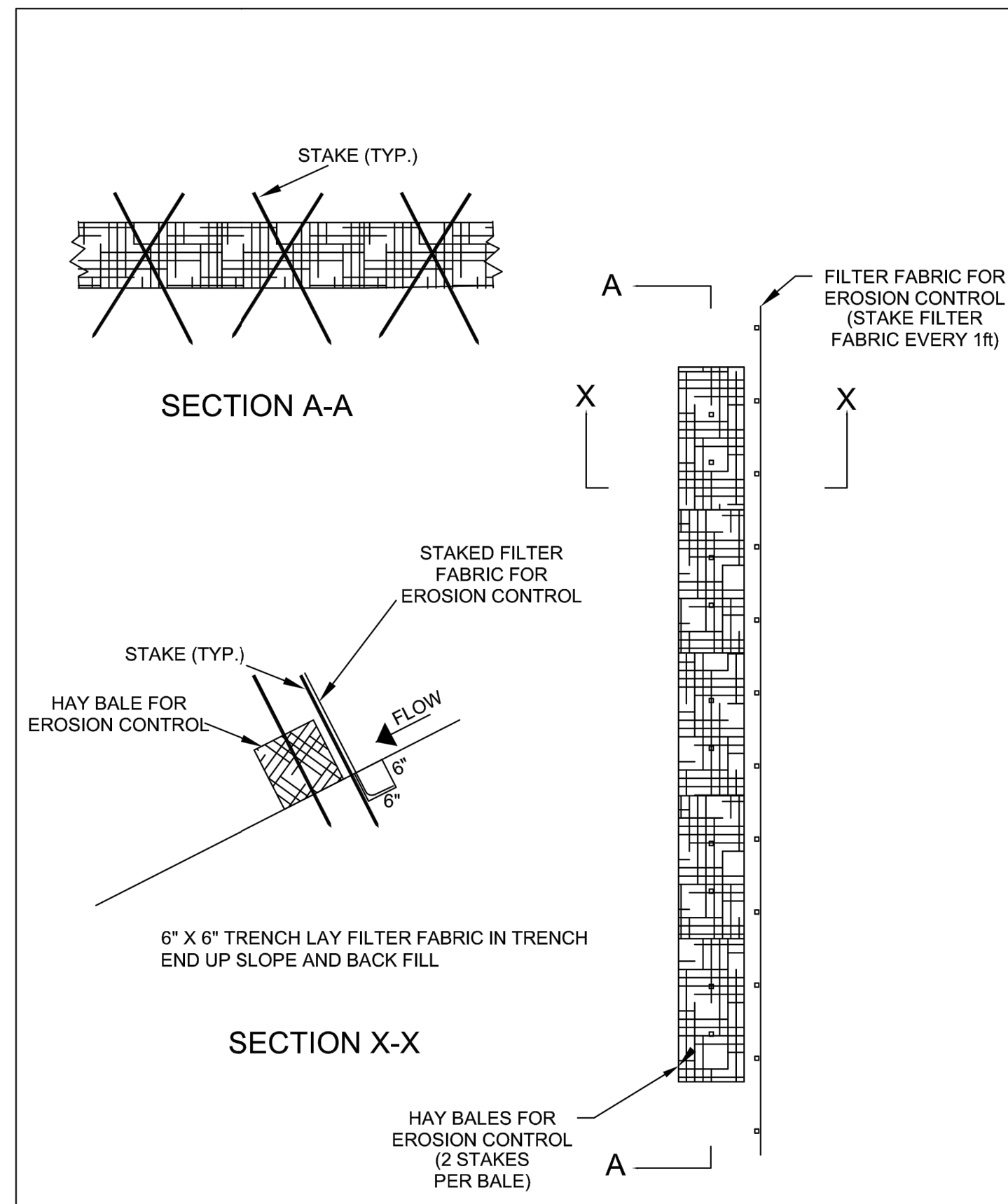
Sheet Title
SEDIMENT CONTROL DETAILS

3/1/2021
Date

No.	Revision/Issue	Date
1	RESPONSE TO CITY/STANTEC COMMENTS	09/28/2020
2	RESPONSE TO CITY/STANTEC COMMENTS	10/22/2020
3	RESPONSE TO CITY/STANTEC COMMENTS	12/09/2020
4	RESPONSE TO CITY/STANTEC COMMENTS	01/29/2021
5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
Date 03/06/2020
Scale AS NOTED

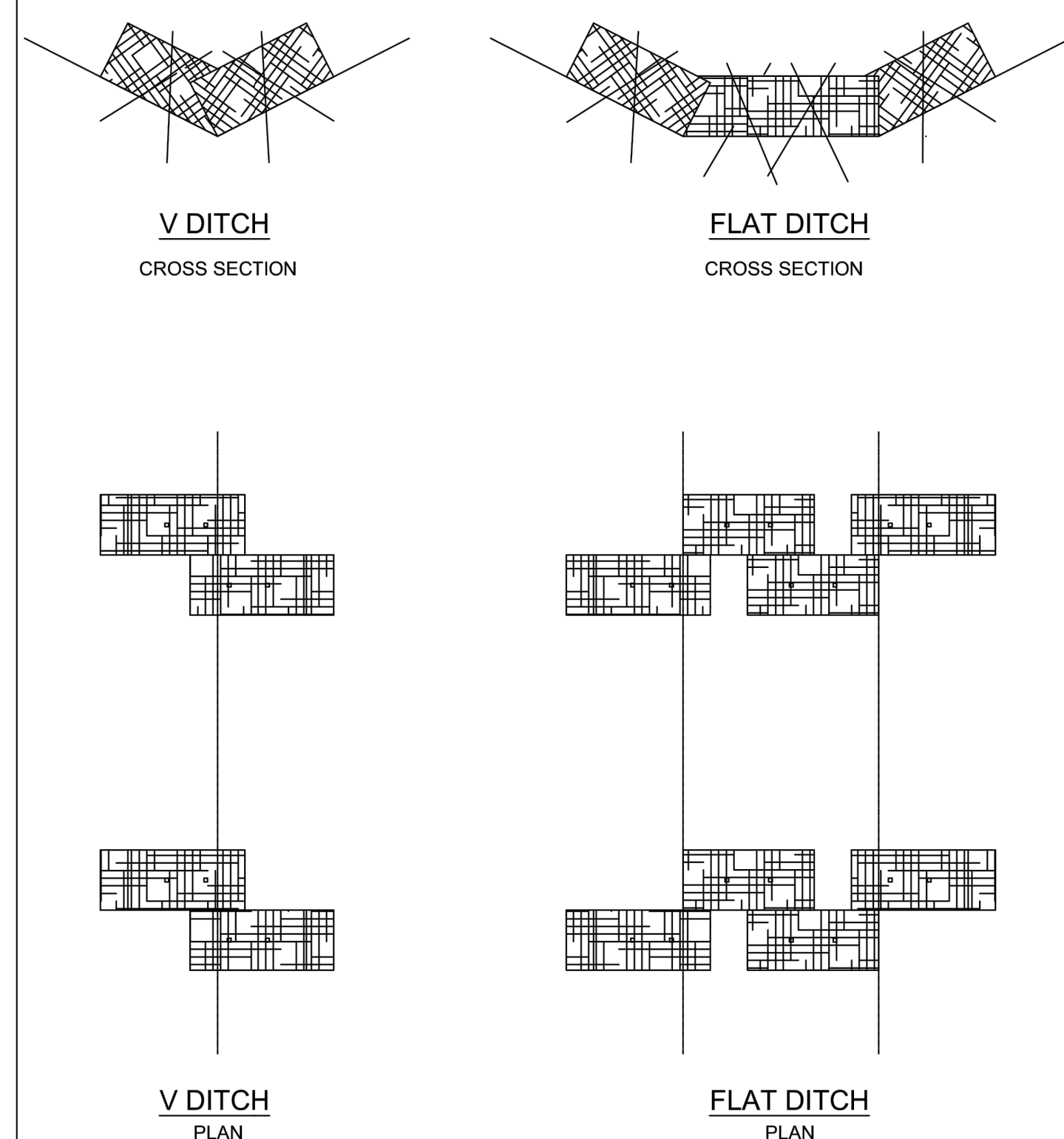
Sheet
C-33



massDOT
CONSTRUCTION STANDARDS

HAY BALES AND SILT FENCES FOR EROSION CONTROL

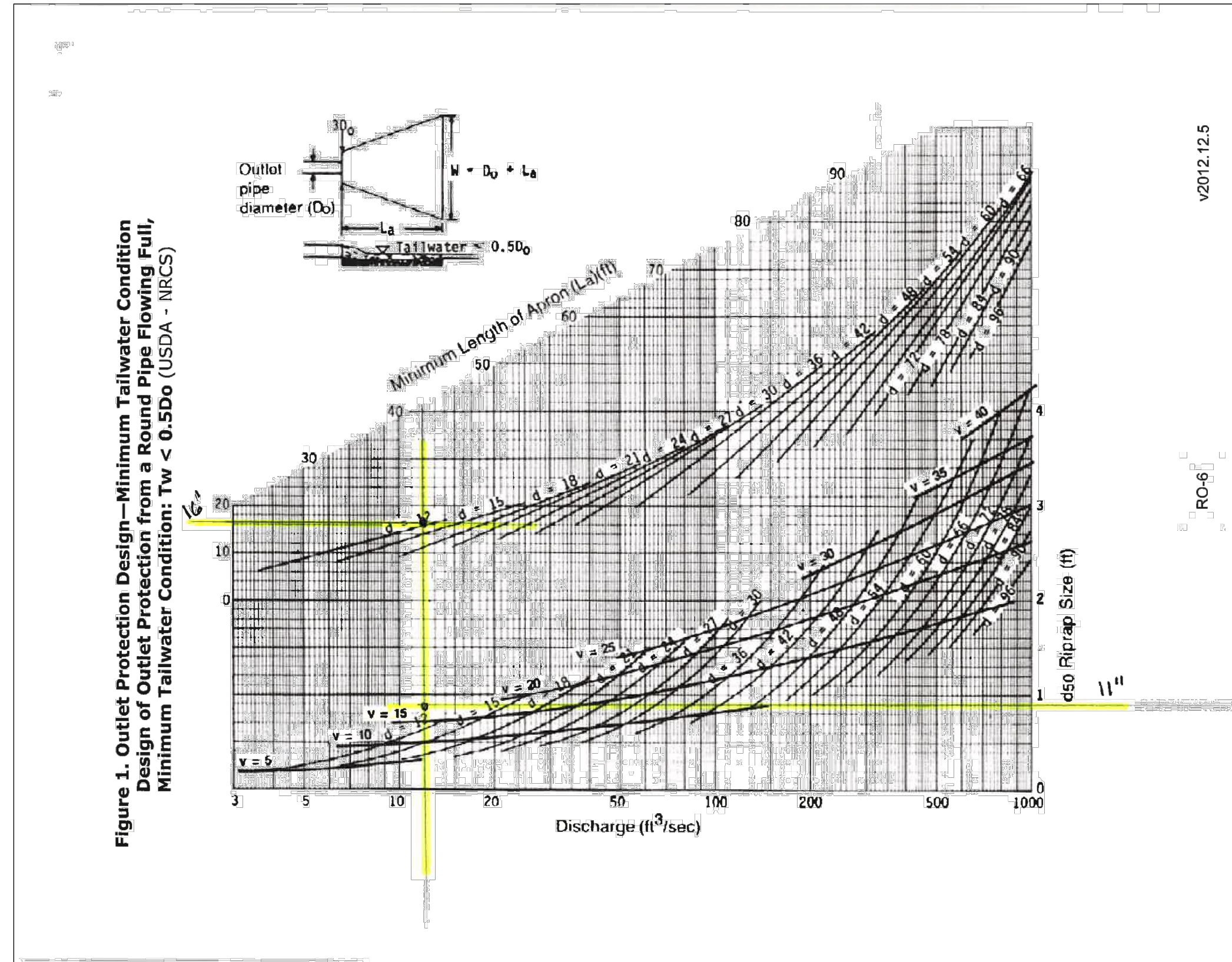
DATE OF ISSUE: OCTOBER 2017
DRAWING NUMBER: **E 210.3.0**



massDOT
CONSTRUCTION STANDARDS

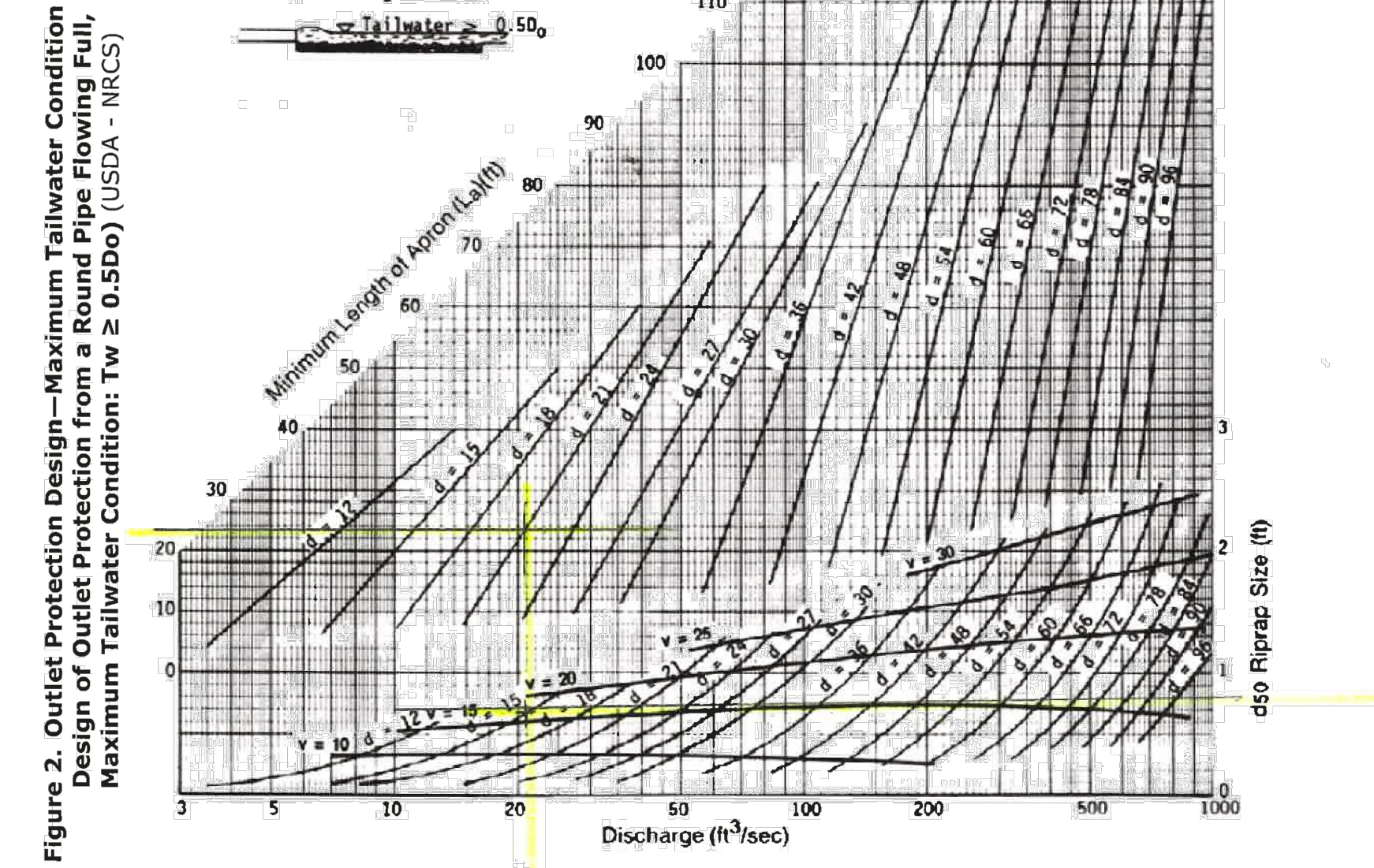
DITCH CHECK DAMS FOR EROSION CONTROL

DATE OF ISSUE: OCTOBER 2017
DRAWING NUMBER: **E 210.2.0**



RIP-RAP APRON 2 SIZE AT PIPE OUTLET

Q100 = 19.94 CFS
V = 19.94 FPS
Do = 18"
TW = 6"
La = 16'
d50 = 11"
w = 1.5 + 0.4X16 = 7.9 USE 8'

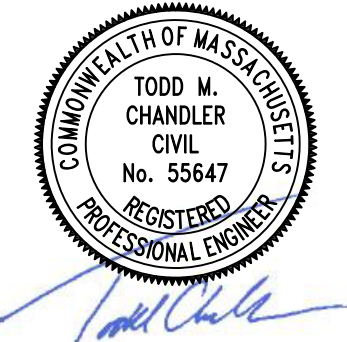


Pipe Results

SM Element ID	Peak Flow (cfs)	Time of Peak Flow Occurrence (days h:mm)	Design Flow Capacity (cfs)	Peak Flow/Design Flow Ratio	Peak Flow Velocity (ft/sec)	Peak Flow Travel Time (min)	Peak Flow Depth (ft)	Peak Flow Depth/Total Depth Ratio	Total Time Surcharged (min)	Froude Number	Reported Condition
1 HZ Outlet	11.06	0 00:05	15.73	0.70	8.84	0.13	0.83	0.62	0.00		Calculated
2 PIPEA1-A2	1.12	0 00:20	16.73	0.07	7.70	0.09	0.22	0.18	0.00		Calculated
3 PIPEA2-A3	4.44	0 00:21	8.89	0.50	7.24	0.04	0.62	0.50	0.00		Calculated
4 PIPEA3-DETENTION1	5.14	0 00:55	10.84	0.47	8.72	0.02	0.81	0.48	0.00		Calculated
5 PIPEB1-B2	2.35	0 00:20	9.28	0.25	6.96	0.24	0.43	0.34	0.00		Calculated
6 PIPEB2-A2	3.33	0 00:21	8.89	0.38	5.46	0.81	0.82	0.50	0.00		Calculated
7 PIPEC1-C2	21.29	0 00:00	27.04	0.79	9.53	0.02	1.34	0.67	0.00		Calculated
8 PIPEC2-C3	21.29	0 00:02	27.71	0.77	9.72	0.14	1.31	0.66	0.00		Calculated
9 PIPEC3-C4	21.29	0 00:04	24.67	0.86	8.83	0.22	1.43	0.72	0.00		Calculated
10 PIPEC4-OUTLET	21.29	0 00:04	25.19	0.85	8.89	0.09	1.41	0.71	0.00		Calculated
11 PIPED1-D2	0.27	0 00:05	7.04	0.04	2.83	0.09	0.17	0.13	0.00		Calculated
12 PIPED2-D3	1.73	0 00:21	6.56	0.26	4.51	0.27	0.44	0.35	0.00		Calculated
13 PIPED3-D4	3.19	0 00:05	10.08	0.32	7.30	0.13	0.48	0.39	0.00		Calculated
14 PIPED4-DET2	7.46	0 00:05	11.20	0.67	9.76	0.00	0.75	0.60	0.00		Calculated
15 PIPEE1-E2	0.83	0 00:05	16.15	0.05	9.69	0.21	0.19	0.15	0.00		Calculated
16 PIPEE2-D3	2.16	0 00:05	9.28	0.23	6.19	0.20	0.41	0.33	0.00		Calculated
17 PIPEF1-F2	1.45	0 00:05	15.06	0.10	8.83	0.09	0.26	0.21	0.00		Calculated
18 PIPEF2-D4	2.38	0 00:05	10.83	0.22	7.10	0.23	0.40	0.32	0.00		Calculated
19 PIPEG1-D4	1.93	0 00:05	7.72	0.25	5.24	0.09	0.42	0.34	0.00		Calculated
20 PIPEH1-JH2	11.06	0 00:02	13.49	0.82	8.82	0.16	1.03	0.69	0.00		Calculated

RIP-RAP APRON 1 SIZE AT PIPE OUTLET

Q100 = 21.29 CFS
V = 9.61 FPS
Do = 24"
TW = 15"
La = 22'
d50 = 10"
w = 2 + 0.4X22 = 10.8 USE 11'



3/1/2021
Date

No.	Revision/Issue	Date
1	RESPONSE TO CITY/STANTEC COMMENTS	09/28/2020
2	RESPONSE TO CITY/STANTEC COMMENTS	10/22/2020
3	RESPONSE TO CITY/STANTEC COMMENTS	12/09/2020
4	RESPONSE TO CITY/STANTEC COMMENTS	01/29/2021
5	RESPONSE TO CITY/STANTEC COMMENTS	03/01/2021

Project No. ***
Date 03/06/2020
Scale AS NOTED

Sheet **C-34**



PROJECT:
SINGLETARY ARMS
115 W. MAIN ST.
MILLBURY, MA

CLIENT:
DOUGLAS BACKMAN

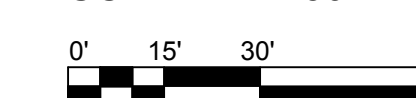
DATE: 7-15-2020

REVISIONS:

NO.	DATE	DESCRIPTION
1	11-9-20	RESPONSE TO TOWN OF MILLBURY COMMENTS
2	1-25-21	RESPONSE TO TOWN OF MILLBURY COMMENTS

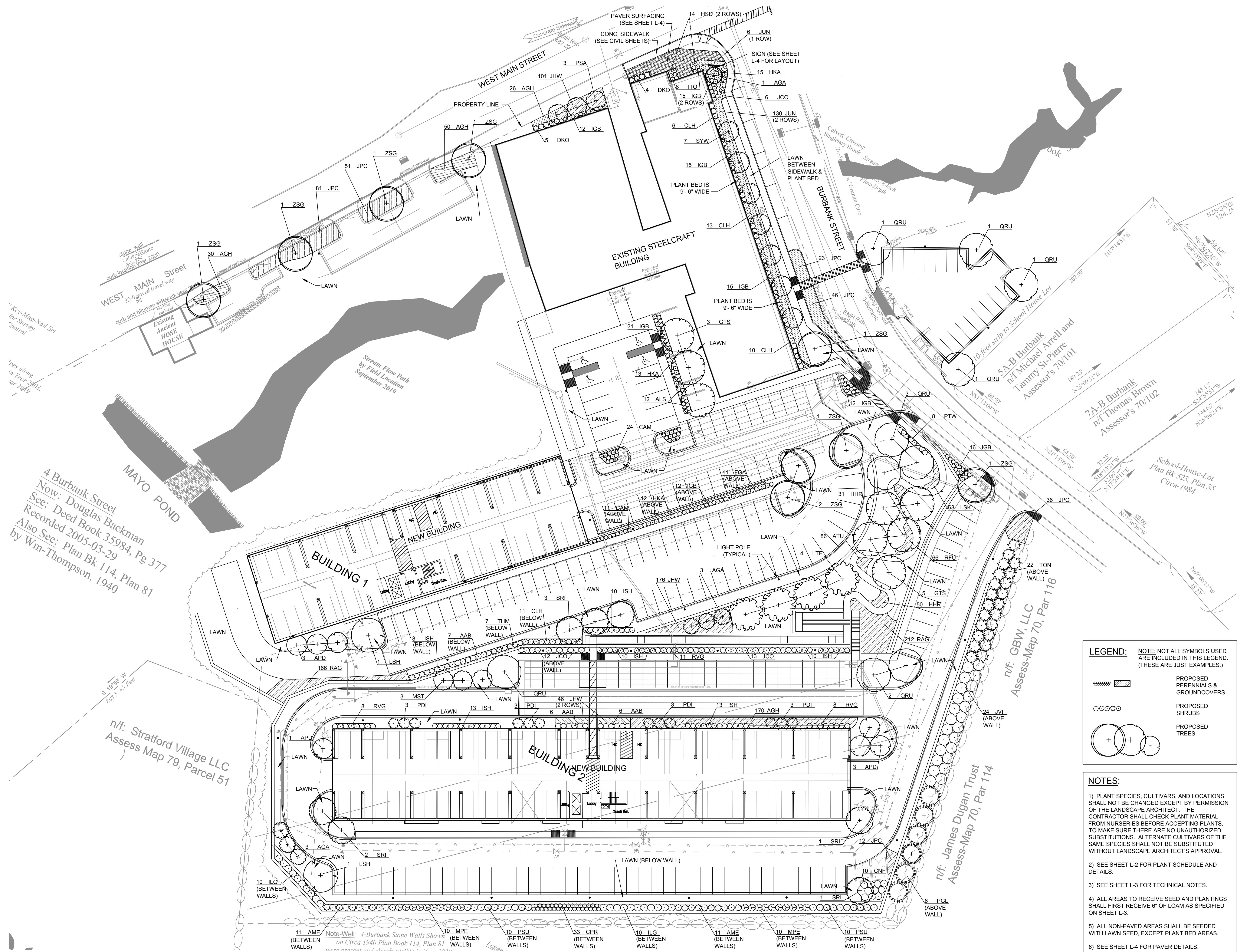


SCALE: 1" = 30'



LANDSCAPE PLAN

SHEET L-1



LEGEND:

	PROPOSED PERENNIALS & GROUNDCOVERS
	PROPOSED SHRUBS
	PROPOSED TREES

NOTES:

- 1) PLANT SPECIES, CULTIVARS, AND LOCATIONS SHALL NOT BE CHANGED EXCEPT BY PERMISSION OF THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL CHECK PLANT MATERIAL FROM NURSERIES BEFORE ACCEPTING PLANTS, TO MAKE SURE THERE ARE NO UNAUTHORIZED SUBSTITUTIONS. ALTERNATE CULTIVARS OF THE SAME SPECIES SHALL NOT BE SUBSTITUTED WITHOUT LANDSCAPE ARCHITECT'S APPROVAL.
- 2) SEE SHEET L-2 FOR PLANT SCHEDULE AND DETAILS.
- 3) SEE SHEET L-3 FOR TECHNICAL NOTES.
- 4) ALL AREAS TO RECEIVE SEED AND PLANTINGS SHALL FIRST RECEIVE 6" OF LOAM AS SPECIFIED ON SHEET L-3.
- 5) ALL NON-PAVED AREAS SHALL BE SEEDED WITH LAWN SEED, EXCEPT PLANT BED AREAS.
- 6) SEE SHEET L-4 FOR PAVER DETAILS.

4 Burbank Street
Now: Douglas Backman
See: Deed Book 35984, Pg 377
Recorded 2005-03-29
Also See: Plan Bk 114, Plan 81
by Wm-Thompson, 1940

n/f: Stratford Village LLC
Assess Map 79, Parcel 51

n/f: GBW, LLC
Assess-Map 70, Par 116

n/f: James Dugan Trust
Assess-Map 70, Par 114

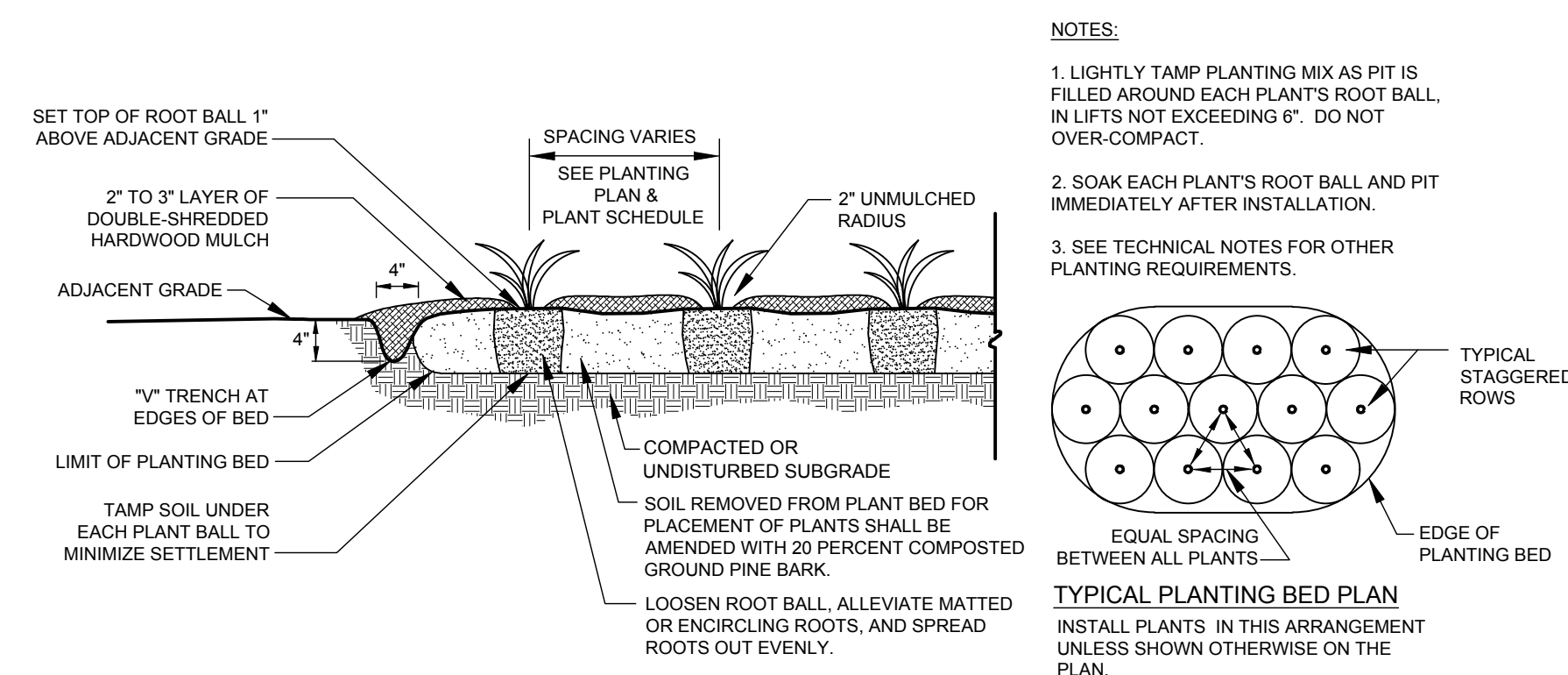
LEGEND: NOTE: NOT ALL SYMBOLS USED ARE INCLUDED IN THIS LEGEND. (THESE ARE JUST EXAMPLES.)

NOTES:

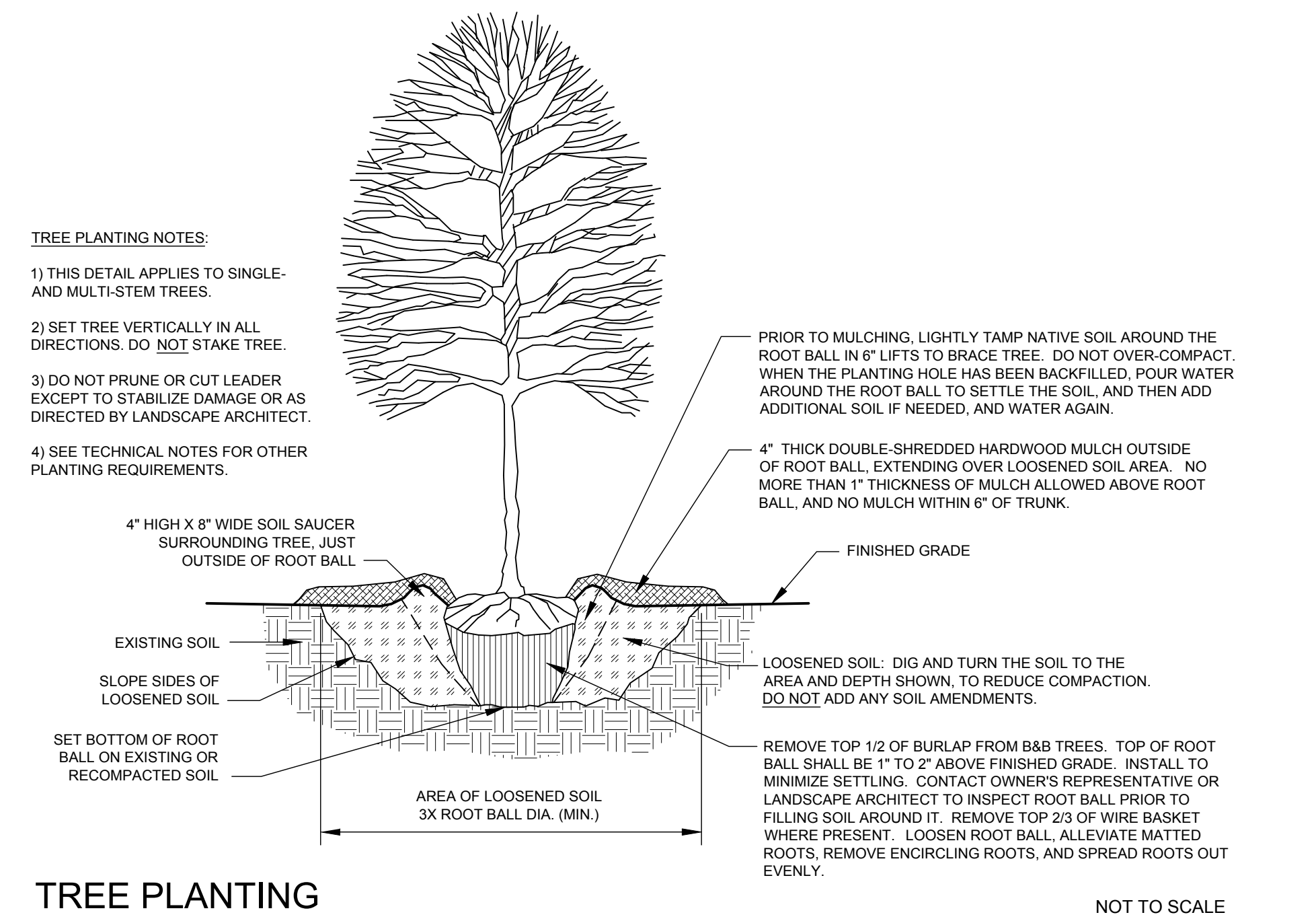
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- 6) SEE SHEET L-4 FOR PAVER DETAILS.

PLANT SCHEDULE					
SYMBOL	QTY.	BOTANICAL NAME	COMMON NAME	MINIMUM SIZE AT PLANTING	PLANT SPACING & NOTES
SHADE TREES:					
GTS	8	GLEDITZIA TRIACANTHOS VAR. INERMIS 'SKYLINE'	SKYLINE HONEYSUCKLE	2.5" CALIPER	B&B, PLANT 25' ON CENTER
LSH	2	LIQUIDAMBAR STYRACIFLUA 'HAPPIDAZE'	HAPPIDAZE SWEETGUM	2.5" CALIPER	B&B, PLANT 25' ON CENTER
LTE	4	LIRIODENDRON TULIPIFERA 'EMERALD CITY'	EMERALD CITY TULIP POPLAR	2.5" CALIPER	B&B, PLANT 25' ON CENTER
QRU	10	QUERCUS RUBRA	RED OAK	2.5" CALIPER	B&B, PLANT 25' ON CENTER
SRI	7	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK JAPANESE TREE LILAC	2.5" CALIPER	B&B, PLANT 20' ON CENTER
SYW	7	SYRINGA RETICULATA 'WILLAMETTE'	IVORY PILLAR JAPANESE TREE LILAC	2.5" CALIPER	B&B, PLANT 24' ON CENTER
ZSG	9	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2.5" CALIPER	B&B, PLANT 25' ON CENTER, OR FARTHER APART WHERE INDICATED
ORNAMENTAL AND EVERGREEN TREES:					
AGA	7	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8' HEIGHT	B&B, MULTI-STEM, PLANT 12' ON CENTER
APD	7	AMELANCHIER X GRANDIFLORA 'PRINCESS DIANA'	PRINCESS DIANA SERVICEBERRY	8' HEIGHT	B&B, MULTI-STEM, PLANT 15' ON CENTER
MST	3	MAGNOLIA STELLATA	STAR MAGNOLIA	8' HEIGHT	B&B, PLANT 15' ON CENTER
PGL	6	PICEA GLAUCA	WHITE SPRUCE	8' HEIGHT	B&B, PLANT 15' ON CENTER
PSA	3	PRUNUS SARGENTII 'COLUMNARIS'	COLUMNAR SARGENT CHERRY	8' HEIGHT	B&B, PLANT 15' ON CENTER
SHRUBS:					
AAB	19	ARONIA ARBUTIFOLIA 'BRILLIANTISSIMA'	BRILLIANT ARONIA	# 3 POT	PLANT 4' ON CENTER
ALS	12	ARONIA MELANOCARPA 'LOW SCAPE MOUND'	LOW SCAPE MOUND ARONIA	# 3 POT	PLANT 3' ON CENTER
AME	22	ARONIA MELANOCARPA (STRAIGHT SPECIES)	BLACK ARONIA	# 3 POT	PLANT 5' ON CENTER
CAM	35	CEANOTHUS AMERICANUS	NEW JERSEY TEA	# 3 POT	PLANT 3' ON CENTER
CLH	40	CLETHRA ALNIFOLIA 'HUMMINGBIRD'	HUMMINGBIRD SUMMERSWEET	# 3 POT	PLANT 4' ON CENTER
CNF	10	CLETHRA ALNIFOLIA (STRAIGHT SPECIES)	SUMMERSWEET	# 3 POT	PLANT 5' ON CENTER
CPR	33	COMPTONIA PEREGRINA	SWEETFERN	# 3 POT	PLANT 3' ON CENTER
DKO	9	DIERVILLA X 'KODIAK ORANGE'	KODIAK ORANGE BUSH HONEYSUCKLE	# 3 POT	PLANT 4' ON CENTER
FGA	11	FOTHERGILLA GARDENII	DWARF FOTHERGILLA	# 3 POT	PLANT 3' ON CENTER
HKA	40	HYPERICUM KALMIANUM 'DEPPE'	SUNNY BOULEVARD ST. JOHN'S WORT	# 3 POT	PLANT 3' ON CENTER. DO NOT SUBSTITUTE HYPERICUM 'HIDCOTE' FOR THIS PLANT.
IGB	120	ILEX GLABRA 'GEM BOX'	GEM BOX INKBERRY	# 3 POT	PLANT 3' ON CENTER. DO NOT SUBSTITUTE LARGER CULTIVAR FOR THIS PLANT.
ILG	20	ILEX GLABRA (STRAIGHT SPECIES)	INKBERRY	# 3 POT	PLANT 5' ON CENTER
ISH	64	ILEX GLABRA 'SHAMROCK'	SHAMROCK INKBERRY	# 3 POT	PLANT 4' ON CENTER
ITO	8	ILEX CRENATA 'SOFT TOUCH'	SOFT TOUCH HOLLY	# 3 POT	PLANT 3' ON CENTER. DO NOT SUBSTITUTE LARGER CULTIVAR FOR THIS PLANT.
JCO	31	JUNIPERUS CHINENSIS 'OLD GOLD'	OLD GOLD JUNIPER	# 3 POT	PLANT 4' ON CENTER
JVI	24	JUNIPERUS VIRGINIANA	EASTERN REDCEDAR	8' HEIGHT	PLANT 8' ON CENTER
MPE	20	MYRICA PENNSYLVANICA	NORTHERN BAYBERRY	# 3 POT	PLANT 5' ON CENTER
PDI	12	PHYSOCARPUS OPULIFOLIUS 'DIABOLO'	DIABOLO NINEBARK	5' HEIGHT	PLANT 8' ON CENTER
PSU	20	PHYSOCARPUS OPULIFOLIUS 'SUMMER WINE'	SUMMER WINE NINEBARK	# 3 POT	PLANT 5' ON CENTER
PTW	8	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	TINY WINE NINEBARK	# 3 POT	PLANT 3.5' ON CENTER. DO NOT SUBSTITUTE LARGER CULTIVAR FOR THIS PLANT.
RVG	27	ROSA VIRGINIANA	VIRGINIA ROSE	# 3 POT	PLANT 4' ON CENTER
THM	7	THUJA OCCIDENTALIS 'HETZ MIDGET'	HETZ MIDGET ARBOVITAE	# 3 POT	PLANT 4' ON CENTER. DO NOT SUBSTITUTE LARGER CULTIVAR FOR THIS PLANT.
TON	22	THUJA OCCIDENTALIS 'NIGRA'	DARK AMERICAN ARBOVITAE	8' HEIGHT	PLANT 8' ON CENTER
GROUNDCOVERS & PERENNIALS					
AGH	276	ARONIA MELANOCARPA 'GROUNDHOG'	GROUNDHOG ARONIA	# 2 POT	PLANT 30" ON CENTER
ATU	86	ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED	# 1 POT	PLANT 12" ON CENTER
HHR	81	HEMEROCALLIS X 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	# 1 POT	PLANT 18" ON CENTER
HSD	14	HEMEROCALLIS X 'STELLA D'ORO'	STELLA D'ORO DAYLILY	# 1 POT	PLANT 18" ON CENTER
JHW	323	JUNIPERUS HORIZONTALIS 'WILTONI'	BLUE RUG JUNIPER	# 2 POT	PLANT 2' ON CENTER
JPC	249	JUNIPERUS HORIZONTALIS 'PLUMOSA COMPACTA'	COMPACT ANDORRA JUNIPER	# 3 POT	PLANT 3' ON CENTER
JUN	136	JUNIPERUS PROCUMBENS 'NANA'	DWARF JAPANESE GARDEN JUNIPER	# 3 POT	PLANT 3' ON CENTER
LSK	68	LIATRIS SPICATA 'KOBOLD'	KOBOLD BLAZINGSTAR	# 1 POT	PLANT 15" ON CENTER
RAG	378	RHUS AROMATICA 'GRO-LOW'	GRO-LOW SUMAC	# 2 POT	PLANT 2' ON CENTER
RFU	66	RUDBECKIA FULGIDA 'GOLDSTURM'	GOLDSTURM BLACK-EYED SUSAN	# 1 POT	PLANT 18" ON CENTER

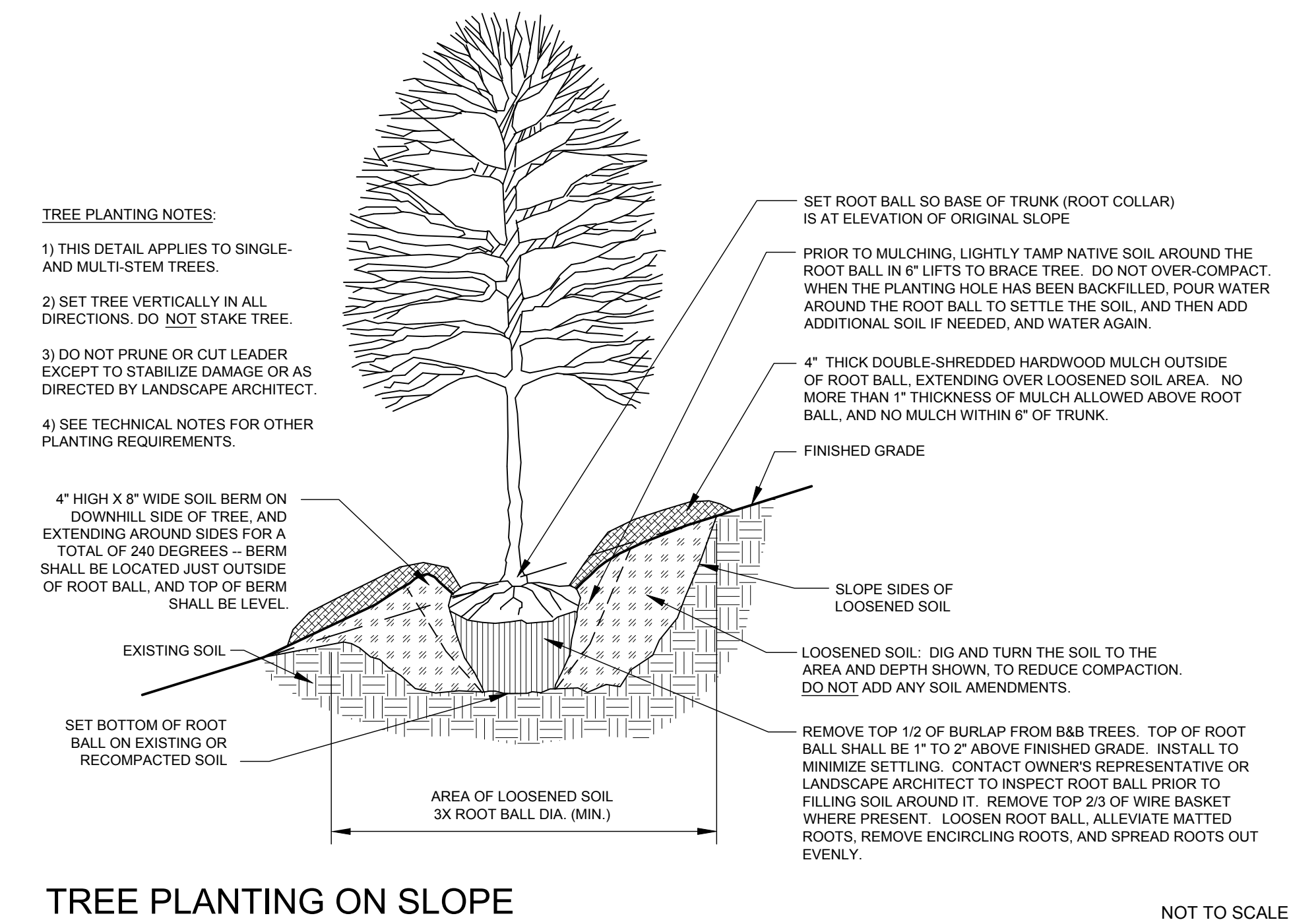
NOTE: PLANT SPECIES, CULTIVARS, SIZES, AND LOCATIONS SHALL NOT BE CHANGED EXCEPT BY PERMISSION OF THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL CHECK PLANT MATERIAL FROM NURSERIES BEFORE ACCEPTING PLANTS, TO MAKE SURE THERE ARE NO UNAUTHORIZED SUBSTITUTIONS. ALTERNATE CULTIVARS OF THE SAME SPECIES SHALL NOT BE SUBSTITUTED WITHOUT LANDSCAPE ARCHITECT'S APPROVAL.



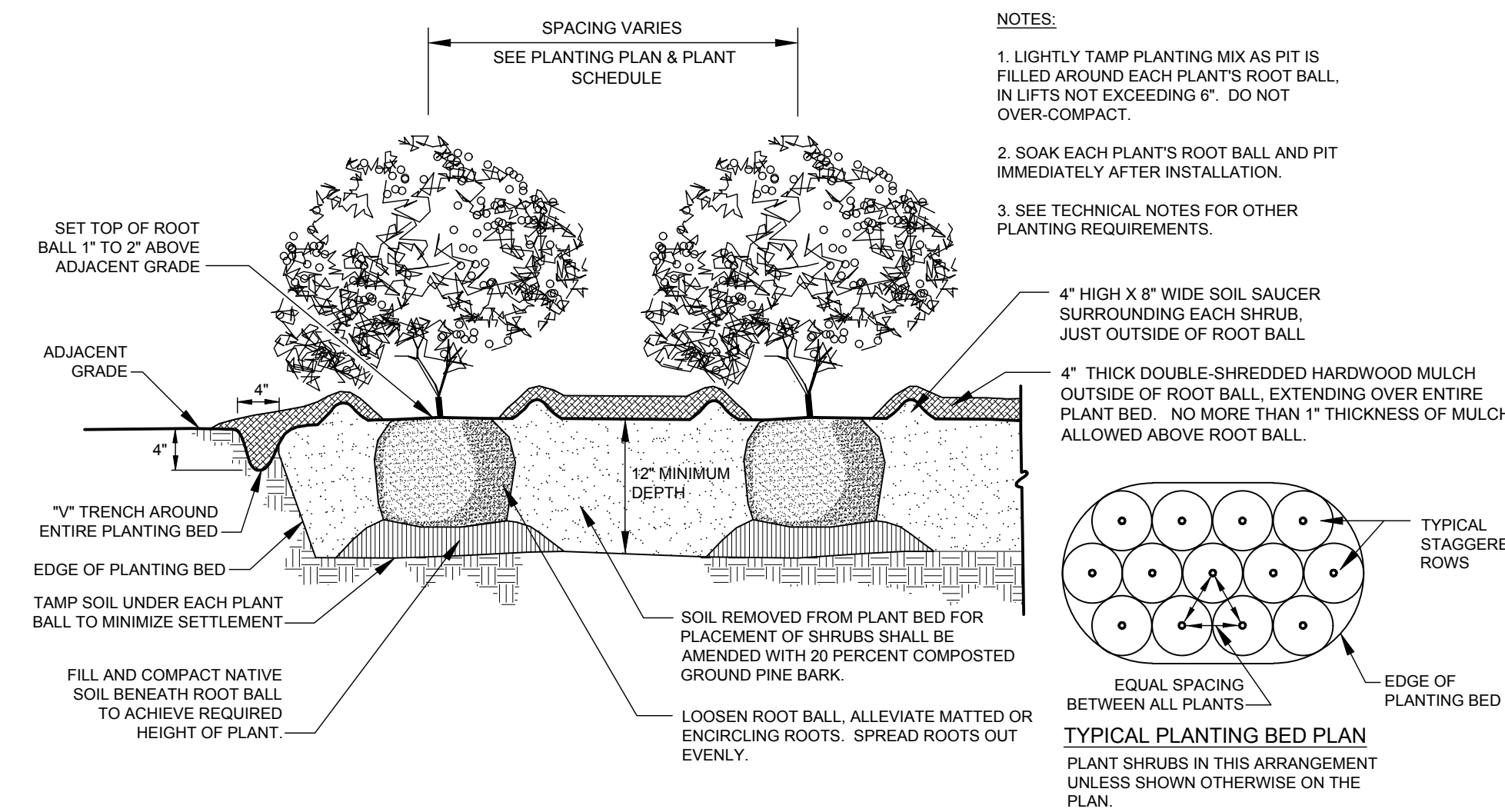
GROUNDCOVER & PERENNIAL PLANTING NOT TO SCALE



TREE PLANTING NOT TO SCALE



TREE PLANTING ON SLOPE NOT TO SCALE



SHRUB PLANTING NOT TO SCALE



PROJECT:
SINGLETERY ARMS
115 W. MAIN ST.
MILLBURY, MA

CLIENT:
DOUGLAS BACKMAN

DATE: 7-15-2020

REVISIONS:		
NO.	DATE	DESCRIPTION
1	11-9-20	RESPONSE TO TOWN OF MILLBURY COMMENTS
2	1-25-21	RESPONSE TO TOWN OF MILLBURY COMMENTS

NOT TO SCALE

LANDSCAPE SCHEDULE & DETAILS

SHEET L-2

TECHNICAL NOTES FOR LOAM BORROW:

- 1) **SCOPE OF WORK:** FOR THIS PROJECT, THE WORK SHALL INCLUDE PLACING LOAM ALL AREAS TO RECEIVE PLANTS AND TURFGRASS SEEDING.
- 2) THE CONTRACTOR SHALL FURNISH A CERTIFIED LABORATORY REPORT SHOWING THE SOILS CLASSIFICATION AND NUTRIENT ANALYSIS OF REPRESENTATIVE SAMPLES OF THE LOAM THIS IS PROPOSED TO BE USED, INCLUDING THE EXTENT OF LIME AND FERTILIZER REQUIRED. ALL COSTS FOR SUCH WORK SHALL BE BORNE BY THE CONTRACTOR.
- 3) IN ACCORDANCE WITH THE SPECIFIC REQUIREMENTS OF THIS PROJECT, EXISTING ON-SITE SOIL MAY BE RE-USED AS LOAM BORROW ONLY IF IT MEETS THIS SPECIFICATION. EXISTING TOPSOIL THAT DOES NOT MEET THIS SPECIFICATION MAY BE RE-USED ONLY UP TO THE SUBGRADE ELEVATION WITHIN THE LIMITS OF AREAS TO RECEIVE NEW LOAM BORROW. THE CONTRACTOR SHALL FURNISH ALL REQUIRED LOAM BORROW, FROM OFF-SITE SOURCES, AS NECESSARY, TO COMPLETE THE PROJECT.
- 4) SCREENED LOAM SHALL BE "FINE SANDY LOAM" OR "SANDY LOAM" DETERMINED BY MECHANICAL ANALYSIS (ASTM D-422) AND BASED ON THE "USDA CLASSIFICATION SYSTEM". SCREENED LOAM SHALL HAVE THE FOLLOWING MECHANICAL ANALYSIS:
- | <u>TEXTURAL CLASS PERCENTAGE</u> | <u>PERCENTAGE OF TOTAL WEIGHT</u> | <u>AVERAGE PERCENTAGE</u> |
|----------------------------------|-----------------------------------|---------------------------|
| SAND
(0.05 - 2.0 MM) | 45 - 75 | 60 |
| SILT
(0.002 - 0.05 MM) | 5 - 35 | 25 |
| CLAY
(LESS THAN 0.002 MM) | 5 - 20 | 15 |
- 5) SCREENED LOAM SHALL BE A NATURAL PRODUCT CONSISTING PRIMARILY OF NATURAL TOPSOIL, FREE FROM SUBSOIL, AND OBTAINED FROM AN AREA THAT HAS NEVER BEEN STRIPPED BEFORE. SCREENED LOAM SHALL NOT CONTAIN LESS THAN FIVE PERCENT (5%) NOR MORE THAN TEN PERCENT (10%) ORGANIC MATTER. TO ADJUST ORGANIC MATTER CONTENT, THE SOIL MAY BE AMENDED, PRIOR TO SITE DELIVERY, BY THE ADDITION OF COMPOSTED LEAF MOLD OR PEAT MOSS. NO MIXING OR AMENDING OF LOAM IS PERMITTED ON SITE.
- 6) THE LOAM SHALL NOT BE DELIVERED IN A WET OR FROZEN CONDITION.
- 7) SCREENED LOAM SHALL CONSIST OF FERTILE, FRIABLE, LOAM CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH. LOAM SHALL BE WITHOUT ADMIXTURE OF SUBSOIL AND REFUSE. IT SHALL BE A HOMOGENEOUS MATERIAL FREE OF STONES GREATER THAN ONE-HALF (1/2) INCH IN THE LONGEST DIMENSION; FREE OF LUMPS, PLANTS, GRASS, ROOTS, STICKS, EXCESSIVE STONE CONTENT, DEBRIS, AND EXTRANEOUS MATTER AS DETERMINED BY THE OWNER.
- 8) SCREENED LOAM SHALL BE WITHIN THE PH RANGE OF 6.0 TO 6.5. IT SHALL BE UNCONTAMINATED BY SALT WATER, FOREIGN MATTER, AND SUBSTANCES HARMFUL TO PLANT GROWTH. THE MAXIMUM SOLUBLE SALT INDEX SHALL BE 100. SCREENED LOAM SHALL NOT HAVE LEVELS OF ALUMINUM GREATER THAN 200 PARTS PER MILLION.
- 9) SEE TURFGRASS NOTES FOR LIME AND FERTILIZER REQUIREMENTS FOR LAWN AREAS.
- 10) TOPSOIL STRUCTURE SHALL NOT BE DESTROYED THROUGH EXCESSIVE AND UNNECESSARY HANDLING OR COMPACTION. INAPPROPRIATE HANDLING LEADING TO THE COMPACTION OF DETERIORATION OF SOIL STRUCTURE WILL RESULT IN REJECTION OF TOPSOIL FOR USE.
- 11) AT NO TIME SHALL EQUIPMENT OR MATERIAL REST ON THE SOIL.

12) THE CONTRACTOR SHALL FURNISH AND SPREAD LOAM TO A MINIMUM 6 INCH DEPTH (AFTER SOIL SETTLEMENT) IN ALL LAWN AND PLANT BED AREAS. SUBSOIL SHALL BE SCARIFIED PRIOR TO PLACEMENT OF LOAM. THE TOP OF THE SETTLED LOAM BORROW LAYER SHALL BE TO GRADES SPECIFIED ON THE DRAWINGS. NO COMPACTION SHALL BE REQUIRED BEYOND THAT EXTENT NECESSARY TO PLACE SOD OR OR TO PLANT TREES AND SHRUBS TO ENSURE AGAINST UNEVENNESS OR SETTLING BELOW ACCEPTED GROWTH LINES.

TECHNICAL NOTES FOR TURFGRASS SEEDING:

- 1) **SCOPE OF WORK:** FOR THIS PROJECT, THE WORK SHALL INCLUDE SEEDING AREAS DENUDED BY CONSTRUCTION.
- 2) ALL AREAS SHALL BE SEEDDED WITHIN 30 DAYS AFTER FINISHED GRADES ARE ESTABLISHED AND OTHER ELEMENTS INCLUDED IN THIS CONTRACT ARE CONSTRUCTED.
- 3) **TURFGRASS SEED SPECIFICATIONS:**
- B) AREAS RECEIVING FULL SUN OR PART SHADE
- FESCUE/BLUEGRASS/PERENNIAL RYEGRASS MIXTURE:**
MIXTURE REQUIREMENTS ARE AS FOLLOWS (WITH APPROXIMATE PERCENTAGES):
35% FINE FESCUE (ENDOPHYTIC)
35% KENTUCKY BLUEGRASS
30% PERENNIAL RYEGRASS (ENDOPHYTIC)
- C) AREAS RECEIVING MOSTLY SHADE:
- FESCUE/PERENNIAL RYEGRASS MIXTURE:**
MIXTURE REQUIREMENTS ARE AS FOLLOWS (WITH APPROXIMATE PERCENTAGES):
90% FINE FESCUE (ENDOPHYTIC)
10% PERENNIAL RYEGRASS (ENDOPHYTIC)
- D) ANY PROPOSED SUBSTITUTIONS SHALL BE PRESENTED TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO SEEDING.
- E) ALL TURFGRASS SEED SHALL HAVE A MINIMUM PURITY OF 98 PERCENT AND A GERMINATION RATE OF 85 PERCENT.
- F) ALL TURFGRASS SEED SHALL BE LABELED TO SHOW THAT IT IS WITHIN THE REQUIREMENTS OF THE USDA AS TO PURITY, GERMINATION, AND PRESENCE OF RESTRICTED OR PROHIBITED WEEDS.
- 4) **BED PREPARATION FOR AREAS TO BE SEEDDED WITH TURFGRASS:** A ROTOVATOR, CHISEL PLOW, OR CULTIVATOR SHALL BE USED TO WORK THE SOIL TO A DEPTH OF SIX INCHES. AFTER THIS OPERATION, REMOVE AND DISPOSE OF STICKS, STONES OVER 1 INCH DIAMETER, AND RUBBISH TO A MINIMUM DEPTH OF TWO INCHES.
- 5) **LIME AND NUTRIENTS FOR TURFGRASS AREAS:** LIME SHALL BE GROUND DOLOMITIC LIMESTONE, APPLIED AT THE RATE OF 50 POUNDS PER 1000 SQUARE FEET. LIME SHALL BE WELL-MIXED INTO THE TOP THREE INCHES OF LOAM.
- 6) **FERTILIZER FOR TURFGRASS AREAS:** FERTILIZER SHALL BE A COMMERCIAL GRADE WITH A MINIMUM OF 50 PERCENT OF THE NITROGEN COMPONENT IN A CONTROLLED RELEASE FORM LABELED TO RELEASE NITROGEN FOR A MINIMUM OF SIX WEEKS. FERTILIZER SHALL HAVE AN N/P/K RATIO IN THE RANGE OF 1:1:1 TO 1:2:2. IT SHALL BE APPLIED AT A RATE WHICH ACHIEVES ONE POUND OF NITROGEN PER 1000 SQUARE FEET.
- 7) **SEEDING PROCEDURE FOR TURFGRASS:** SOWING OF SEED SHALL BE DONE ONLY AFTER THE PREPARED SOIL, TO WHICH LIME AND FERTILIZER HAVE BEEN ADDED AS SPECIFIED, HAS BEEN THOROUGHLY SETTLED BY RAINFALL OR ARTIFICIAL WATERING. IMMEDIATELY BEFORE ANY SEED IS SOWN, THE GROUND SHALL BE SCARIFIED AS SPECIFIED. LAWN AREAS SHALL BE SEEDDED EVENLY WITH A MECHANICAL SPREADER. SEED MIXTURES SHALL BE SOWN AT A RATE OF 5 POUNDS PER 1000 SQUARE FEET. AFTER SEEDING, THE LAWN SHALL BE LIGHTLY RAKED, ROLLED WITH A 200-POUND ROLLER, AND WATERED WITH A FINE SPRAY. THIS METHOD OF SEEDING MAY BE VARIED AT THE DISCRETION OF THE CONTRACTOR ON HIS OWN RESPONSIBILITY TO ESTABLISH A SMOOTH, UNIFORMLY GRASSED LAWN.
- 8) SEED FOR PERMANENT TURFGRASS SHALL ONLY BE SOWN FROM THE THIRD WEEK IN APRIL THROUGH JUNE AND DURING THE MONTH OF SEPTEMBER.
- 9) **TEMPORARY SEEDING FOR EROSION CONTROL:** IN THE EVENT THAT THE CONTRACT IS SUSPENDED, TEMPORARY SEEDING SHALL BE USED ON ANY BARE AREAS THAT MAY BE SUBJECT TO EROSION AND WHERE TEMPORARY VEGETATION CAN BE USED TO RETARD EROSION FROM 2 TO 12 MONTHS. THE SEED TYPE USED FOR TEMPORARY COVER SHALL BE 100 PERCENT TALL FESCUE APPLIED AT A RATE OF 300 POUNDS PER ACRE.
- 10) **MAINTENANCE:** MAINTAIN THE TURFGRASS FROM TIME OF INSTALLATION UNTIL THE FINAL INSPECTION IMMEDIATELY PRIOR TO THE BEGINNING OF THE GUARANTEE PERIOD. MAINTENANCE SHALL INCLUDE WATERING OF TURF AREAS, REPAIRS TO TURF AREAS, AND OTHER NECESSARY OPERATIONS. THE MAINTAINED TURF AREAS SHALL BE MOWED TO A UNIFORM HEIGHT OF APPROXIMATELY TWO AND ONE-HALF INCHES. MOWING SHALL BE PROVIDED AS REQUIRED SO THAT THE TURF NEVER EXCEEDS FOUR INCHES IN HEIGHT. TURF SHALL BE PROTECTED AND REPLANTED AS NECESSARY TO ESTABLISH A UNIFORM STAND OF THE SPECIFIED TURF AND UNTIL ACCEPTANCE. SCATTERED BARE SPOTS, NONE OF WHICH IS LARGER THAN ONE SQUARE FOOT, WILL BE ALLOWED UP TO A MAXIMUM OF THREE PERCENT OF ANY TURF AREA. WHEN TURF AREAS ARE READY FOR FINAL INSPECTION, THE MAINTAINED TURF AREAS SHALL BE NEATLY MOWED TO THE UNIFORM HEIGHTS AS NOTED ABOVE. THE LAWNS SHALL BE CONSIDERED ESTABLISHED ONLY WHEN THE SPECIFIED GRASS IS VIGOROUS AND GROWING WELL IN ADDITION TO MEETING THE OTHER REQUIREMENTS SPECIFIED. AT THE TIME OF ACCEPTANCE FOLLOWING FINAL INSPECTION, THE CONTRACTOR IS RELIEVED OF ROUTINE MAINTENANCE RESPONSIBILITIES FOR THE TURF UNDER THIS CONTRACT.
- 11) **FINAL INSPECTION, CLEANUP AND COMPLETION:** FINAL INSPECTION SHALL BE FOR THE COMPLETED LANDSCAPE AND SHALL BE MADE AT THE CONCLUSION OF THE LANDSCAPE WORK. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL REMOVE FROM THE SITE ALL EQUIPMENT AND OTHER ARTICLES USED. ALL EXCESS SOIL, STONES, AND DEBRIS SHALL BE REMOVED FROM THE SITE. ALL WORK AREAS SHALL BE LEFT IN A CLEAN AND NEAT CONDITION. ALL DAMAGE TO EXISTING CONSTRUCTION CAUSED BY THE LANDSCAPING OPERATIONS SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER AT THE CONTRACTOR'S EXPENSE.
- 12) **GUARANTY AND REPLACEMENT:** IF A SATISFACTORY STAND OF MAINTAINED TURF HAS BEEN PRODUCED AT THE TIME OF FINAL INSPECTION, IT SHALL BE GUARANTEED THROUGH ONE COMPLETE GROWING SEASON. IF RENOVATION AND/OR RESEEDING ARE REQUIRED AT THE END OF THE GUARANTEE PERIOD, THIS WORK SHALL BE DONE IN CONFORMANCE WITH THE REQUIREMENTS NOTED ABOVE. IF A SATISFACTORY STAND OF MAINTAINED TURF HAS NOT BEEN PRODUCED AT THE TIME OF FINAL INSPECTION, NECESSARY REPAIRS SHALL BE PERFORMED IN CONFORMANCE WITH THE REQUIREMENTS NOTED ABOVE. UPON COMPLETION OF THESE REPAIRS, THE TURF GRASS SHALL BE GUARANTEED AS NOTED ABOVE.

TECHNICAL NOTES FOR TREE, SHRUB, GROUND COVER, AND PERENNIAL PLANTINGS:

- 1) **NOMENCLATURE:** THE NAMES OF PLANTS REQUIRED UNDER THIS CONTRACT SHALL CONFORM TO THOSE GIVEN IN STANDARDIZED PLANT NAMES, LATEST EDITION, PREPARED BY THE AMERICAN JOINT COMMITTEE ON HORTICULTURAL NOMENCLATURE. NAMES OF VARIETIES NOT INCLUDED THEREIN SHALL CONFORM GENERALLY WITH NAMES ACCEPTED IN THE NURSERY TRADE.
- 2) **QUALITY AND SIZE:** PLANTS SHALL HAVE A HABIT OF GROWTH THAT IS NORMAL FOR THE SPECIES AND SHALL BE SOUND, HEALTHY, VIGOROUS, AND FREE FROM INSECT PESTS, PLANT DISEASES, AND INJURIES. ALL PLANTS SHALL EQUAL OR EXCEED THE MEASUREMENTS SPECIFIED IN THE PLANT LIST, WHICH ARE MINIMUM ACCEPTABLE SIZES. THEY SHALL BE MEASURED BEFORE PRUNING IS DONE AT TIME OF PLANTING. REQUIREMENTS FOR THE MEASUREMENTS, BRANCHING, GRADING, QUALITY, BALLING, AND BURLAPPING OF PLANTS IN THE PLANT LIST SHALL FOLLOW THE CODE OF STANDARDS CURRENTLY RECOMMENDED BY THE AMERICAN ASSOCIATIONS OF NURSERYMEN, INC., IN THE AMERICAN STANDARD FOR NURSERY STOCK.
- 3) **SUBSTITUTIONS:** SUBSTITUTIONS WILL BE PERMITTED ONLY UPON SUBMISSION OF PROOF THAT ANY PLANT AS SPECIFIED IS NOT OBTAINABLE DURING THE SCHEDULED PLANTING SEASON. WRITTEN AUTHORIZATION BY THE LANDSCAPE ARCHITECT SHALL BE REQUIRED FOR ANY SUBSTITUTION. THE NEAREST EQUIVALENT SIZE OR VARIETY OF PLANT HAVING THE SAME ESSENTIAL CHARACTERISTICS SHALL BE PROPOSED FOR SUBSTITUTION.
- 4) **BALLED AND BURLAPPED MATERIALS:** PLANTS DESIGNATED "B&B" IN THE PLANT LIST SHALL BE BALLED AND BURLAPPED. THEY SHALL BE DUG WITH FIRM, NATURAL BALLS OF EARTH OF SUFFICIENT DIAMETER AND DEPTH TO ENCOMPASS THE FIBROUS AND FEEDING ROOT SYSTEM NECESSARY FOR FULL RECOVERY OF THE PLANT. MATERIAL SHALL BE IN A CONDITION WHERE THE NATURAL ROOT COLLAR OF THE PLANT IS WITHIN APPROXIMATELY TWO (2) INCHES OF THE SOIL LEVEL OF THE BALL. BALLS SHALL BE FIRMLY WRAPPED WITH BURLAP OR SIMILAR MATERIAL AND BOUND WITH TWINE, CORD, OR WIRE MESH. NO SYNTHETIC FABRIC IS ALLOWED. WHERE NECESSARY TO PREVENT BREAKING OR CRACKING OF THE BALL DURING THE PROCESS OF PLANTING, THE BALL MAY BE SECURED TO A PLATFORM. BALLS SHALL BE KEPT MOIST AND SHADED UNTIL THEY ARE PLANTED. REMOVE ALL BALL TIES OR STRAPPING FROM ROOT BALL PRIOR TO PLANTING. PLANT IN ACCORDANCE WITH TREE AND SHRUB PLANTING DETAILS.
- 5) **CONTAINER-GROWN MATERIALS:** PLANTS NOT DESIGNATED OTHERWISE IN THE PLANT LIST MAY BE PURCHASED AS CONTAINER-GROWN OR BALLED/BURLAPPED. CONTAINER-GROWN PLANTS, IF STORED ON THE SITE, SHALL BE WATERED THOROUGHLY AT LEAST ONCE EVERY 48 HOURS. ROOT SYSTEMS OF CONTAINER-GROWN PLANTS SHALL BE WELL-DEVELOPED BUT NOT IN "POT-BOUND" CONDITION OF DENSE, ENCIRCLING ROOTS. THE ROOT BALL OF THE PLANT SHALL BE LOOSENED TO ALLEVIATE ENCIRCLING ROOTS AND TO PROVIDE AN INCREASED ROOT INTERFACE WITH THE FILL SOIL. PLANT IN ACCORDANCE WITH TREE, SHRUB, AND GROUND COVER PLANTING DETAILS.
- 6) **PROTECTION OF PLANTS PRIOR TO INSTALLATION:** THE ROOT ZONE OF ALL PLANTS NOT YET INSTALLED SHALL BE PROTECTED FROM FREEZING, DRYING, AND DIRECT SUNLIGHT.
- 7) **MULCHING:** DOUBLE-SHREDDED HARDWOOD MULCH SHALL BE USED AS THE MULCH FOR ALL PLANT BEDS INDICATED ON THE LANDSCAPE PLAN, INCLUDING AREAS SURROUNDING THE PLANTS AS SHOWN ON THE TREE, SHRUB, AND GROUND COVER PLANTING DETAILS.
- 8) **PLANTING SEASON:** THE NORMAL PLANTING SEASON IS APRIL THROUGH NOVEMBER. SOME PLANTS SPECIFIED AS BALLED AND BURLAPPED CANNOT BE DUG DURING PORTIONS OF THIS PLANTING SEASON -- CHECK WITH NURSERIES FOR SPECIFICS. PLANTING OPERATIONS SHALL BE CONDUCTED UNDER FAVORABLE WEATHER CONDITIONS DURING THE NORMAL PLANTING SEASON.
- 9) **WEATHER CONDITIONS:** PLANTING SHALL NOT TAKE PLACE WHEN SOILS ON SITE ARE FROZEN OR WET AND IN POOR TILTH.
- 10) **LAYOUT:** NEW PLANTINGS SHALL BE LOCATED ACCORDING TO THE LANDSCAPE PLAN. THE CONTRACTOR SHALL STAKE THE PLANT LOCATIONS, AND SHALL THEN CONTACT THE LANDSCAPE ARCHITECT FOR APPROVAL.
- 11) **SETTING PLANTS:** ALL PLANTS SHALL BE PLANTED IN PREPARED SOILS BEDS, AND SET ON FIRM SOIL TO SUCH DEPTH AS INDICATED IN THE PLANTING DETAILS. TREES, SHRUBS, GROUND COVERS, AND PERENNIALS SHALL BE SET SO THAT THE PLANT'S NATURAL ROOT COLLAR OR CROWN IS ABOVE FINISHED GRADE AT THE HEIGHTS INDICATED IN THE PLANTING DETAILS. NO BURLAP SHALL BE PULLED FROM UNDER THE BALLS. ROOTS ON BARE-ROOT PLANTS SHALL BE SPREAD IN THEIR NORMAL POSITION. ALL BROKEN OR FRAYED ROOTS SHALL BE CUT OFF CLEANLY. PREPARED SOIL SHALL BE PLACED AND COMPACTED CAREFULLY TO AVOID INJURY TO ROOTS. TO FILL ALL VOIDS, AND TO MINIMIZE ROCKING OF ROOT BALL. ADD WATER AND TAMP THE BACKFILL UNTIL THE BACKFILL IS COMPLETELY SATURATED, THEN ALLOW IT TO SOAK AWAY. FILL THE HOLE TO FINISHED GRADE, AND FORM A SAUCER AROUND EACH TREE AND SHRUB BY PLACING A RIDGE OF TOPSOIL AROUND THE EDGE OF EACH ROOT BALL, IN ACCORDANCE WITH THE PLANTING DETAILS. AFTER THE GROUND SETTLES, ADDITIONAL SOIL SHALL BE FILLED IN TO THE LEVEL OF THE FINISHED GRADE, AND WATERED.
- 12) **STAKING TREES:** DO NOT STAKE TREES, UNLESS TREES ARE PLANTED ON STEEP SLOPES, IN WHICH CASE THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT FOR PERMISSION TO STAKE THOSE TREES.
- 13) **MAINTENANCE:** MAINTAIN PLANTS AND PLANT BEDS FROM THE TIME OF INSTALLATION UNTIL THE FINAL INSPECTION IMMEDIATELY PRIOR TO COMMENCEMENT OF THE GUARANTEE PERIOD. MAINTENANCE SHALL INCLUDE WATERING AND PROTECTION OF PLANTINGS AND OTHER NECESSARY OPERATIONS.
- 14) **FINAL INSPECTION:** WHEN THE TREE AND SHRUB PLANTINGS ARE READY FOR FINAL INSPECTION, ALL MULCHED AREAS SHALL BE FREE FROM WEEDS AND MULCHED TO THE EXTENT INDICATED ON THESE DRAWINGS. PLANT TAGS SHALL BE REMOVED BY THE CONTRACTOR PRIOR TO THE INSPECTION FOR ACCEPTANCE.
- 15) **GUARANTEE:** AFTER ACCEPTANCE AT TIME OF FINAL INSPECTION, ALL PLANTS SHALL BE GUARANTEED FOR ONE (1) YEAR. PLANTINGS SHALL BE ALIVE AND IN SATISFACTORY VIGOR AT THE END OF THE GUARANTEE PERIOD.
- 16) **REPLACEMENT:** AT THE END OF THE GUARANTEE PERIOD, ANY PLANT REQUIRED UNDER THIS CONTRACT THAT IS DEAD OR IN POOR VIGOR SHALL BE REMOVED FROM THE SITE. THESE AND ANY MISSING PLANTS SHALL BE REPLACED AS SOON AS CONDITIONS PERMIT, BUT DURING THE NORMAL PLANTING SEASON. ALL REPLACEMENTS SHALL BE PLANTS OF THE SAME KIND AS ORIGINALLY PLANTED AND SHALL BE OF SIZE EQUAL TO THAT ATTAINED BY ADJACENT PLANTS OF THE SAME KIND AT THE TIME REPLACEMENT IS MADE. ONLY ONE REPLACEMENT WILL BE REQUIRED FOR EACH PLANT DECLARED DEAD, IN AN UNHEALTHY OR BADLY IMPAIRED CONDITION, OR MISSING AT THE TIME OF FINAL INSPECTION.



PROJECT:
SINGLETERY ARMS
115 W. MAIN ST.
MILLBURY, MA

CLIENT:
DOUGLAS BACKMAN

DATE: 7-15-2020

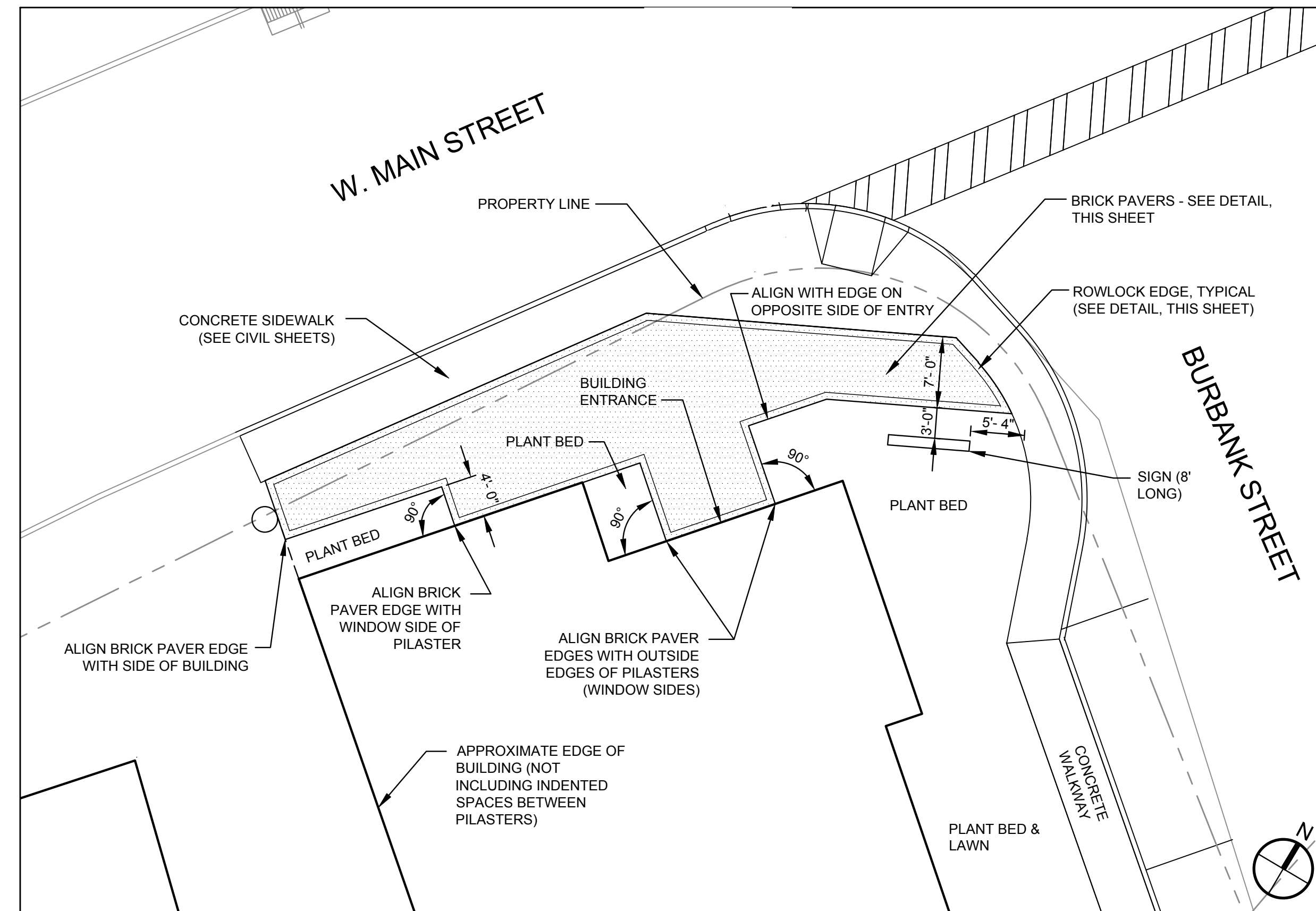
REVISIONS:

NO.	DATE	DESCRIPTION
1	11-9-20	RESPONSE TO TOWN OF MILLBURY COMMENTS
2	1-25-21	RESPONSE TO TOWN OF MILLBURY COMMENTS

NOT TO SCALE

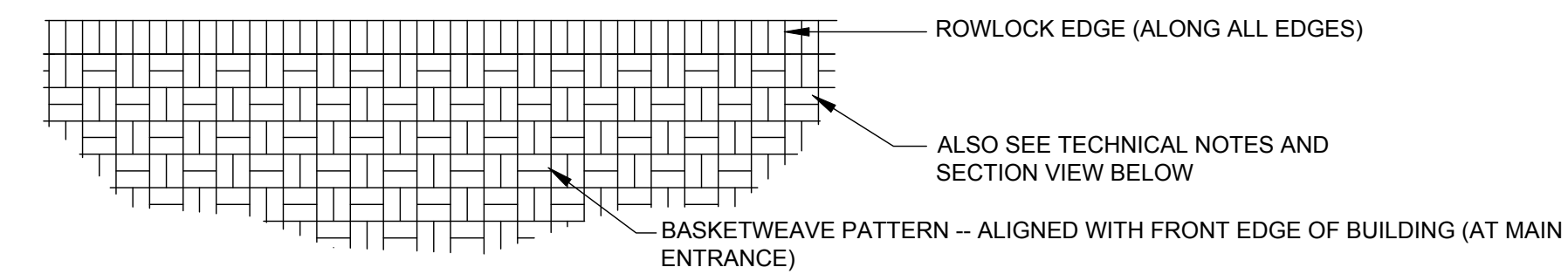
LANDSCAPE NOTES

SHEET L-3

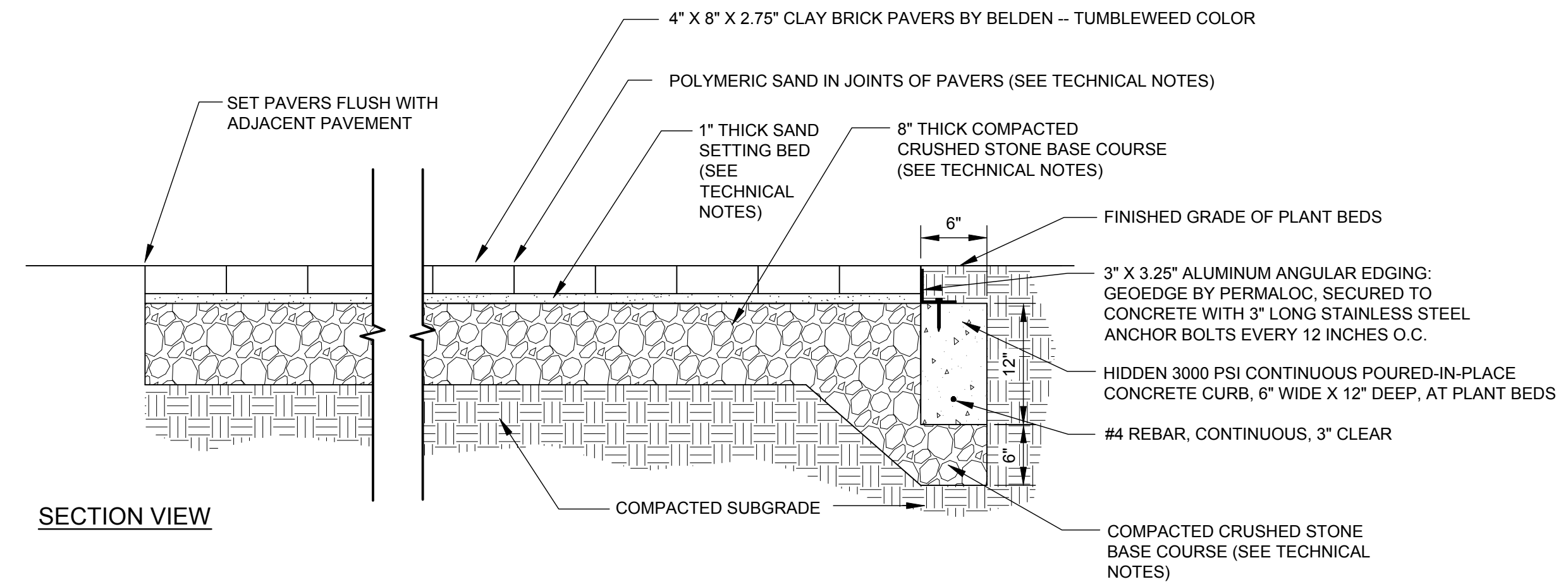


BRICK PAVER SURFACING AT MAIN BUILDING ENTRANCE

SCALE: 1" = 10'



PLAN VIEW: TYPICAL PAVER PATTERN



SECTION VIEW

BRICK PAVER SURFACING

NOT TO SCALE

TECHNICAL NOTES FOR BRICK UNIT PAVING

1) SOME OF THE PRODUCTS AND EXECUTION METHODS ARE SPECIFIED IN THIS SECTION BY REFERENCE TO PUBLISHED SPECIFICATIONS OR STANDARDS OF THE FOLLOWING, WITH RESPECTIVE ABBREVIATIONS USED:

- A) AASHTO: AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
- B) ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS
- C) MA DOT: MASSACHUSETTS DEPARTMENT OF TRANSPORTATION

2) REQUIRED INSTALLER QUALIFICATIONS: AN EXPERIENCED INSTALLER WHO HAS COMPLETED UNIT PAVER INSTALLATIONS SIMILAR IN MATERIAL, DESIGN, AND EXTENT TO THAT INDICATED FOR THIS PROJECT, AND WHOSE WORK HAS RESULTED IN CONSTRUCTION WITH A RECORD OF SUCCESSFUL IN-SERVICE PERFORMANCE.

3) THE CONTRACTOR SHALL PROTECT BRICKS, SAND, AND AGGREGATE DURING STORAGE AND CONSTRUCTION AGAINST SOILING OR CONTAMINATION FROM EARTH AND OTHER MATERIALS. BRICKS SHALL BE COVERED WITH PLASTIC OR OTHER PACKAGING MATERIALS THAT WILL PREVENT RUST MARKS FROM STEEL STRAPPING, WHEN PRESENT. THE CONTRACTOR SHALL STORE CEMENTITIOUS MATERIALS ON ELEVATED PLATFORMS, UNDER COVER, AND IN A DRY LOCATION.

4) THE CONTRACTOR SHALL NOT USE FROZEN MATERIALS OR MATERIALS MIXED OR COATED WITH ICE OR FROST. HE/SHE SHALL NOT BUILD ON FROZEN SUBGRADE OR SETTING BEDS. HE/SHE SHALL REMOVE AND REPLACE UNIT PAVER WORK DAMAGED BY FROST OR FREEZING.

5) CLAY BRICKS SHALL BE 4" X 8" X 2.75" THICK, TUMBLEWEED COLOR, BY THE BELDEN BRICK CO., PHONE # 330-451-2031, WWW.BELDENBRICK.COM

6) ALUMINUM EDGE RESTRAINTS SHALL BE GEOEDGE BY PERMALOC, PHONE # 616-39-9600, WWW.PERMALOC.COM. ANCHOR BOLTS SHALL BE 3" LONG STAINLESS STEEL.

7) SAND FOR LEVELING COURSE SHALL BE WASHED CONCRETE SAND, FREE OF SOIL AND OTHER FOREIGN DEBRIS.

8) POLYMERIC SAND FOR JOINTS SHALL CONSIST OF CLEAR POLYMERS, AND SHALL NOT CONTAIN ANY PORTLAND CEMENT.

9) AGGREGATE BASE COURSE SHALL BE 3/4" CRUSHED STONE AND SHALL MEET THE REQUIREMENTS OF MA DOT SPECIFICATION SECTION M2.01.4 OF DIVISION 3 -- MATERIALS.

10) THE CONTRACTOR SHALL NOT USE ANY BRICKS THAT HAVE CHIPS, CRACKS, VOIDS, DISCOLORATIONS, AND OTHER DEFECTS THAT MIGHT BE VISIBLE OR CAUSE STAINING IN FINISHED WORK.

11) WHEN CUTTING IS NECESSARY, THE CONTRACTOR SHALL CUT BRICKS WITH MOTOR-DRIVEN MASONRY SAW EQUIPMENT TO PROVIDE CLEAN, SHARP, UN-CHIPPED EDGES. HE/SHE SHALL CUT UNITS TO PROVIDE PATTERN INDICATED AND TO FIT ADJOINING WORK NEATLY. HE/SHE SHALL USE FULL UNITS WITHOUT CUTTING WHERE POSSIBLE. HAMMER CUTTING IS NOT ACCEPTABLE.

12) JOINT AND COLOR PATTERNS SHALL BE AS INDICATED ON THE PLANS AND IN THE CONSTRUCTION DETAILS.

13) TOLERANCES: THE CONTRACTOR SHALL NOT EXCEED 1/32-INCH UNIT-TO-UNIT OFFSET FROM FLUSH (LIPPAGE) NOR 1/8-INCH IN 10 FEET FROM INDICATED SLOPE, FOR FINISHED SURFACE OF PAVEMENT.

14) INSTALLATION PROCESS:

- A) COMPACT SOIL SUBGRADE UNIFORMLY TO 95 PERCENT OF ASTM D 1557 LABORATORY DENSITY.
- B) PLACE CRUSHED STONE BASE COURSE OVER COMPACTED SUBGRADE. PROVIDE COMPACTED THICKNESS INDICATED. COMPACT BASE COURSE TO 100 PERCENT OF ASTM D 1557 MAXIMUM LABORATORY DENSITY AND SCREED TO DEPTH REQUIRED TO ALLOW SETTING OF PAVERS.
- C) INSTALL HIDDEN CURBING (SEE CEMENT CONCRETE NOTES).
- D) PLACE LEVELING COURSE OF SAND OVER AGGREGATE BASE COURSE AND SCREED TO THICKNESS INDICATED ON THE DRAWINGS, TAKING CARE THAT MOISTURE CONTENT REMAINS CONSTANT AND DENSITY IS LOOSE AND CONSTANT UNTIL BRICKS ARE SET AND COMPACTED.
- E) SET BRICKS WITH A MINIMUM JOINT WIDTH OF 1/16 INCH AND A MAXIMUM WIDTH OF 1/8 INCH, BEING CAREFUL NOT TO DISTURB LEVELING COURSE. IF BRICKS HAVE SPACER LUGS, PLACE BRICKS HAND-TIGHT AGAINST LUGS. USE STRING LINES TO KEEP STRAIGHT LINES. FILL GAPS BETWEEN UNITS THAT EXCEED 3/8 INCH WITH PIECES CUT TO FIT FROM FULL-SIZE BRICKS.
- F) VIBRATE BRICKS INTO LEVELING COURSE WITH A LOW-AMPLITUDE PLATE VIBRATOR CAPABLE OF A 3500- TO 5000-LBF (16- TO 22-kN) COMPACTION FORCE AT 80 TO 90 Hz. PERFORM AT LEAST THREE PASSES ACROSS PAVING SURFACE WITH VIBRATOR. VIBRATE UNDER THE FOLLOWING CONDITIONS:
 - 1. AFTER EDGE BRICKS ARE INSTALLED AND THERE IS A COMPLETED SURFACE OR BEFORE SURFACE IS EXPOSED TO RAIN
 - 2. BEFORE ENDING EACH DAY'S WORK, FULLY-COMPACT INSTALLED BRICKS TO WITHIN 36 INCHES OF THE LAYING FACE. COVER OPEN LAYERS WITH NON-STAINING PLASTIC SHEETS OVERLAPPED 48 INCHES ON EACH SIDE OF THE LAYING FACE TO PROTECT IT FROM RAIN.
- G) SPREAD DRY POLYMERIC SAND AND FILL JOINTS IMMEDIATELY AFTER VIBRATING BRICKS INTO LEVELING COURSE. POLYMERIC SAND SHALL ONLY BE INSTALLED WHEN BRICKS ARE COMPLETELY DRY, AND NO PRECIPITATION IS IN THE FORECAST FOR AT LEAST 48 HOURS. VIBRATE PAVERS AND THEN ADD THE POLYMERIC SAND UNTIL JOINTS ARE COMPLETELY FILLED TO THE BASE OF THE BEVELED EDGES, OR TOPS OF NON-BEVELED BRICK EDGES. REMOVE ALL EXCESS POLYMERIC SAND FROM SURFACE OF BRICKS PRIOR TO WETTING THE JOINTS. THEN LIGHTLY MOISTEN JOINTS UNTIL THEY WILL NOT ACCEPT ANY MORE WATER. TO ENSURE THAT THE ENTIRE DEPTH OF THE JOINT IS MOISTENED, WHILE TAKING CARE NOT TO LET SAND WASH OUT OF THE JOINTS DURING THIS PROCESS. DO NOT ALLOW ANY TRAFFIC (PEDESTRIAN OR VEHICULAR) ONTO THE BRICK PAVEMENT FOR AT LEAST 24 HOURS AFTER JOINTS HAVE BEEN WATERED. IF UNEXPECTED PRECIPITATION HAPPENS DURING THIS PERIOD, COVER BRICK PAVEMENT WITH NON-STAINING PLASTIC SHEETS AS NOTED IN F2 ABOVE.

15) REPAIR AND PROTECTION: THE CONTRACTOR SHALL REMOVE AND REPLACE BRICKS THAT ARE LOOSE, CHIPPED, BROKEN, STAINED, OR OTHERWISE DAMAGED, OR THAT DO NOT MATCH ADJOINING UNITS AS INTENDED, AND THOSE WHOSE SURFACES HAVE BEEN STAINED WITH POLYMERIC SAND. THE CONTRACTOR SHALL REPLACE THESE BRICKS TO MATCH ADJOINING BRICKS, AND INSTALL IN SAME MANNER AS ORIGINAL BRICKS, WITH SAME JOINT TREATMENT AND WITH NO EVIDENCE OF REPLACEMENT.



PROJECT:
SINGLETERY ARMS
115 W. MAIN ST.
MILLBURY, MA

CLIENT:
DOUGLAS BACKMAN

DATE: 7-15-2020

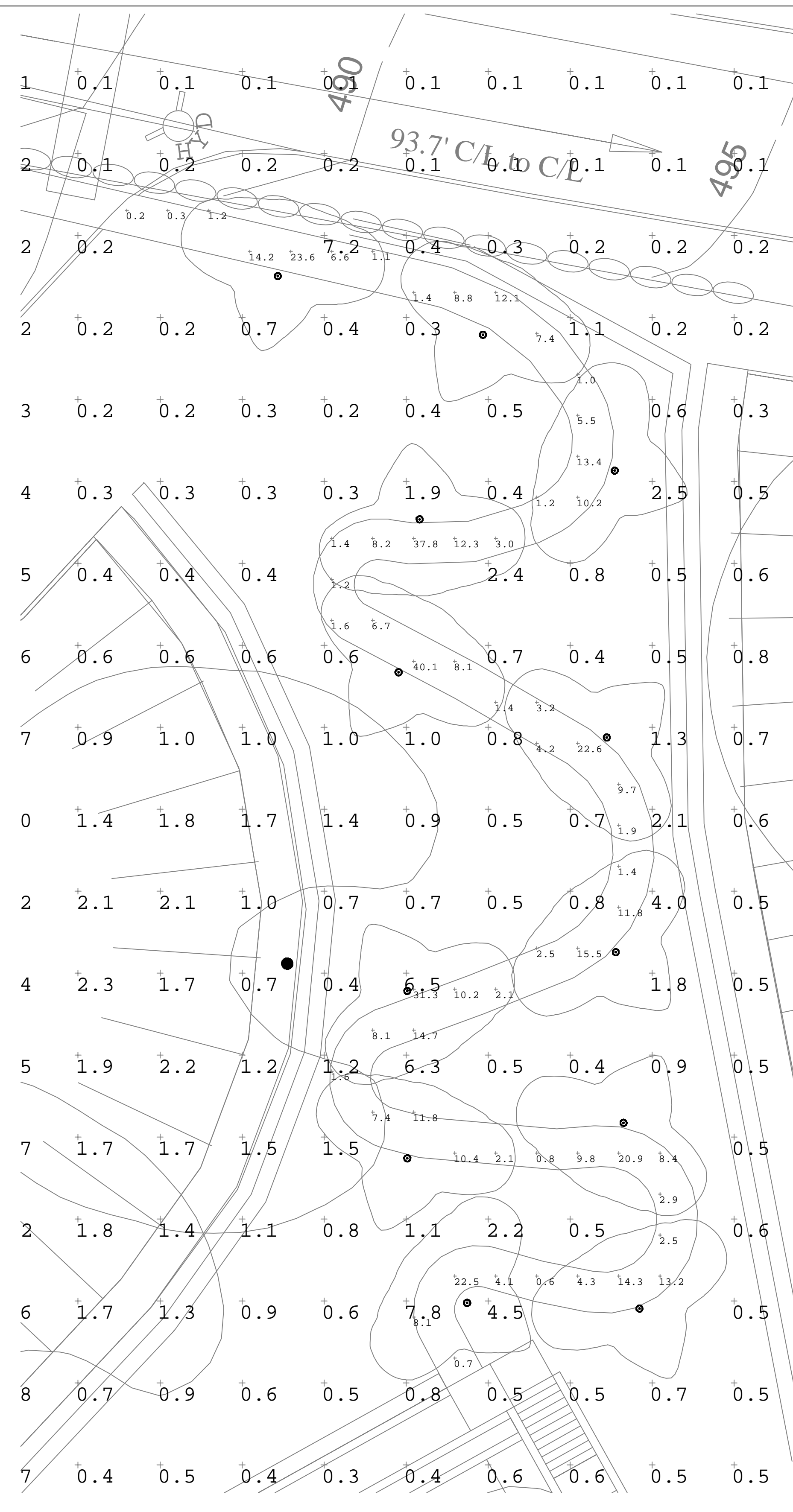
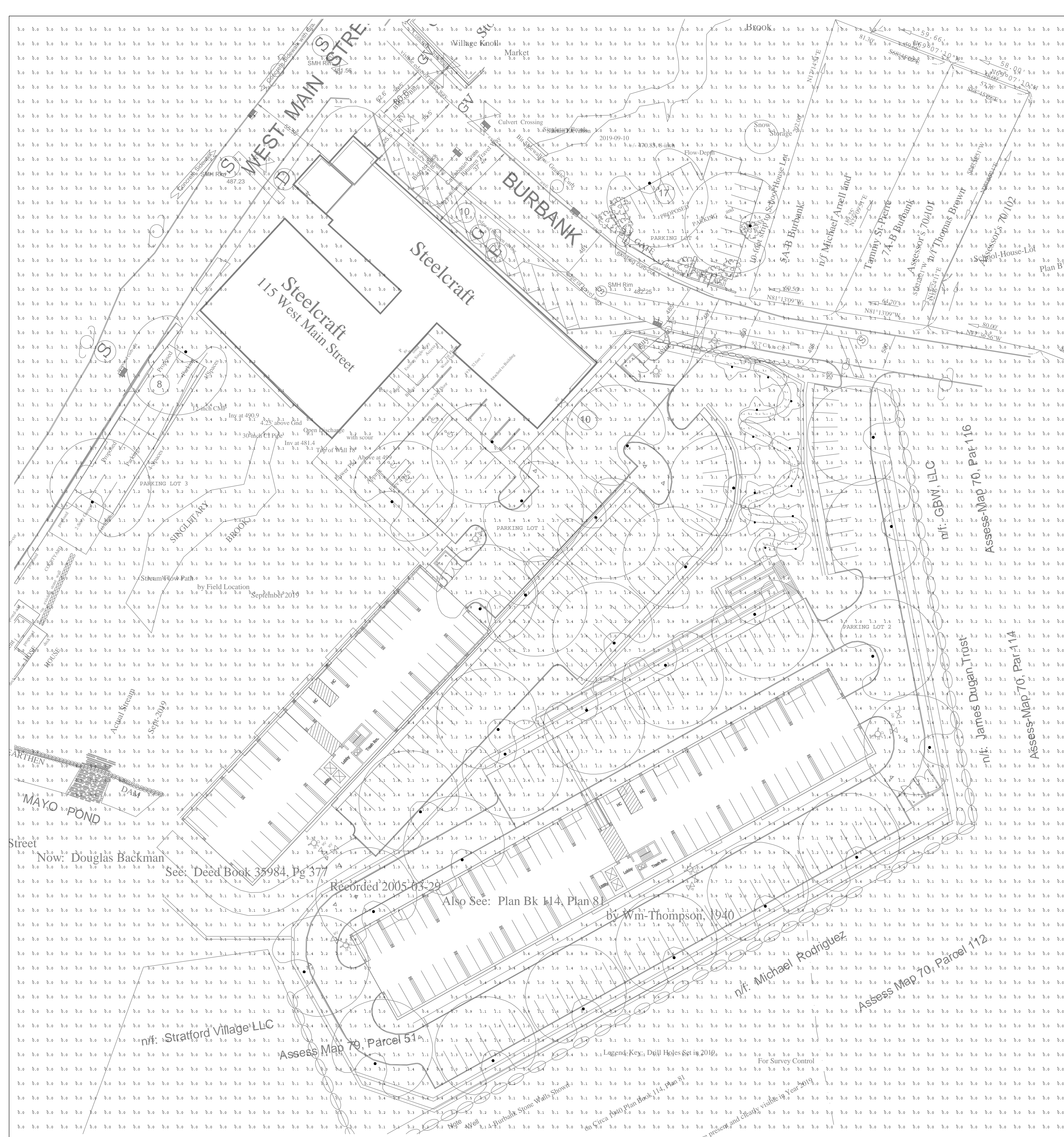
REVISIONS:

NO.	DATE	DESCRIPTION
1	11-9-20	RESPONSE TO TOWN OF MILLBURY COMMENTS
2	1-25-21	RESPONSE TO TOWN OF MILLBURY COMMENTS

SCALE: VARIES

**HARDSCAPE
DETAILS & NOTES**

SHEET L-4



WALKWAY
SCALE: 1"=10'-0"

LIGHT SHIELDS WILL BE USED TO ELIMINATE SPILLOVER ONTO ADJACENT PROPERTIES.

JOB NAME: 151 W MAIN ST - MILLBURY, MA
APEX LIGHTING SOLUTIONS
WORKPLANE/CALC PLANE: @ FINISH GRADE
MOUNTING HEIGHT: SEE LUMINAIRE SCHEDULE
APPS: BD
SALES: DT

Qty	Label	Arrangement	Lumens	Input Watts	LLF	BUG Rating	Description
33	SL1	SINGLE	8695	105.1	0.850	B2-04-G5	HADCO CL32PHK1AHWA5NSP2 / MOUNTED TO 16FT POLE
12	SL3	SINGLE	2551	30.3	0.765	B1-00-G1	GARCO PBL-36-14L-600-WW-G2-3-UNV-PCB-P1-BK

Label	Grid Height	Avg	Max	Min	Avg/Min	Max/Min
CalcPta_1	0	0.31	7.8	0.0	N.A.	N.A.
WALKWAY	0	8.59	40.1	0.2	42.95	200.50
PARKING LOT 1		1.48	2.9	0.3	4.93	9.67
PARKING LOT 2		1.23	2.4	0.4	3.08	6.00
PARKING LOT 3		1.01	2.1	0.4	2.53	5.25
PARKING LOT 4		1.22	2.3	0.4	3.05	5.75

GENERAL DISCLAIMER:
Calculations have been performed according to IES standards and good practice. Some differences between measured values and calculated results may occur due to measurement techniques and field conditions such as wind, temperature, humidity, and other environmental factors. Large data used to generate the attached calculations may not be representative of the actual lighting conditions. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.
* LLF Determined Using Current Published Lamp Data
NOTE TO REVIEWER:
Total Light Loss Factor (LLF) applied at time of design is determined by applying the Lamp Lumen Depreciation (LLD) from current lamp manufacturer's catalog and a Ballast Factor (BF) from current ballast manufacturer's catalog. Application of a Total Light Loss Factor (LLF) will result in a decrease of performance that will not accurately depict actual results.
For proper comparison of photometric results, it is essential that you insist all clients use correct Light Loss Factors.



PROJECT TITLE:
115 W MAIN ST
MILLBURY, MA

DRAWING TITLE:
EXTERIOR LIGHTING
PHOTOMETRIC CALCULATION

SCALE: 1"=30'-0"

DATE: 7/22/20

DRAWN BY: BD

SHEET:

SL-1