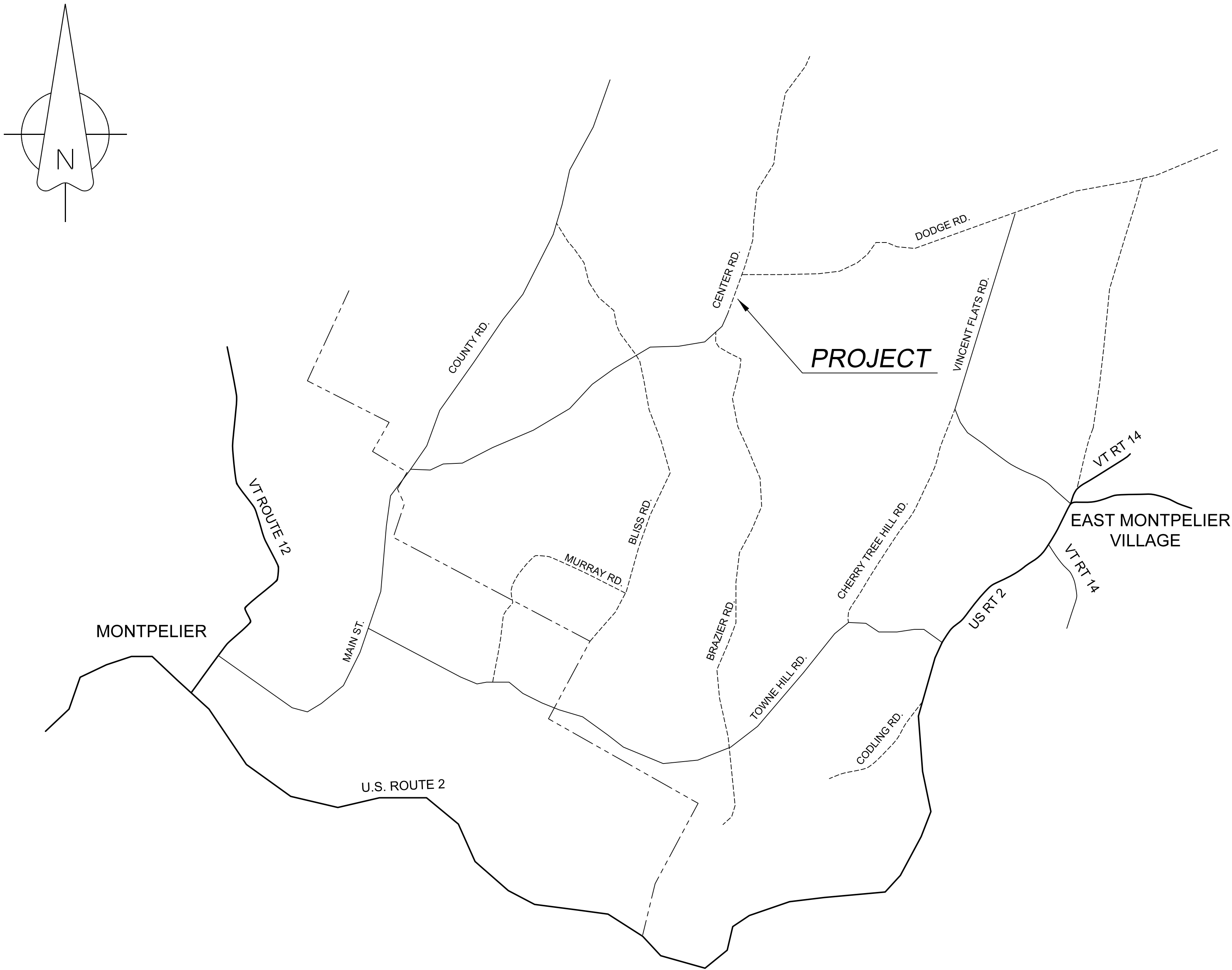


STATE OF VERMONT  
WASHINGTON COUNTY  
TOWN OF EAST MONTPELIER

T.H. 3, - Culvert Upgrade  
TH Structures Grant Program  
FY 2018, Project BC 1853



Project plans prepared through joint efforts of the following:

Newton Technical Services, LLC  
728 South Barre Road  
Barre, VT 05641  
(802) 476-6900

Contech Engineered Solutions LLC  
9025 Centre Pointe Drive  
West Chester, OH 45069

Chase & Chase Surveyors & Septic Designers, Inc.  
301 North Main St., Suite 301  
Barre, VT 05641  
(802) 479-9636

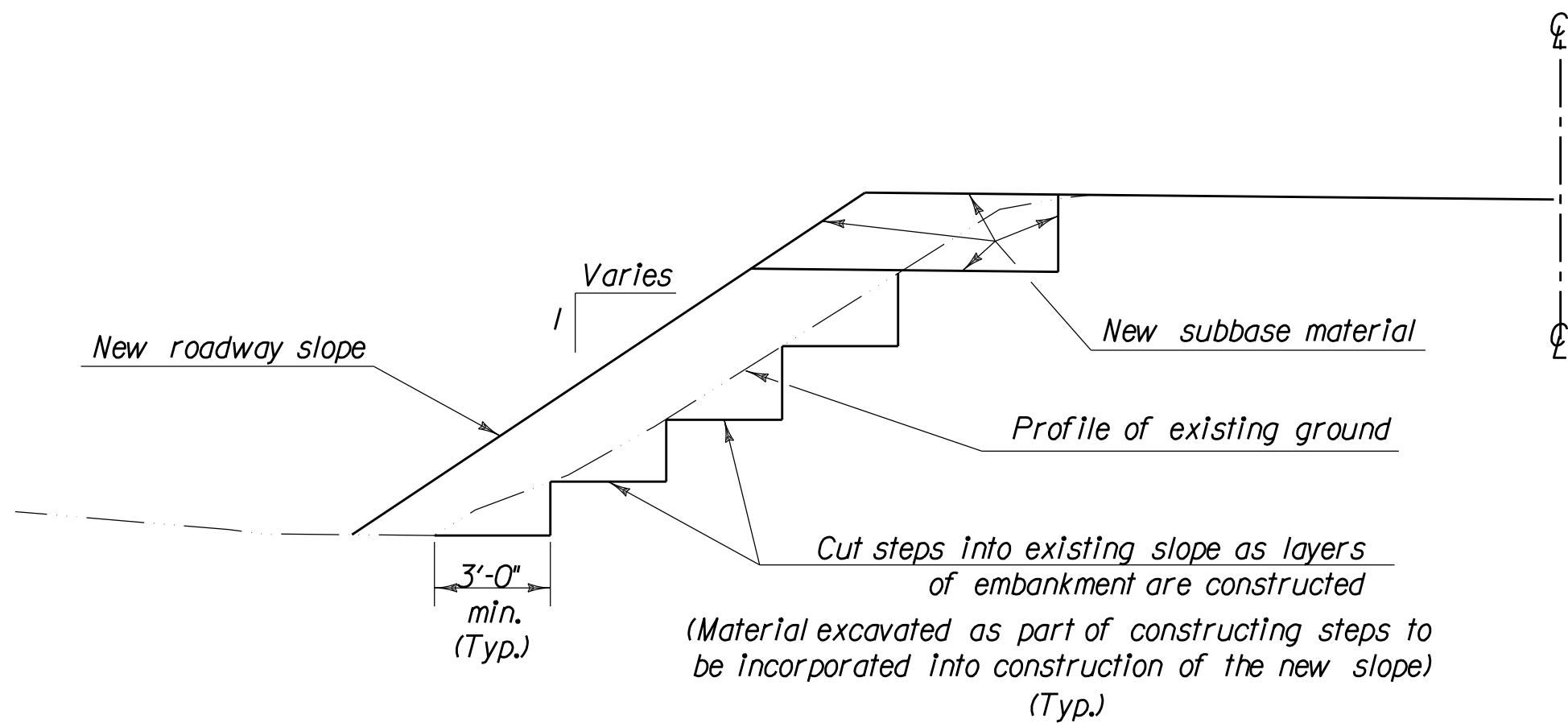
Town of East Montpelier  
40 Kelton Road  
PO Box 157  
East Montpelier, VT 05651  
(802)223-3313

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Sheet #	Title
1	Title Sheet
2	Quantity Sheet, Typical Sections and Miscellaneous Details
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4	Erosion Control and Stablization Plan
5	Erosion Control and Stablization Details
6	Vermont Wetlands Impact Plan
6.1	Restoration Plan
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22	Construction Standards

ESTIMATED QUANTITIES			
Item No.	Item Name	Unit	Total
201.10	Clearing and Grubbing Including Individual Trees and Stumps	LUMP SUM	1
203.15	Common Excavation	CY	350
203.27	Unclassified Channel Excavation	CY	520
204.20	Trench Excavation of Earth	CY	18
204.25	Structure Excavation	CY	670
204.30	Granular Backfill for Structures	CY	305
301.35	Subbase of Dense Graded Crushed Stone	CY	205
401.10	Aggregate Surface Course	CY	75
601.09/5	18" Corrugated Polyethylene Pipe (HDPE)	LF	20
604.18	Precast Reinforced Concrete Drop Inlet with Grate	EACH	1
608.25	All Purpose Excavator Rental, Type I	HOURS	10
613.10	Stone Fill, Type I	CY	40
613.11	Stone Fill, Type II	CY	65
613.12	Stone Fill, Type III	CY	95
619.16	Steel Marker Posts	EACH	2
621.205	Steel Beam Guardrail, Galvanized with 8' Posts	LF	358
621.60	Anchor for Steel Beam Guardrail	EACH	4
635.11	Mobilization/Demobilization	LUMP SUM	1
641.10	Traffic Control	LUMP SUM	1
649.11	Geotextile for Roadbed Separator (for use under bed for new structure)	SY	129
649.31	Geotextile under Stone Fill	SY	400
651.40	Grubbing Material	SY	65
	9'-7" x 6'-6" x 64'-6" Aluminum Pipe Arch (9' x 2 1/2" corrugations) *		
	Erosion Prevention and Sediment Control	LUMP SUM	1
	Temporary Stream Diversion	LUMP SUM	1
	Assembly of New Structure	LUMP SUM	1
	Installation of New Structure	LUMP SUM	1
	Wetlands Restoration Work	LUMP SUM	1
	Streambed Stone Fill, Type E2	CY	71
	Turf Establishment (Seed, Fertilizer, Mulch, Erosion Matting, etc.)	LUMP SUM	1

(Not a bid item - town will purchase) \*

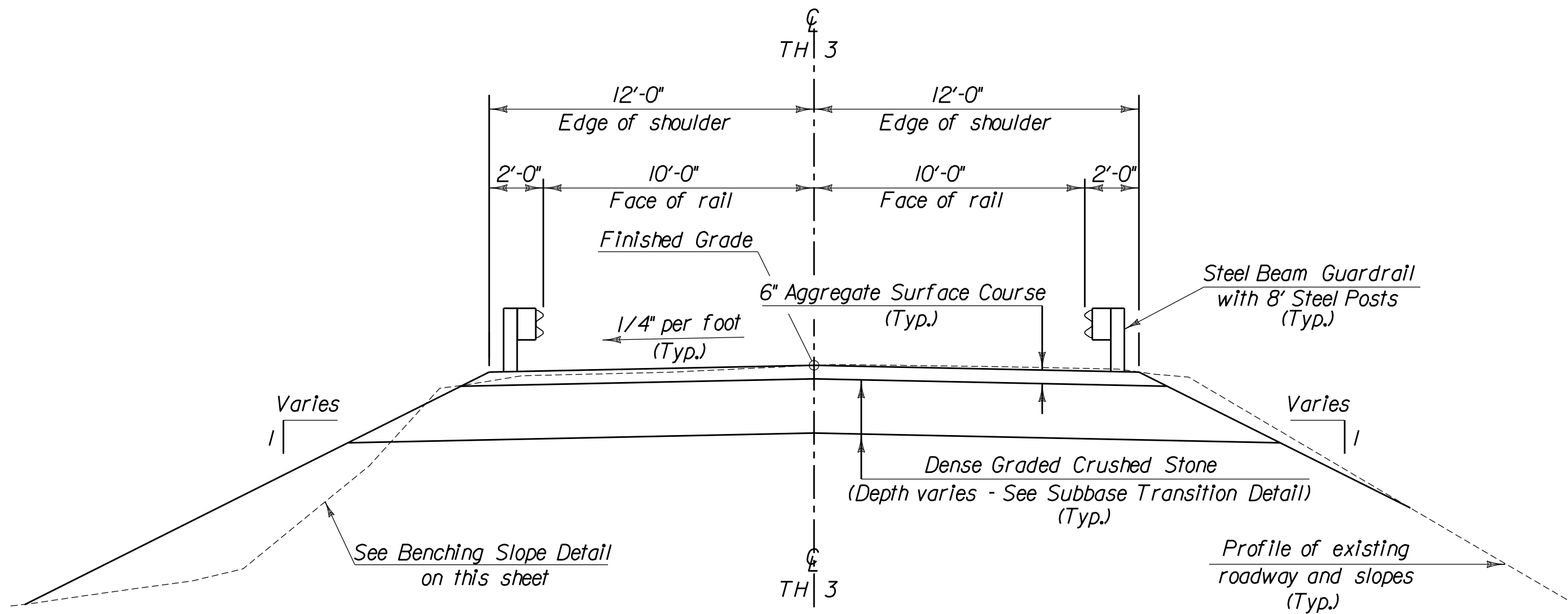


DETAILS FOR BENCHING OF EXISTING SLOPES

Not to Scale

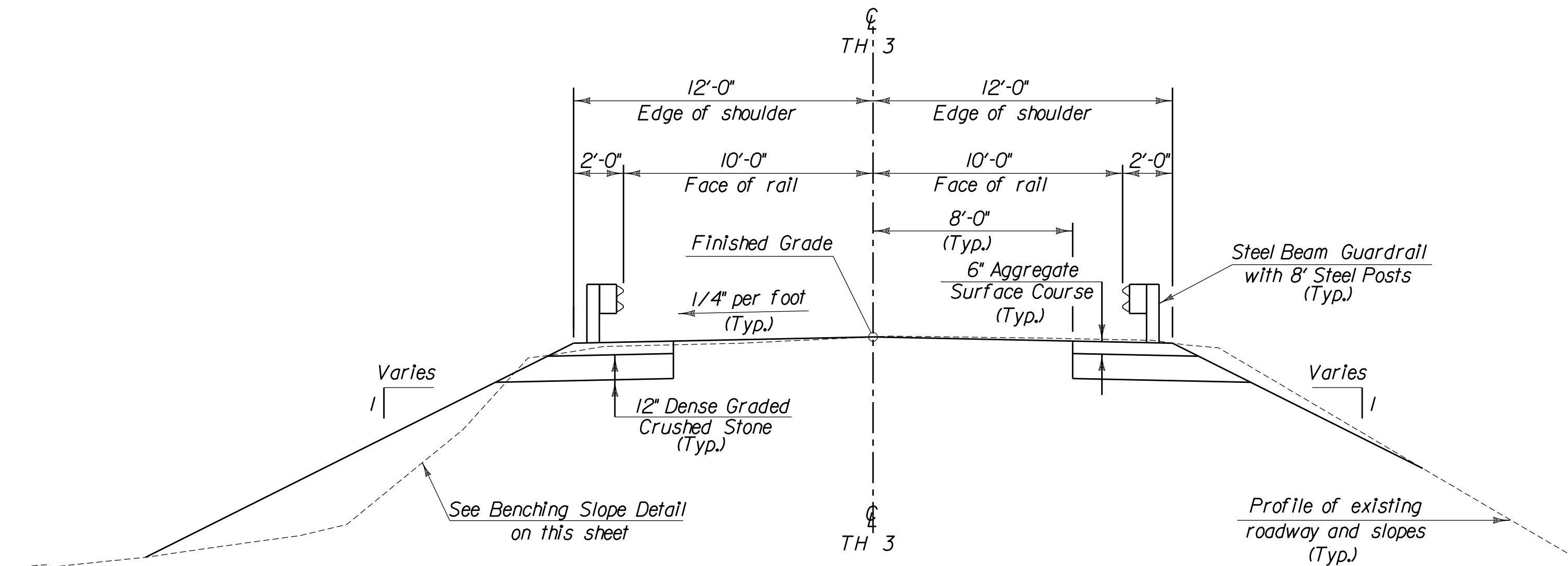
EARTHWORKS SUMMARY

FILL AVAILABLE:		
COMMON EXCAVATION (350 CY X 0.8)	CY	280
UNCLASSIFIED EXCAVATION (520 CY X 0.3)	CY	156
TRENCH EXCAVATION OF EARTH (18 CY X 0.5)	CY	9
STRUCTURE EXCAVATION (670 CY X 0.5)	CY	335
ROUNDING	CY	0
<b>TOTAL FILL AVAILABLE:</b>	<b>CY</b>	<b>780</b>
FILL REQUIRED:		
FACTORED FILL (85 CY X 1.15)	CY	97.75
ROUNDING	CY	0.25
<b>TOTAL FILL REQUIRED:</b>	<b>CY</b>	<b>98</b>
<b>EXCESS MATERIAL (WASTE)</b>	<b>CY</b>	<b>682</b>



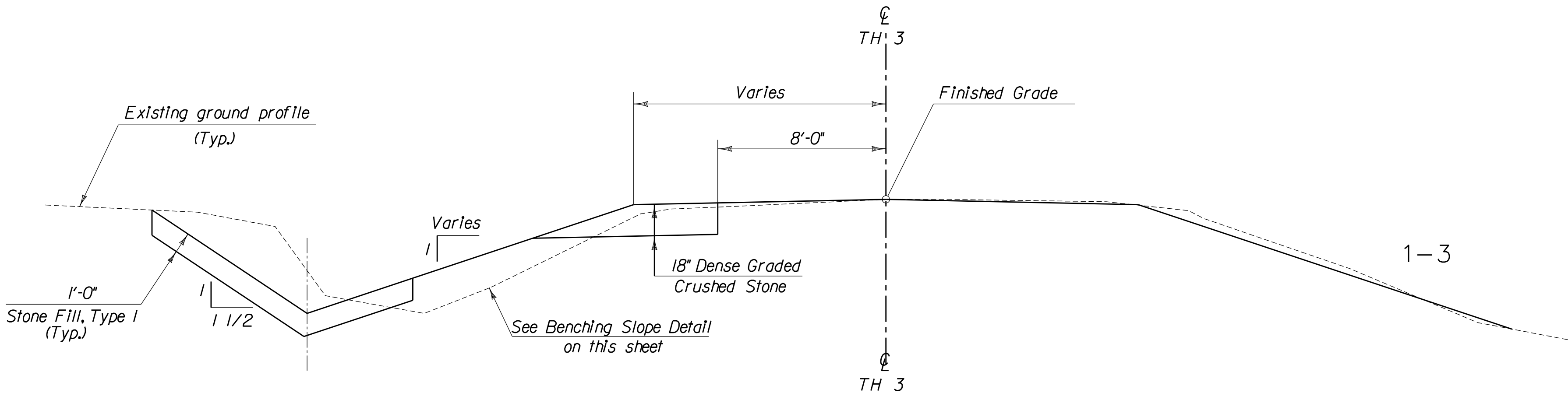
Typical Roadway Section at New Structure

Sta. 1+32.50 - Sta. 2+07.50



Typical Roadway Section

Sta. 2+07.50 - Sta. 3+25



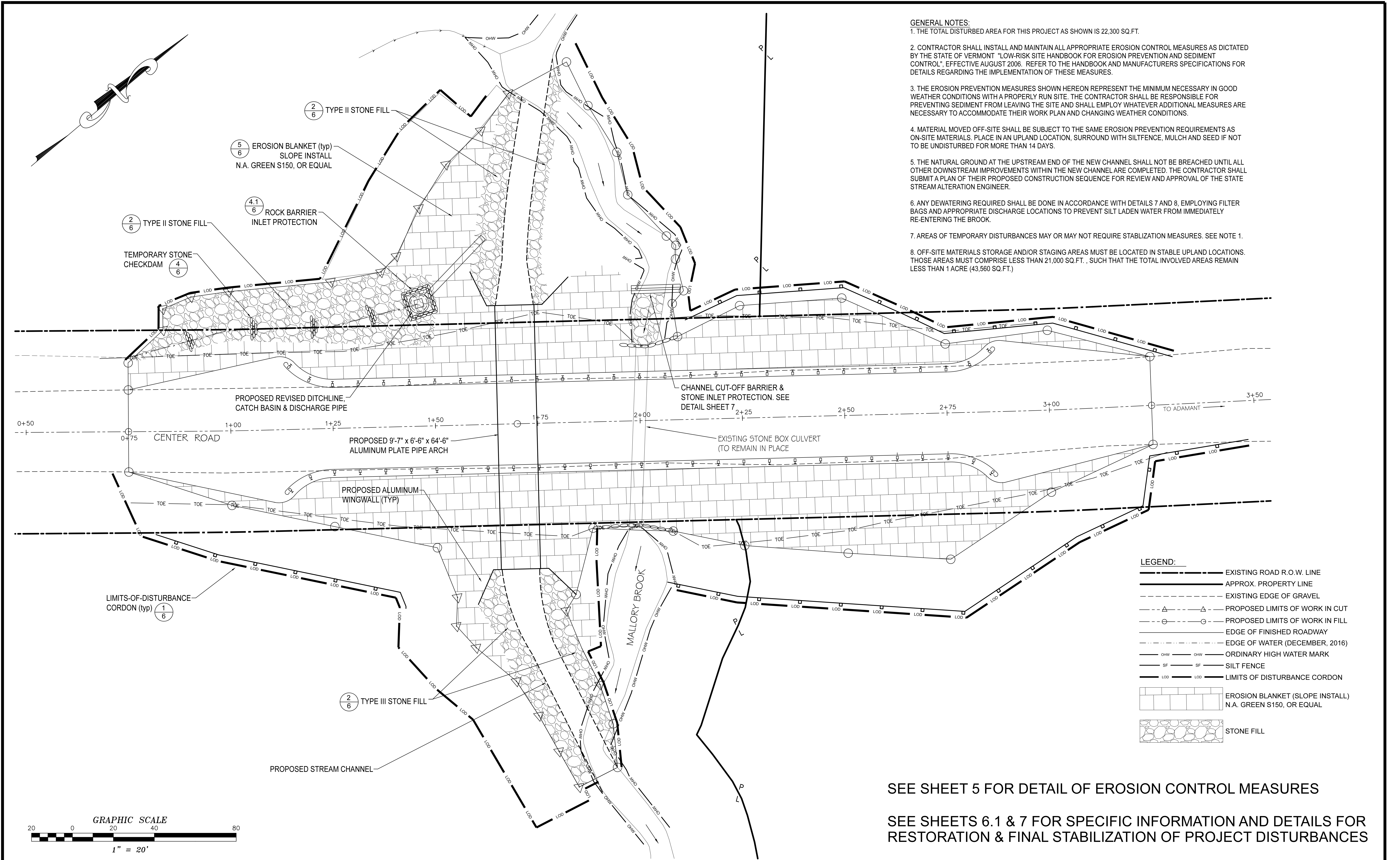
Typical Roadway Section

Sta. 0+75 Lt. - Sta. 1+25 Lt.

NO.	REVISIONS	BY	DATE	DES' DWN	DATE	SCALE	Town of East Montpelier TH 3 – Center Road TH Structures Grant Program FY 2018 BC 1853	Quantity Sheet Typical Sections Details for Benching Existing Slope	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 2 OF 23
				DRN DWN	November 2020	As Noted					
				CHK DWN							
				APPD							







- GENERAL NOTES:
1. THE TOTAL DISTURBED AREA FOR THIS PROJECT AS SHOWN IS 22,300 SQ.FT.
  2. CONTRACTOR SHALL INSTALL AND MAINTAIN ALL APPROPRIATE EROSION CONTROL MEASURES AS DICTATED BY THE STATE OF VERMONT "LOW-RISK SITE HANDBOOK FOR EROSION PREVENTION AND SEDIMENT CONTROL", EFFECTIVE AUGUST 2006. REFER TO THE HANDBOOK AND MANUFACTURERS SPECIFICATIONS FOR DETAILS REGARDING THE IMPLEMENTATION OF THESE MEASURES.
  3. THE EROSION PREVENTION MEASURES SHOWN HEREON REPRESENT THE MINIMUM NECESSARY IN GOOD WEATHER CONDITIONS WITH A PROPERLY RUN SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING SEDIMENT FROM LEAVING THE SITE AND SHALL EMPLOY WHATEVER ADDITIONAL MEASURES ARE NECESSARY TO ACCOMMODATE THEIR WORK PLAN AND CHANGING WEATHER CONDITIONS.
  4. MATERIAL MOVED OFF-SITE SHALL BE SUBJECT TO THE SAME EROSION PREVENTION REQUIREMENTS AS ON-SITE MATERIALS. PLACE IN AN UPLAND LOCATION, SURROUND WITH SILTFENCE, MULCH AND SEED IF NOT TO BE UNDISTURBED FOR MORE THAN 14 DAYS.
  5. THE NATURAL GROUND AT THE UPSTREAM END OF THE NEW CHANNEL SHALL NOT BE BREACHED UNTIL ALL OTHER DOWNSTREAM IMPROVEMENTS WITHIN THE NEW CHANNEL ARE COMPLETED. THE CONTRACTOR SHALL SUBMIT A PLAN OF THEIR PROPOSED CONSTRUCTION SEQUENCE FOR REVIEW AND APPROVAL OF THE STATE STREAM ALTERATION ENGINEER.
  6. ANY DEWATERING REQUIRED SHALL BE DONE IN ACCORDANCE WITH DETAILS 7 AND 8, EMPLOYING FILTER BAGS AND APPROPRIATE DISCHARGE LOCATIONS TO PREVENT SILT LADEN WATER FROM IMMEDIATELY RE-ENTERING THE BROOK.
  7. AREAS OF TEMPORARY DISTURBANCES MAY OR MAY NOT REQUIRE STABILIZATION MEASURES. SEE NOTE 1.
  8. OFF-SITE MATERIALS STORAGE AND/OR STAGING AREAS MUST BE LOCATED IN STABLE UPLAND LOCATIONS. THOSE AREAS MUST COMPRISE LESS THAN 21,000 SQ.FT. , SUCH THAT THE TOTAL INVOLVED AREAS REMAIN LESS THAN 1 ACRE (43,560 SQ.FT.)

- LEGEND:
- EXISTING ROAD R.O.W. LINE
  - APPROX. PROPERTY LINE
  - EXISTING EDGE OF GRAVEL
  - PROPOSED LIMITS OF WORK IN CUT
  - PROPOSED LIMITS OF WORK IN FILL
  - EDGE OF FINISHED ROADWAY
  - EDGE OF WATER (DECEMBER, 2016)
  - ORDINARY HIGH WATER MARK
  - SILT FENCE
  - LIMITS OF DISTURBANCE CORDON
  - EROSION BLANKET (SLOPE INSTALL)  
N.A. GREEN S150, OR EQUAL
  - STONE FILL

SEE SHEET 5 FOR DETAIL OF EROSION CONTROL MEASURES

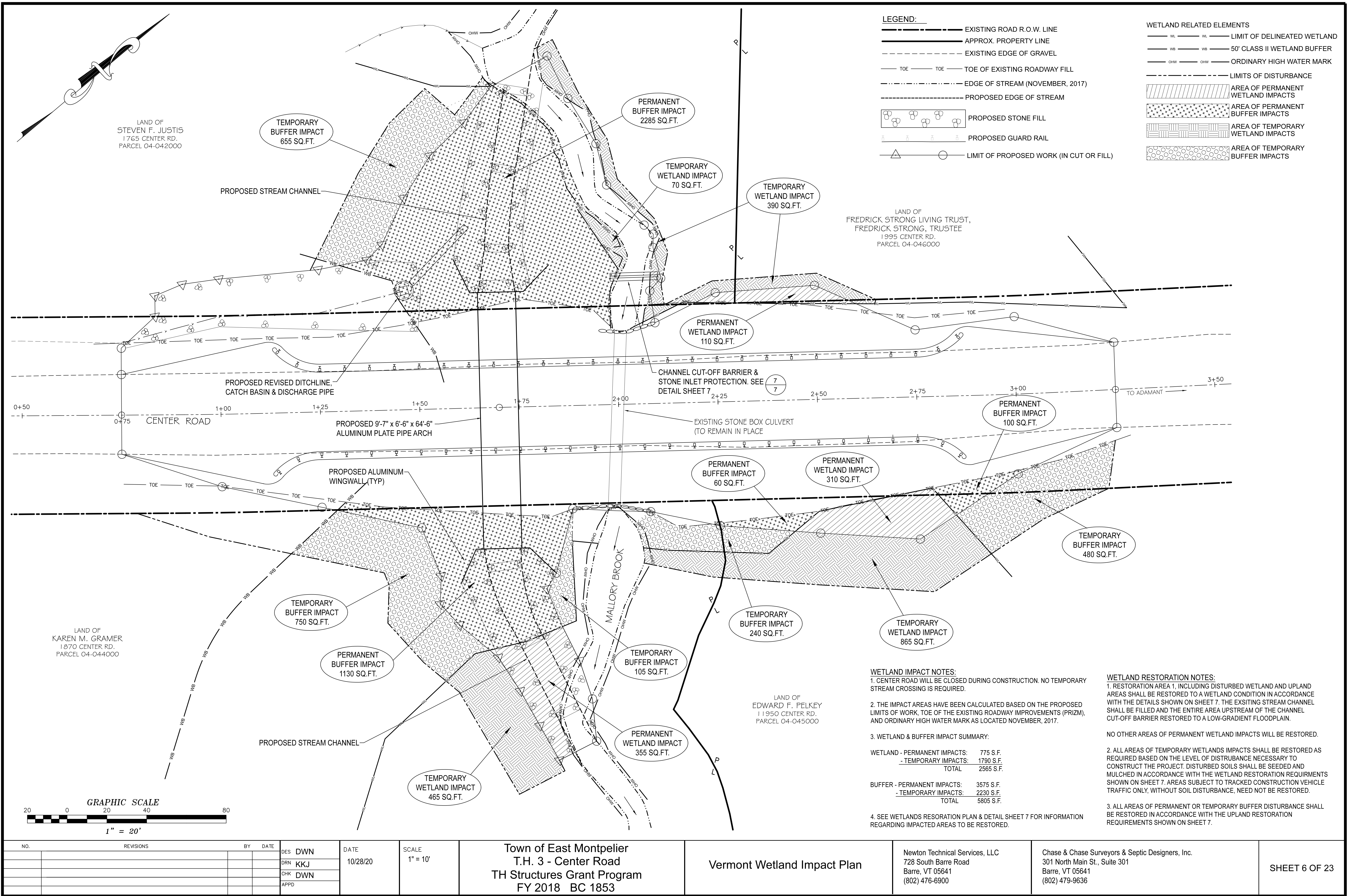
SEE SHEETS 6.1 & 7 FOR SPECIFIC INFORMATION AND DETAILS FOR RESTORATION & FINAL STABILIZATION OF PROJECT DISTURBANCES

NO.		REVISIONS		BY	DATE	DES	DWN	DATE	SCALE	Town of East Montpelier T.H. 3 - Center Road TH Structures Grant Program FY 2018 BC 1853	Erosion Control & Stablization Plan	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 4 OF 23
						DRN	KKJ	NOV 2020	1" = 20'					
						CHK	DWN							
						APPD								

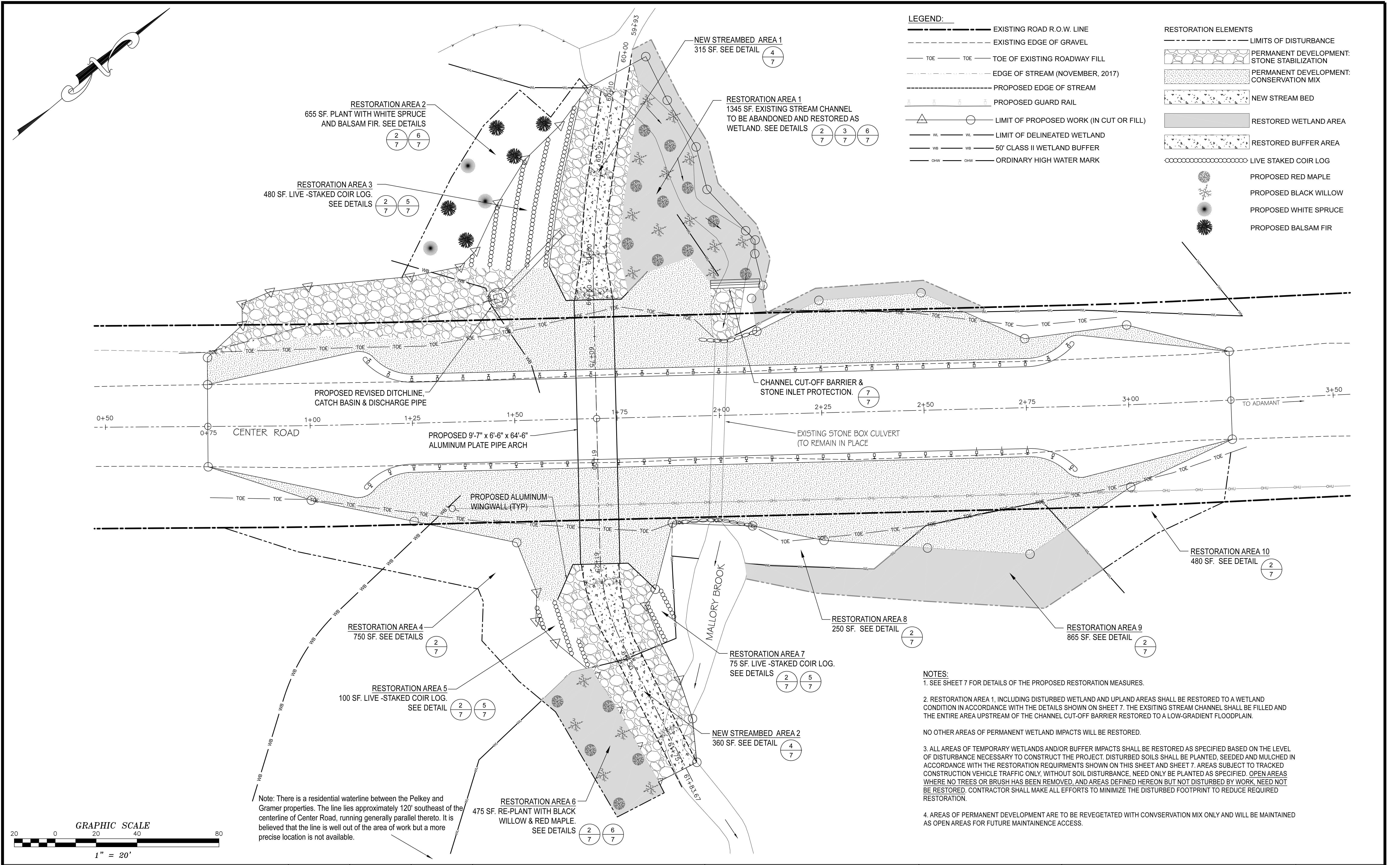












**LEGEND:**

- EXISTING ROAD R.O.W. LINE
- EXISTING EDGE OF GRAVEL
- TOE TOE TOE OF EXISTING ROADWAY FILL
- EDGE OF STREAM (NOVEMBER, 2017)
- PROPOSED EDGE OF STREAM
- PROPOSED GUARD RAIL
- LIMIT OF PROPOSED WORK (IN CUT OR FILL)
- LIMIT OF DELINEATED WETLAND
- WB WB 50' CLASS II WETLAND BUFFER
- OHV OHV ORDINARY HIGH WATER MARK

**RESTORATION ELEMENTS**

- LIMITS OF DISTURBANCE
- PERMANENT DEVELOPMENT: STONE STABILIZATION
- PERMANENT DEVELOPMENT: CONSERVATION MIX
- NEW STREAM BED
- RESTORED WETLAND AREA
- RESTORED BUFFER AREA
- LIVE STAKED COIR LOG
- PROPOSED RED MAPLE
- PROPOSED BLACK WILLOW
- PROPOSED WHITE SPRUCE
- PROPOSED BALSAM FIR

**NOTES:**

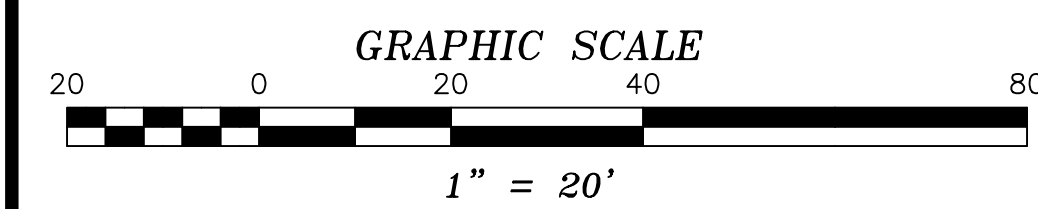
1. SEE SHEET 7 FOR DETAILS OF THE PROPOSED RESTORATION MEASURES.

2. RESTORATION AREA 1, INCLUDING DISTURBED WETLAND AND UPLAND AREAS SHALL BE RESTORED TO A WETLAND CONDITION IN ACCORDANCE WITH THE DETAILS SHOWN ON SHEET 7. THE EXSITING STREAM CHANNEL SHALL BE FILLED AND THE ENTIRE AREA UPSTREAM OF THE CHANNEL CUT-OFF BARRIER RESTORED TO A LOW-GRADIENT FLOODPLAIN.

NO OTHER AREAS OF PERMANENT WETLAND IMPACTS WILL BE RESTORED.

3. ALL AREAS OF TEMPORARY WETLANDS AND/OR BUFFER IMPACTS SHALL BE RESTORED AS SPECIFIED BASED ON THE LEVEL OF DISTURBANCE NECESSARY TO CONSTRUCT THE PROJECT. DISTURBED SOILS SHALL BE PLANTED, SEEDED AND MULCHED IN ACCORDANCE WITH THE RESTORATION REQUIRMENTS SHOWN ON THIS SHEET AND SHEET 7. AREAS SUBJECT TO TRACKED CONSTRUCTION VEHICLE TRAFFIC ONLY, WITHOUT SOIL DISTURBANCE, NEED ONLY BE PLANTED AS SPECIFIED. OPEN AREAS WHERE NO TREES OR BRUSH HAS BEEN REMOVED, AND AREAS DEFINED HEREON BUT NOT DISTURBED BY WORK, NEED NOT BE RESTORED. CONTRACTOR SHALL MAKE ALL EFFORTS TO MINIMIZE THE DISTURBED FOOTPRINT TO REDUCE REQUIRED RESTORATION.

4. AREAS OF PERMANENT DEVELOPMENT ARE TO BE REVEGETATED WITH CONVSERVATION MIX ONLY AND WILL BE MAINTAINED AS OPEN AREAS FOR FUTURE MAINTAINENCE ACCESS.



NO.		REVISIONS		BY	DATE	DES DWN	DATE	SCALE	Town of East Montpelier T.H. 3 - Center Road TH Structures Grant Program FY 2018 BC 1853	Restoration Plan	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 6.1 OF 23
						DRN KJK	10/28/20	1" = 10'					
						CHK DWN							
						APPD							

WETLAND & BUFFER RESTORATION GENERAL NOTES

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Materials:

Loam

Loam (topsoil) shall consist of fertile, friable soil free from subsoil, gravel, roots, weeds, sod, and stones, and containing at least 3% organic matter by weight Loam may be stripped topsoil, provided it is properly screened to remove deleterious material and is not excessively acid or alkaline nor contains toxic material harmful to plant life.

Wetland Muck Soil

- Wetland soil shall be a uniform low-phosphorus mix of compost, sand, and fine soil to blend to a high % organic matter content soil (>15% organic matter).
- The phosphorus index (P-index) for the wetland soil shall be 10 – 30 mg/kg.
- Wetland soil shall have a pH of 6.0 – 7.0.
- Wetland soil shall have a low hydraulic conductivity between 0.1 – 0.01 ft/day.
- The organic portion of the wetland soil shall constitute 15% - 20% of the total wetland soil mixture. The organic portion shall be comprised of well pulverized and composted leaf mulch. Animal or poultry manure shall not be accepted.
- Granular soil shall constitute 80% - 85% of the total wetland soil mixture, and shall meet the following gradation:

Sieve	% passing by weight
No. 16	100%
No. 40	85-100%
No. 60	40-100%
No. 200	5-10%

Alternatively, the existing wetland soils excavated from areas of temporary construction activity maybe used for restoration. The materials shall be stockpiled in a stable upland location and covered with 6 mil poly sheeting to protect soils from precipitation. Confirm that the soils are free from noxious weed or invasive species.

Fertilizer

Fertilizer shall be complete commercial fertilizer that is dry and free flowing and uniform in composition and have low or no phosphorus as shown by soil analysis.

Lime

Lime shall be ground limestone containing not less than 95% of total carbonates and shall be ground to a fineness such that at least 90% will pass through a 100 mesh sieve.

Mulch

Mulch shall be unspoiled hay or legume mowings reasonably free from weeds, twigs debris or other deletrious materials. It shall be free from rot or mold.

Mulch Blanket

Mulch blanket shall be North American Green S150BN (natural blanket materials only – no plastics), or approved equal on slopes of less than 2:1. Use N.A. Green SC150BN on slopes greater than 2:1.

Upland Seed

Seed mix shall be VTrans Rural Conservation Mix and be clean materials guaranteed to be 95% free of seeds other than those listed:

Grass	% by weight
Creeping Red Fescue	37.5%
Turf Type Tall Fescue	37.5%
Birdsfoot Trefoil	15%
Red Top	5%
Annual Rye Grass	5%

Wetland Seed

Wetlands seed mix shall be VT Wetland Supply Wetland Hummock mix, or approved equal.

Wetland seed mix shall be formulated by the approved vendor (see below)

Use the following mix of herbaceous species or equivalent obligate or facultative wet species suitable for wetland zones 4. The vendor shall recommend an appropriate mix or substitution of species based on availability and time of planting. Aggressive species such as cattail (Typha sp.) should be avoided.

Scientific Name	Common Name
Asclepias incarnata	Swamp milkweed
Eupatoriadelphus maculatus	Spotted joe-pye weed
Juncus effuses	Common rush
Lysimachia ciliata	Fringed loosestrife
Scirpus cyperinus	Woolgrass
Verbena hastate	Blue vervain
Iris versicolor	Blueflag iris

Trees/Plants

- White Spruce (Picea glauca), native variety, 24" - 48" height, rootball varies
- Balsam Fir (Abies balsamea), native variety, 24" 48" height, rootball varies
- Red Maple (Acer rubrum), 1" nominal caliper
- Black Willow (Salix nigra), 3 gallon sets.

Execution

Excavation and Stockpiling

A. Wetland Areas

All excavated wetland soil material shall be stockpiled for use during restoration. The materials shall be stockpiled in a stabilized upland location and covered with 6 mil poly sheeting to protect soils from precipitation. If varying soil horizons are encountered during excavation, each horizon shall be stockpiled separately and replaced in the order of the original soil stratum.The temporary stockpiles for reuse must be placed in an upland location, surrounded by silt fence and stabilized in place.

B. Upland Areas

Materials excavated from upland areas for temporary construction activities may be stockpiled on site or hauled off-site at the Contractors discretion. The temporary stockpiles for reuse must be placed in an upland location, surrounded by silt fence and stabilized in place.

Finish Grade

All areas disturbed by temporary construction activities shall be restored as near as practical to original grade.

Soil Preparation, Seeding, Mulching

A. Wetlands Areas

Wetlands muck soils shall be replaced to the lines and original grade or as shown on the plans in Restoration Area 1. After placement, mechanically loosen the top four inches of native soils in the area to be restored.

Do not add chemical fertilizer.

Broadcast wetland seed mix over prepared soils at a rate of 0.4 lbs./1000 sf. Scratch into soil surface.

Spread and secure mulch blanket over seeded soils. Lightly roll.

Do not apply loose/chopped mulch to wetlands areas.

B. Upland Areas

Loam shall be placed to a minimum depth of 4" to the lines and original grade shown on the plans. The loam shall not be hauled over, tramped over, or packed in any way.

Prior to seeding, the loam shall be prepared to a minimum depth of 3" with lime and fertilizer. Lime may be added simultaneously with the fertilizer. Fertilizer and lime shall be tilled to a depth of 3" by disking, harrowing, raking, or other approved method.

Fertilizer shall be applied at the rate of 200 lbs. per acre, unless otherwise shown.

Lime shall be applied at a rate of 5 lbs. per square foot, unless otherwise shown.

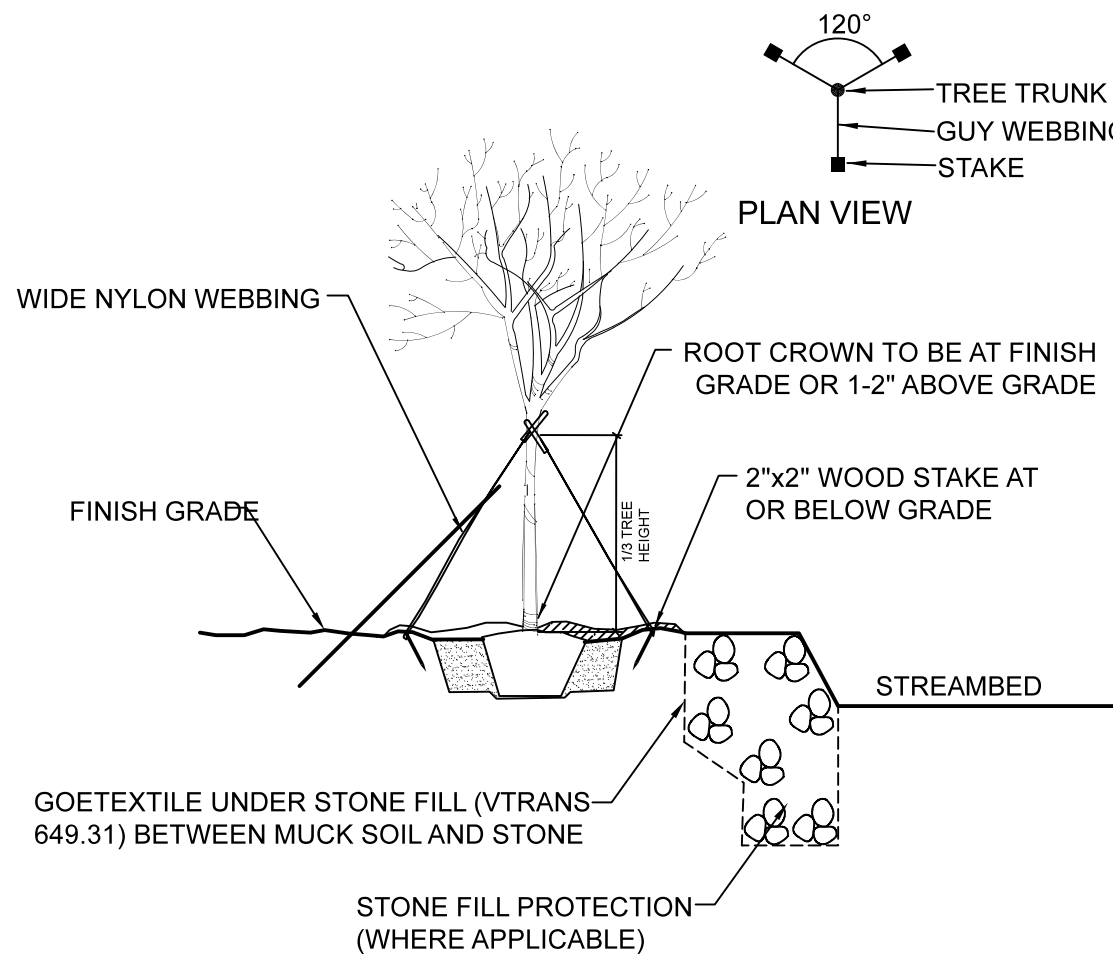
After application of fertilizer and lime, the loam shall be hand raked smooth. Grass seed shall be uniformly applied to the entire area to be seeded at a rate of at least 40 lbs. per acre. Seeding shall not be performed during unfavorable conditions, such as drought, high winds, excessive moisture, or other factors which will cause unsatisfactory seeding results.

Immediately after seeding, the entire seeded area shall be compacted and rolled to remove irregularities in the surface and reduce air pockets to a minimum. Roller shall weigh 60 to 90 lbs. per linear foot.

Within 24 hours after seeding and rolling, the area shall be mulched at the rate of 2 tons of mulch per acre. Mulch material shall be acceptable to the engineer, prior to application. Mulch shall be secured in place if necessary, by such means as a shallow covering of loam or a stapled erosion matting. Seeded and mulched areas shall be watered at a rate and frequency as necessary until the grass has sufficient growth to survive from natural moisture. Mulch shall be chopped and machine applied.

Adjustments

Within two (2) weeks after the grass has shown exposed growth, any areas where the grass seed has not germinated properly or where the surface has been washed or damaged shall be reseeded in the same manner as described above. Repair all damage resulting from erosion, gullies, washouts, or other causes by filling with topsoil, tamping, fertilizing, and seeding without additional cost to the owner until the time of final acceptance and within guarantee. The contractor shall provide signs and barricades as necessary to protect seeded areas from traffic.



DETAIL - WETLAND TREE PLANTING SPECIFICATIONS

NOT TO SCALE

2  
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AREA SPECIFIC PLANTINGS

1. All tree and shrub plantings shall be configured in staggered rows 6' - 8' on center approximating the pattern shown on the Restoration Site Plan sheet 6.1

2. Once resorations measures are established, those areas shall be maintained as undisturbed natural areas.

Restoration Area 1

Wetlands seed mix: 0.40# per 1000 sq.ft.  
Red Maple - 10 total  
Black Willow - 12 total

Restoration Area 2

Conservation Mix: 5# per 1000 sq.ft.  
Balsam Fir - 5 total  
White Spruce - 3 total

Restoration Area 3

Conservation Mix: 5# per 1000 sq.ft.  
Coir Log - 90 lf total

Restoration Area 4

Conservation Mix: 5# per 1000 sq.ft.  
Allow woody brush to naturally establish

Restoration Area 5

Conservation Mix: 5# per 1000 sq.ft.  
Coir Log - 30 lf total

Restoration Area 6

Wetlands seed mix: 0.40# per 1000 sq.ft.  
Red Maple - 5 total  
Black Willow - 5 total

Restoration Area 7

Conservation Mix: 5# per 1000 sq.ft.  
Coir Log - 20 lf total

Restoration Area 8

Conservation Mix: 5# per 1000 sq.ft.  
Allow woody brush to naturally establish

Restoration Area 9

Wetlands seed mix: 0.40# per 1000 sq.ft.  
Cut poplar stumps to naturally root sprout.

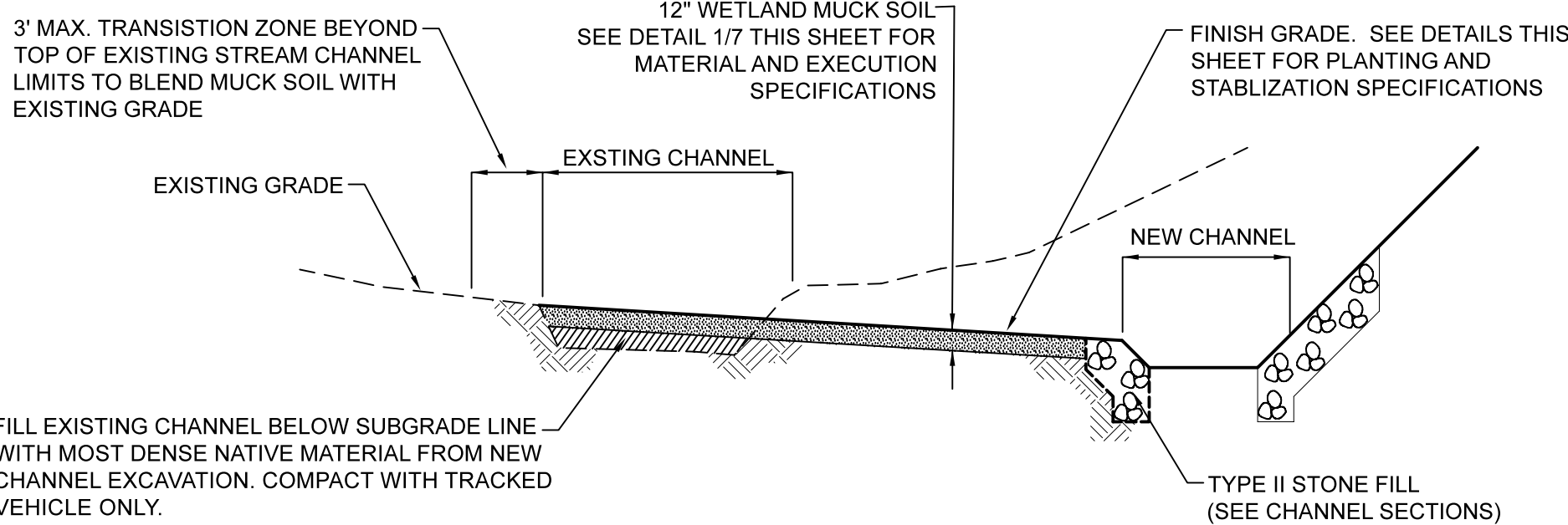
Restoration Area 10

Conservation Mix: 5# per 1000 sq.ft.  
Cut poplar stumps to naturally root sprout.

NOTES: TREE PLANTING

- ALL PLANT MATERIALS SHALL BE IN ACCORDANCE WITH THE AMERICAN STANDARDS FOR NURSERY STOCK (ANSI Z60.1-2004). PLANT ACCORDING TO ANSI A300 PART 6.
- DIG THE PLANTING HOLE A MINIMUM OF 2x WIDTH OF ROOTBALL FOR AT LEAST THE FIRST 12 INCHES OF DEPTH. BELOW 12 INCHES, DIG HOLE WIDE ENOUGH TO PERMIT ADJUSTING. DO NOT DIG THE HOLE DEEPER THAN ROOT BALL DEPTH.
- SCARIFY THE SUBGRADE AND SIDES OF THE PLANTING HOLE WHEN PLANTING IN CLAY SOILS (MORE THAN 15% CLAY).
- LIFT AND SET THE TREE BY ROOT BALL ONLY. DO NOT LIFT USING THE TREE TRUNK AND DO NOT USE TREE TRUNK AS A LEVER.
- SET THE TOP OF THE ROOT BALL LEVEL WITH THE SOIL SURFACE OR SLIGHTLY HIGHER IF THE SOIL IS PRONE TO SETTLING.
- AFTER THE TREE IS SET IN PLACE, REMOVE BURLAP, WIRE AND STRAPS FROM AT LEAST THE UPPER 1/3 OF THE ROOTBALL.
- BACKFILL WITH EXISTING SOIL THAT HAS BEEN WELL-TILLED OR BROKEN UP. DO NOT ADD AMENDMENTS TO THE BACKFILL SOIL. AMEND THE SURFACE WITH MULCH.
- USE THREE 2" X 2" WOOD STAKES DRIVEN INTO UNDISTURBED SOIL A MINIMUM OF 16 INCHES. SPACE STAKES EQUALLY AROUND THE TREE.
- ATTACH 3/4" NYLON WEBBING TO CONNECT THE TREE TO STAKES. ATTACH WEBBING AT 1/3 THE TREE HEIGHT.
- APPLY A 2-3" (SETTLED) DEPTH OF PINE STRAW OR BARK MULCH TO THE PLANTING SURFACE. LEAVE A 2" SPACE AROUND THE TRUNK FOR AIR CIRCULATION.
- PRUNING SHALL BE LIMITED TO DEAD, DISEASED, OR BROKEN LIMBS ONLY AND SHALL BE IN ACCORDANCE WITH ANSI A300 SPECIFICATIONS.
- REMOVE ANY TRUNK WRAP REMAINING AT TIME OF PLANTING. NO WRAPS SHALL BE PLACED ON TRUNK.

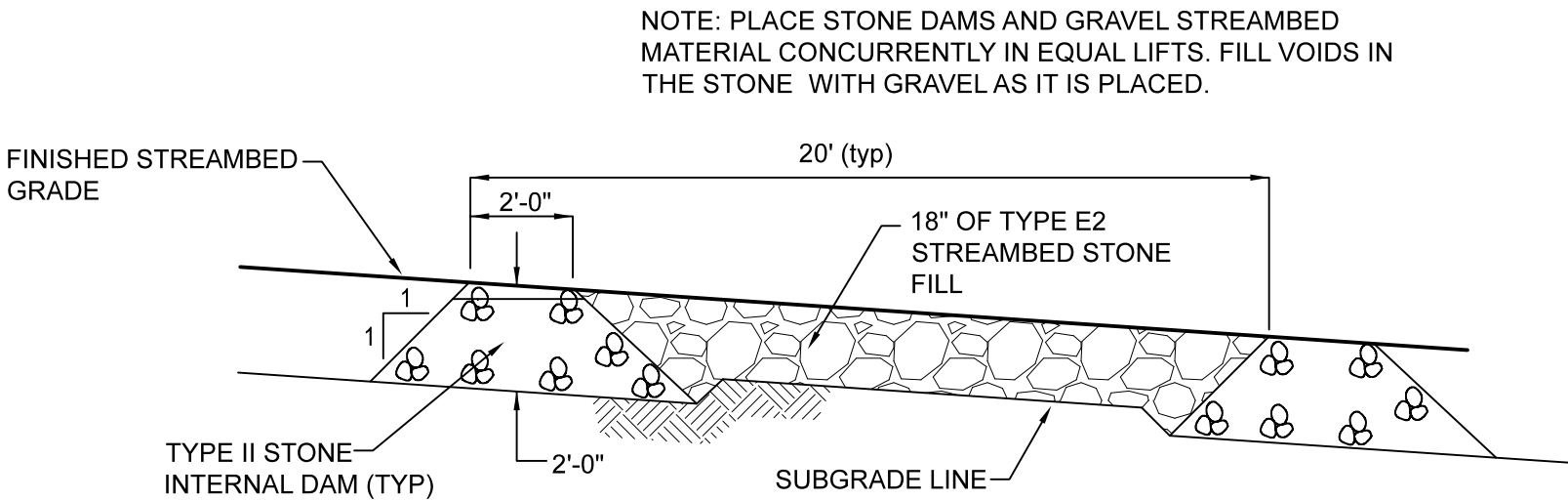
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TYPICAL SECTION - RESTORATION AREA 1

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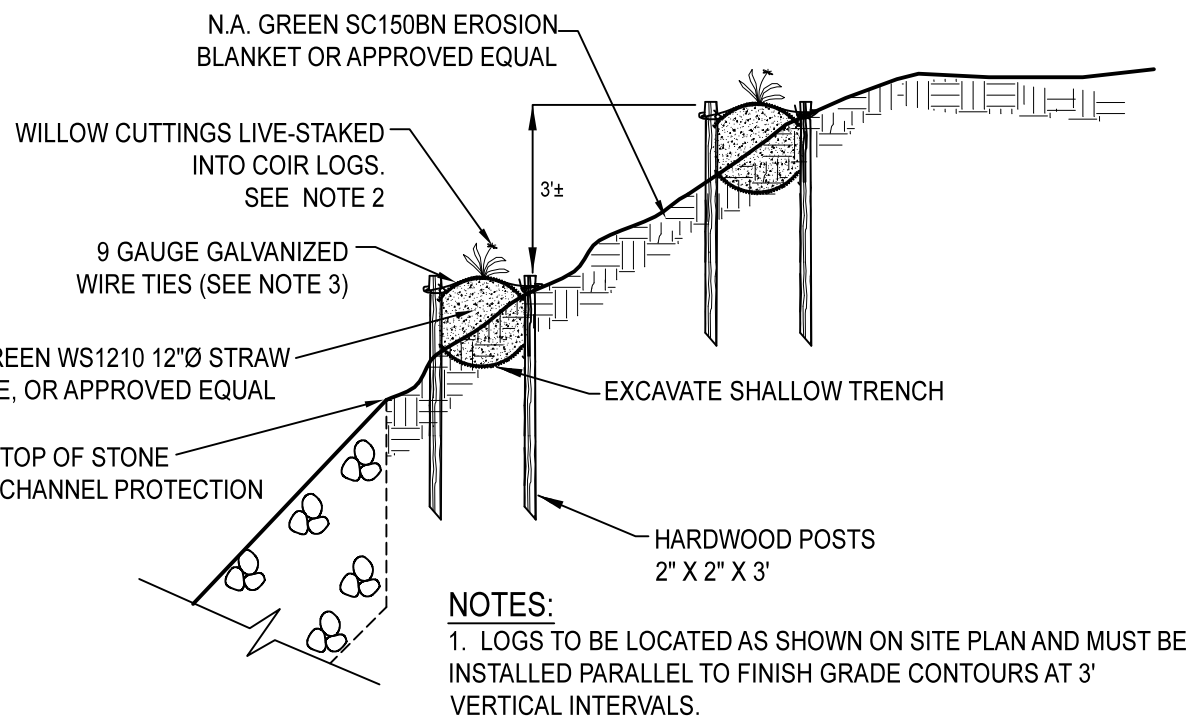
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TYPICAL STREAMBED PROFILE

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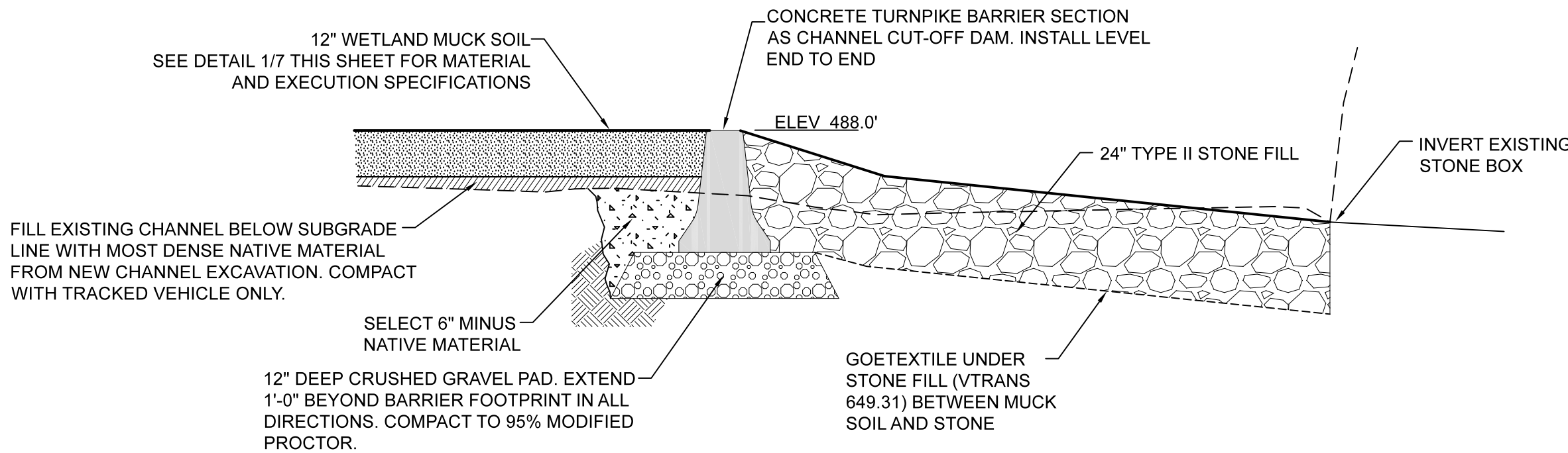
TYPICAL SECTION - COIR LOG BANK RESTORATION

NOT TO SCALE

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NOTES

- THE CONCRETE TRAFFIC BARRIER SECTION PLACED UPSTREAM OF THE INLET OF THE EXISTING STONE BOX SHALL BE 12'-0" IN LENGTH, BE STRUCTURALLY SOUND AND IN REASONABLY GOOD CONDITION, AND FREE FROM ANY CRACKS, DELAMINATIONS, SPALLING OR OTHER IMPERFECTIONS, ETC.
- FURNISHING AND PLACING THE BARRIER, TOGETHER WITH ANY NECESSARY MATERIAL, BACKFILLING AND GRADING WORK, SHALL FALL UNDER THE ITEM, WETLANDS RESTORATION WORK.



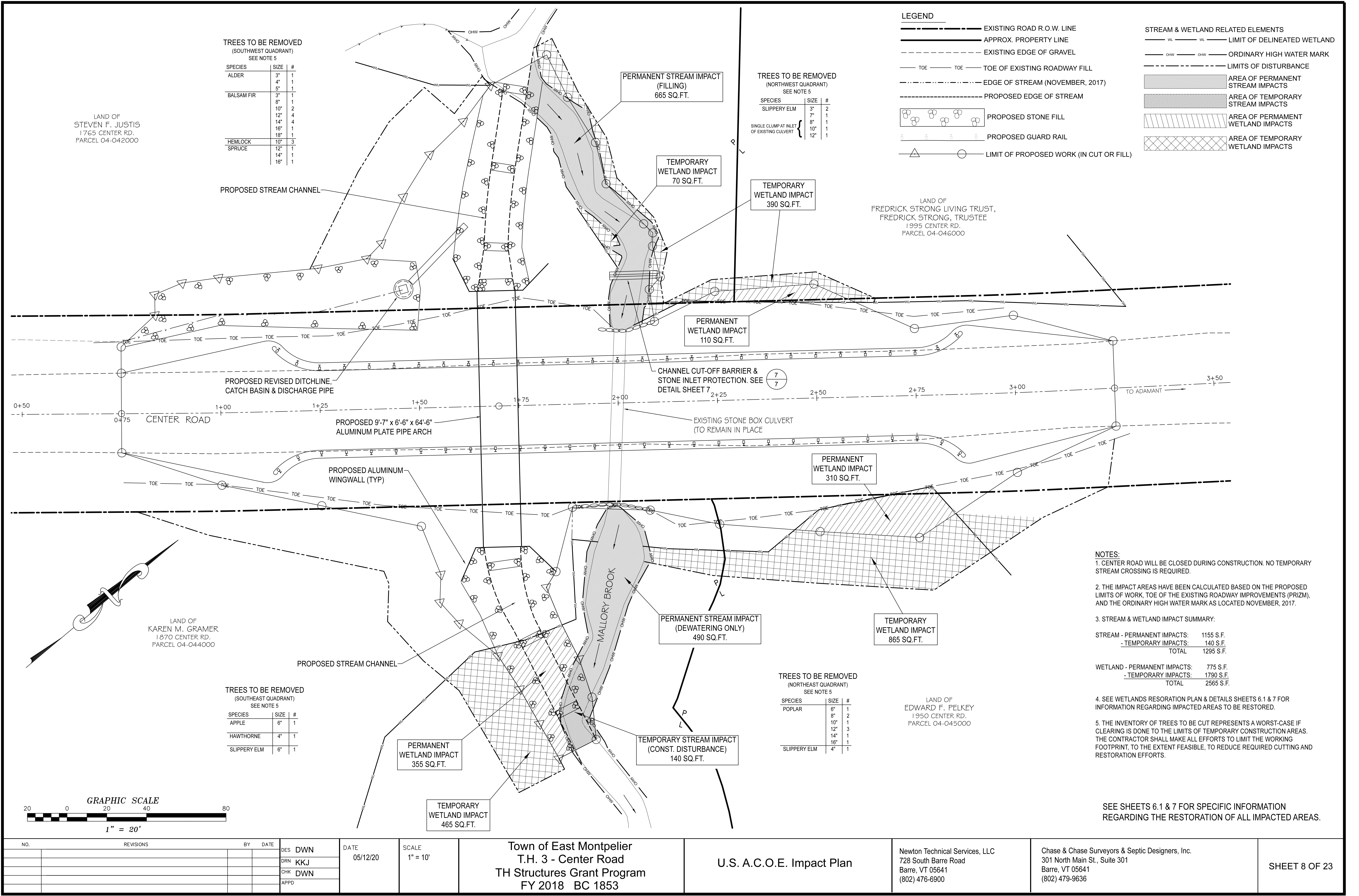
DETAIL - CHANNEL CUT-OFF BARRIER & STONE INLET PROTECTION

NOT TO SCALE

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NO.	REVISIONS	BY	DATE	DES	DATE	SCALE	Town of East Montpelier T.H. 3 - Center Road TH Structures Grant Program FY 2018 BC 1853	Restoration Details	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 7 OF 23
				DWN	10/28/20	1" = 10'					
				KKJ							
				DWN							
				APPD							





TREES TO BE REMOVED  
(SOUTHWEST QUADRANT)  
SEE NOTE 5

SPECIES	SIZE	#
ALDER	3"	1
	4"	1
	5"	1
BALSAM FIR	3"	1
	8"	1
	10"	2
	12"	4
	14"	4
	16"	1
	18"	1
HEMLOCK	10"	3
SPRUCE	12"	1
	14"	1
	16"	1

TREES TO BE REMOVED  
(NORTHWEST QUADRANT)  
SEE NOTE 5

SPECIES	SIZE	#
SLIPPERY ELM	3"	2
	7"	1
	8"	1
	10"	1
	12"	1

SINGLE CLUMP AT INLET  
OF EXISTING CULVERT

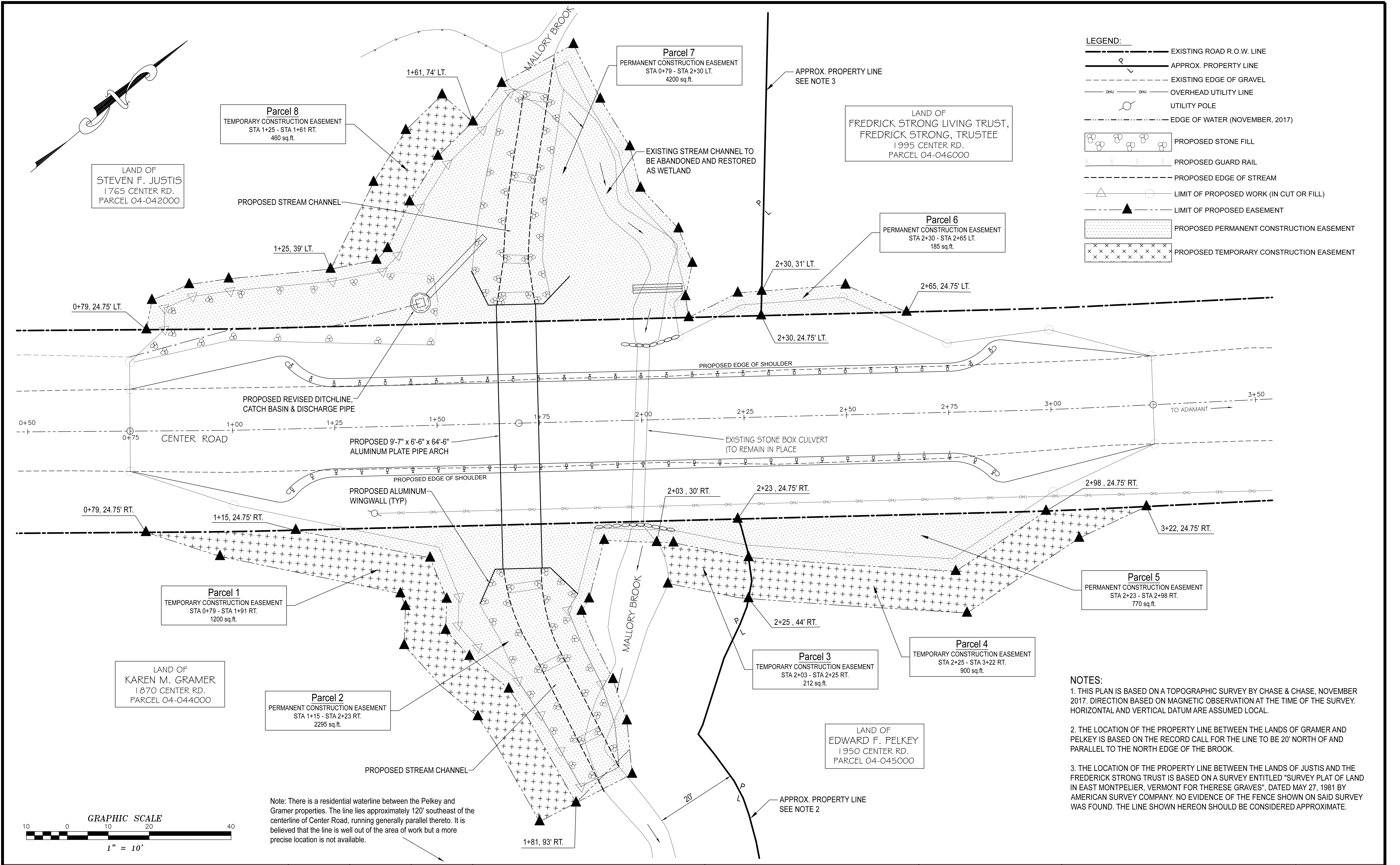
TREES TO BE REMOVED  
(SOUTHEAST QUADRANT)  
SEE NOTE 5

SPECIES	SIZE	#
APPLE	6"	1
	8"	2
	10"	1
	12"	3
	14"	1
	16"	1
SLIPPERY ELM	4"	1

- NOTES:
- CENTER ROAD WILL BE CLOSED DURING CONSTRUCTION. NO TEMPORARY STREAM CROSSING IS REQUIRED.
  - THE IMPACT AREAS HAVE BEEN CALCULATED BASED ON THE PROPOSED LIMITS OF WORK, TOE OF THE EXISTING ROADWAY IMPROVEMENTS (PRIZM), AND THE ORDINARY HIGH WATER MARK AS LOCATED NOVEMBER, 2017.
  - STREAM & WETLAND IMPACT SUMMARY:
- |                             |           |
|-----------------------------|-----------|
| STREAM - PERMANENT IMPACTS: | 1155 S.F. |
| - TEMPORARY IMPACTS:        | 140 S.F.  |
| TOTAL                       | 1295 S.F. |
- |                              |           |
|------------------------------|-----------|
| WETLAND - PERMANENT IMPACTS: | 775 S.F.  |
| - TEMPORARY IMPACTS:         | 1790 S.F. |
| TOTAL                        | 2565 S.F. |
- SEE WETLANDS RESORATION PLAN & DETAILS SHEETS 6.1 & 7 FOR INFORMATION REGARDING IMPACTED AREAS TO BE RESTORED.
  - THE INVENTORY OF TREES TO BE CUT REPRESENTS A WORST-CASE IF CLEARING IS DONE TO THE LIMITS OF TEMPORARY CONSTRUCTION AREAS. THE CONTRACTOR SHALL MAKE ALL EFFORTS TO LIMIT THE WORKING FOOTPRINT, TO THE EXTENT FEASIBLE, TO REDUCE REQUIRED CUTTING AND RESTORATION EFFORTS.

SEE SHEETS 6.1 & 7 FOR SPECIFIC INFORMATION REGARDING THE RESTORATION OF ALL IMPACTED AREAS.

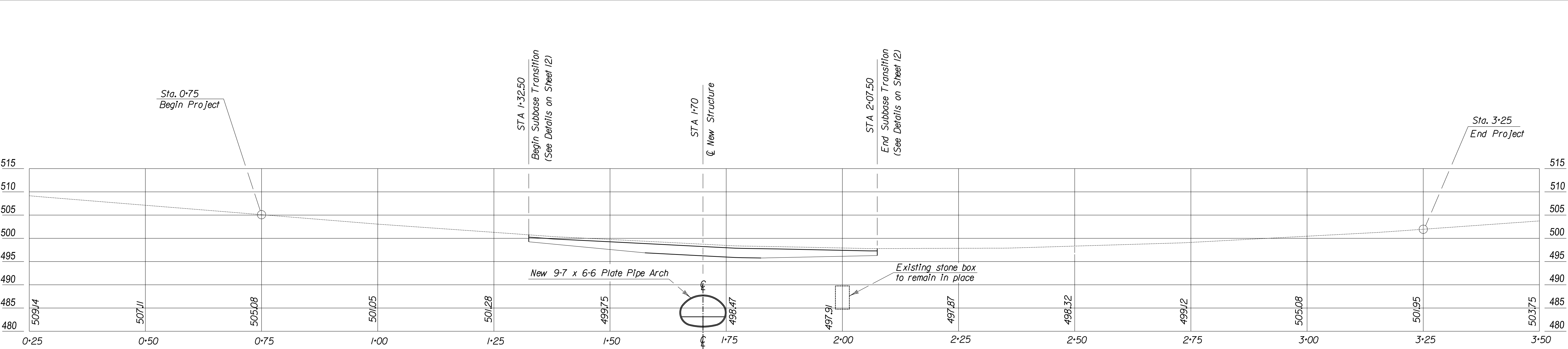
NO.	REVISIONS	BY	DATE	DES	DATE	SCALE	Town of East Montpelier T.H. 3 - Center Road TH Structures Grant Program FY 2018 BC 1853	U.S. A.C.O.E. Impact Plan	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 8 OF 23
				DWN	05/12/20	1" = 10'					
				KKJ							
				DWN							
				APPD							



NO.		REVISIONS		BY	DATE	DES	DRN	CHK	APPD	DATE	SCALE	Town of East Montpelier T.H. 3 - Center Road TH Structures Grant Program FY 2018 BC 1853		Right-of-Way Plan		Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900		Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636		SHEET 9 OF 23	
						DWN	KKJ	DWN		11/09/2020	1" = 10'										



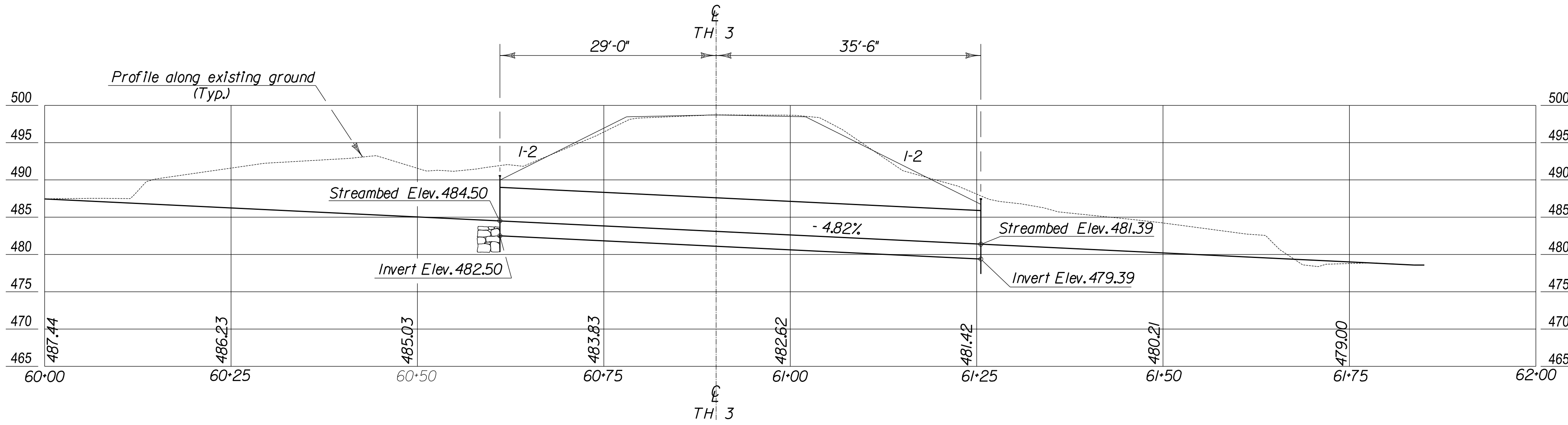




ROADWAY PROFILE

1" = 10'

NOTES: Elevations shown are existing centerline finish grades  
Project to be constructed on that existing vertical alignment



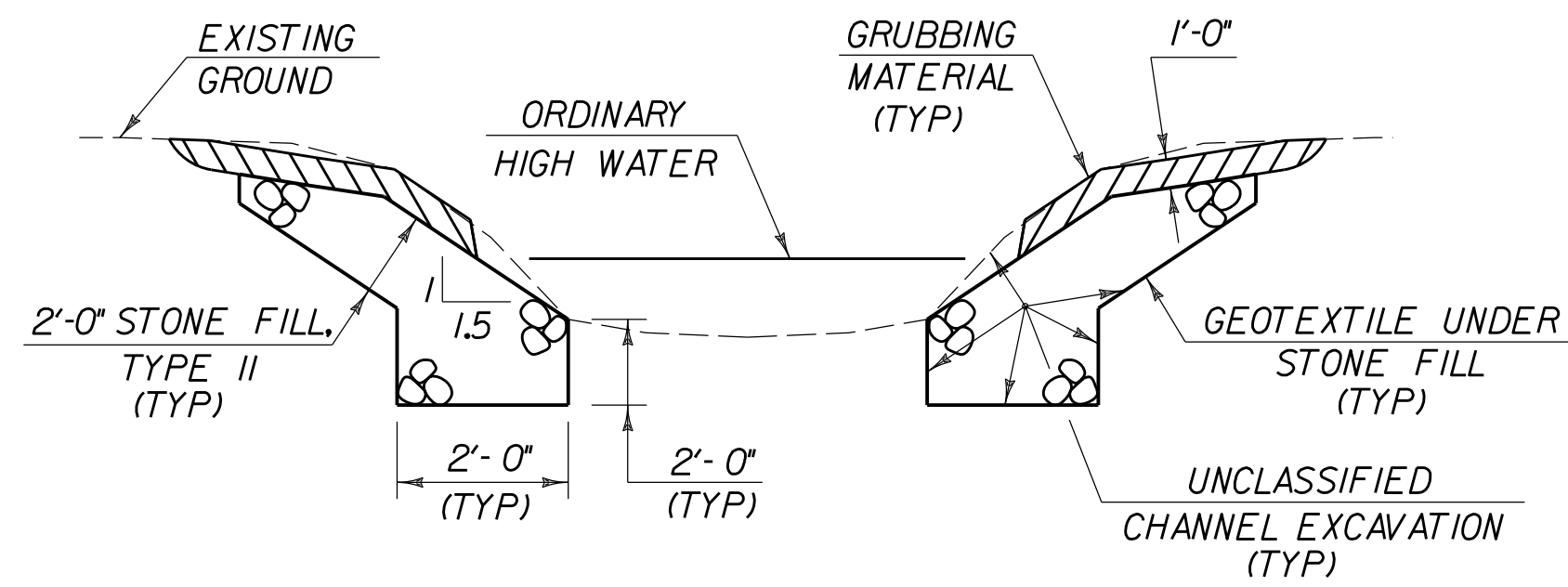
CHANNEL LINE PROFILE

1" = 10'

NOTE: Elevations shown along Channel Line stations are finished streambed grades

NO.		REVISIONS		BY	DATE	DES		DATE October 2020	SCALE As Noted	Town of East Montpelier TH 3, Center Road TH Structures Grant Program BC1853 FY2018	ROADWAY PROFILE CHANNEL LINE PROFILE	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 11 OF 23
						DWN	DWN							
						DRN	DWN							
						CHK	DWN							
						APPD								

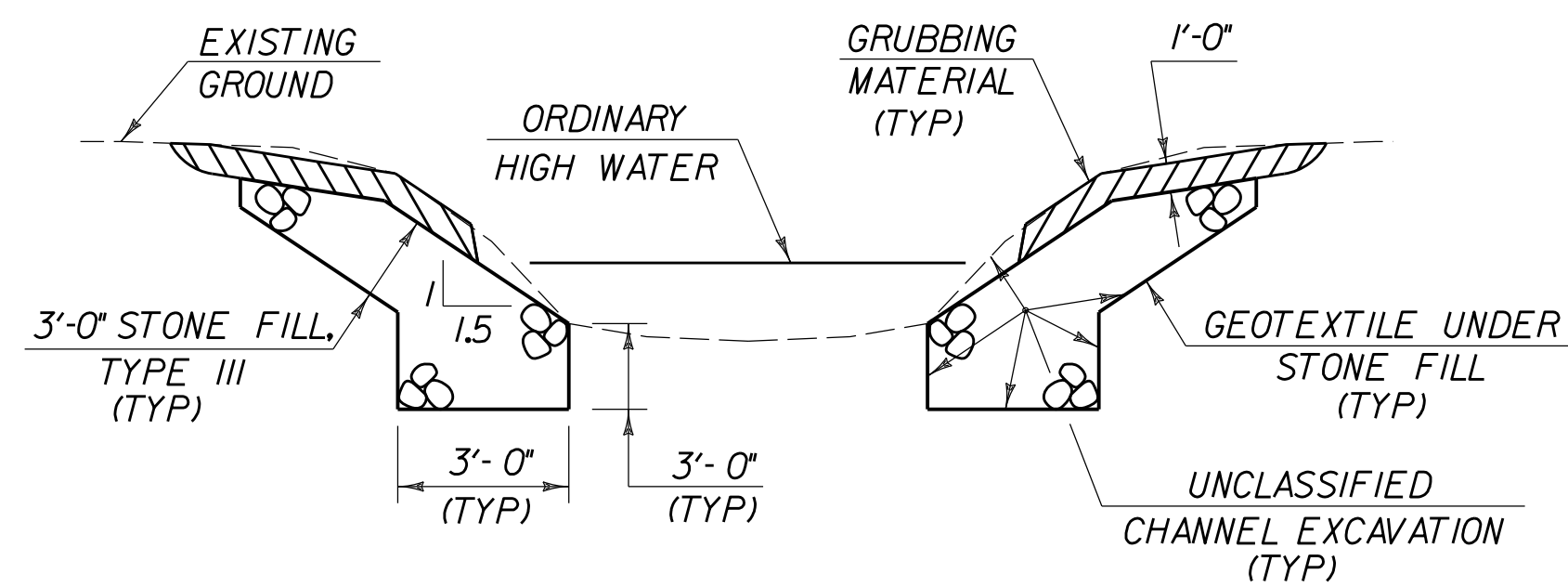




TYPICAL CHANNEL SECTION AT INLET

(NOT TO SCALE)

(See Streambed Construction Detail on this sheet)



TYPICAL CHANNEL SECTION AT OUTLET

(NOT TO SCALE)

(See Streambed Construction Detail on this sheet)

### SEEDING FORMULA

% WT.	LBS./A.	NAME	PUR %	GERM %
37.5	22.5	CREeping RED FESCUE	98	85
37.5	22.5	TALL FESCUE	95	90
5.0	3.0	RED TOP	95	90
15.0	9.0	BIRDSFOOT TREFOIL	98	85
5.0	3.0	ANNUAL RYEGRASS	95	85
100.0	60.0			

#### NOTES:

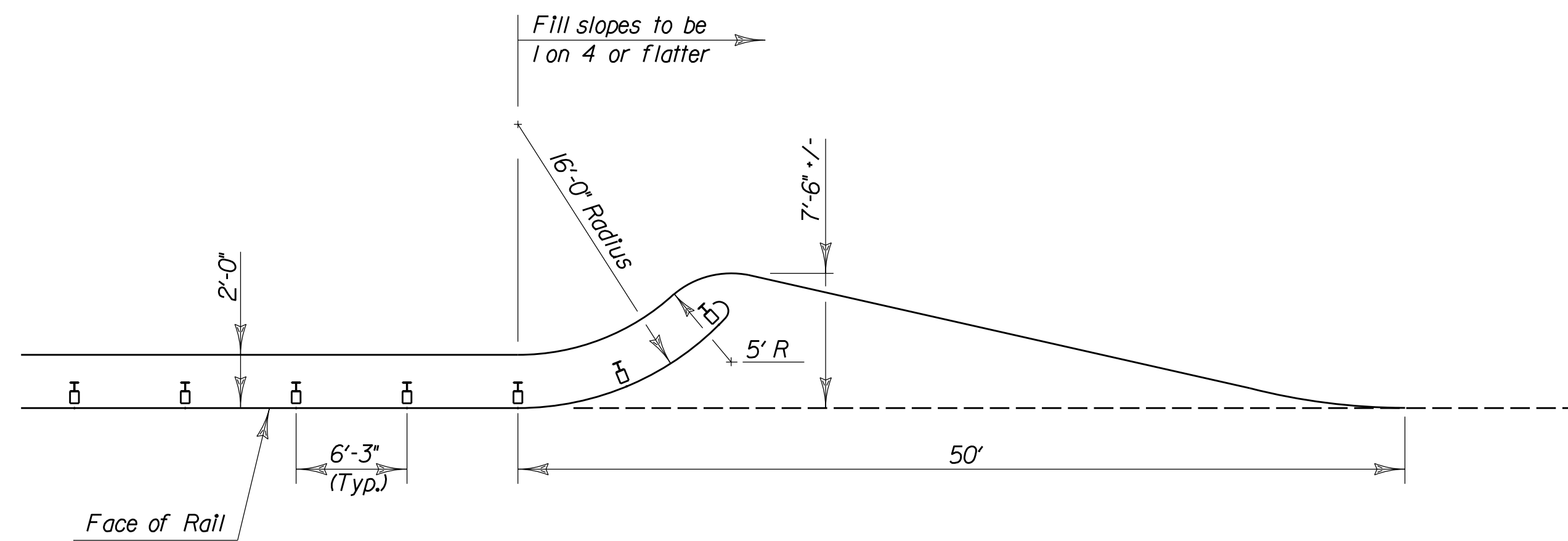
SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.

SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.

FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 LBS./ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

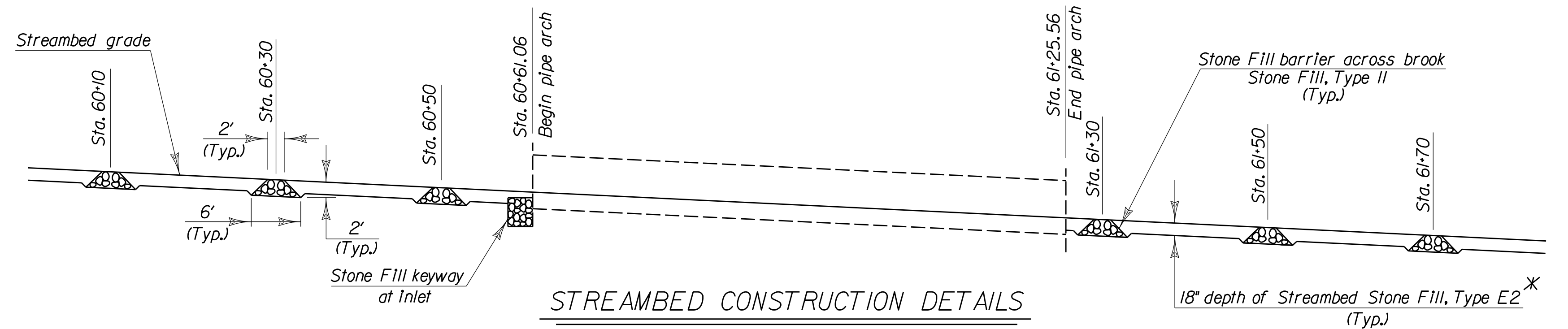
AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.



GUARDRAIL FLARE DETAIL

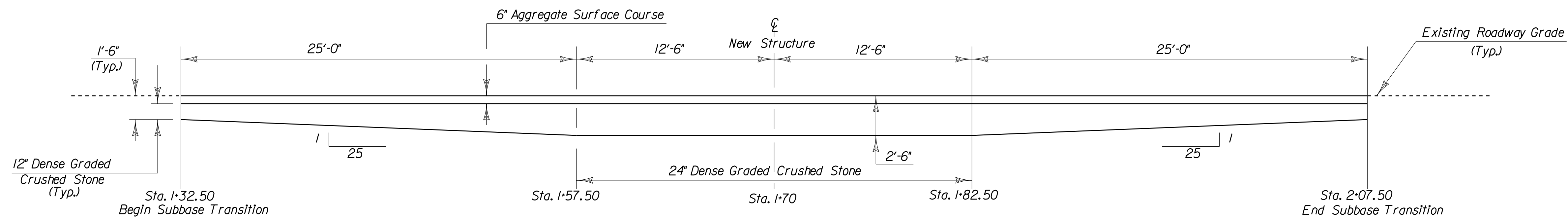
(NOT TO SCALE)



STREAMBED CONSTRUCTION DETAILS

(NOT TO SCALE)

\* (Streambed Stone Fill, Type II material shall be placed concurrently with the stone fill to ensure that both materials are consolidated together)



SUBBASE TRANSITION DETAILS

1/4" = 1'-0"

NO.	REVISIONS	BY	DATE	DES	DATE	SCALE	Town of East Montpelier TH 3 – Center Road TH Structures Grant Program FY 2018 BC 1853	Subbase Transition Detail Guardrail Flare Detail Streambed Construction Details Typical Channel Sections Seeding Formula	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 12 OF 23
				DWN	November 2020	As Noted					
				DRN							
				CHK							
				APPD							





Ground Surface to 10'	Used 3.25"	augers: Then SS to 12' refusal at 14'3"	
		Earth Boring	14'3"
		Rock Coring	
		Samples:	2
		HOLE NUMBER	B-7A

Ground Surface to 19"	Used 3.25"	augers: Then SS to refusal at 19'5.5"	Earth Boring	19'5.5"
			Rock Coring	
			Samples:	4
			HOLE NUMBER	B-8

TO: Doug Newton Newton Technical Service, LLC 728 South Barre Road Barre, VT 05641	PROJECT NAME: Center Rd Culvert  LOCATION: East Montpelier, VT  MBC JOB #: 202026	SHEET: 4 DATE: 4-27-2020 HOLE #: B-9 LINE & STA. OFFSET: 9.5 RT of
---	---	--

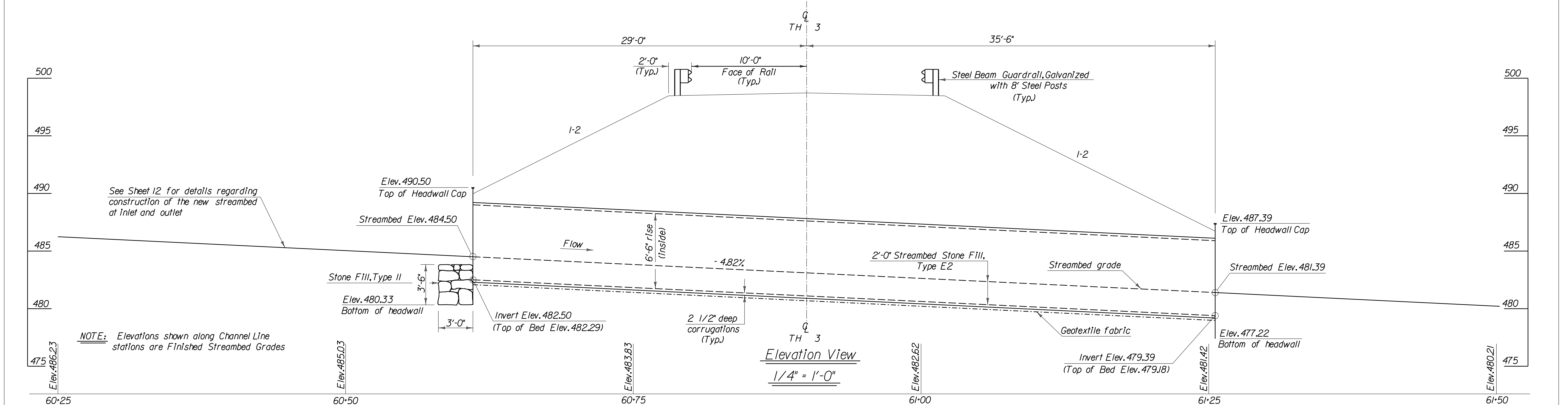
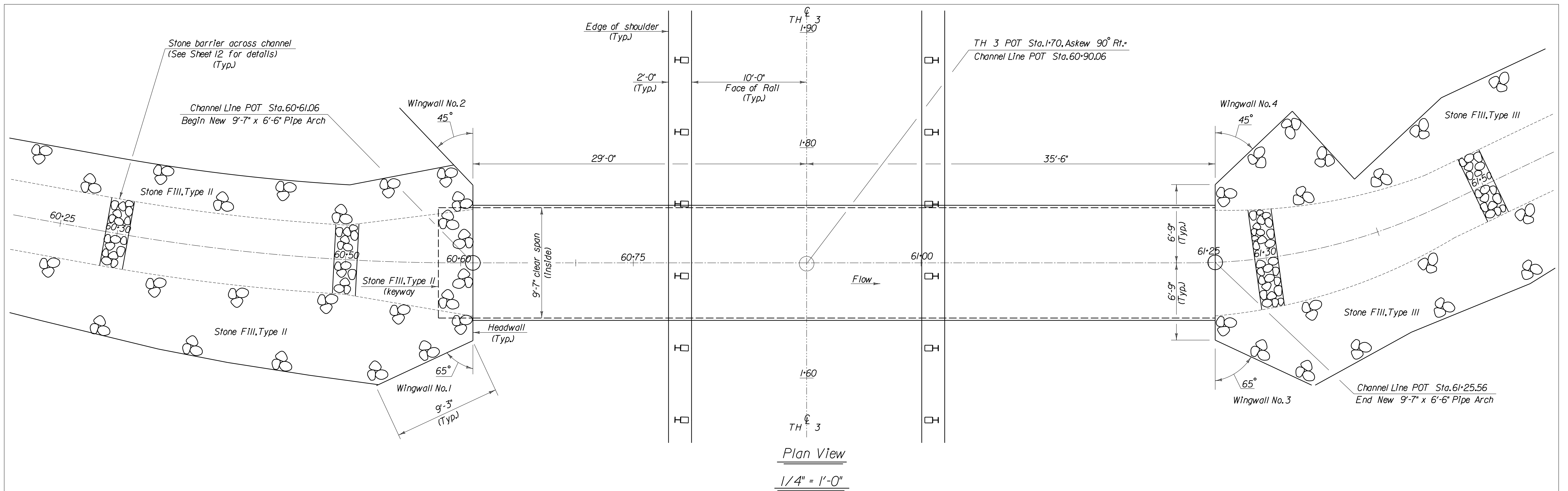
TO: Doug Newton Newton Technical Service, LLC 728 South Barre Road Barre, VT 05641	PROJECT NAME: Center Rd Culvert  LOCATION: East Montpelier, VT  MBC JOB #: 202026	SHEET: 5 DATE: 4-28-2020 HOLE #: B-10 LINE & STA. OFFSET: 9' LT of CL
---	---	---

TO: Doug Newton Newton Technical Service, LLC 728 South Barre Road Barre, VT 05641	PROJECT NAME: Center Rd Culvert  LOCATION: East Montpelier, VT  MBC JOB # 202026	SHEET: 6 DATE: 4-27-2020 HOLE #: B- 11 LINE & STA. OFFSET: 4' LT of CL
---	--	--

TO: Doug Newton Newton Technical Service, LLC 728 South Barre Road Barre, VT 05641	PROJECT NAME: Center Rd Culvert  LOCATION: East Montpelier, VT  MBC JOB #: 202026	SHEET: 7 DATE: 4-28-2020 HOLE #: B- 12 LINE & STA. OFFSET: 9' LT of CL
---	---	--

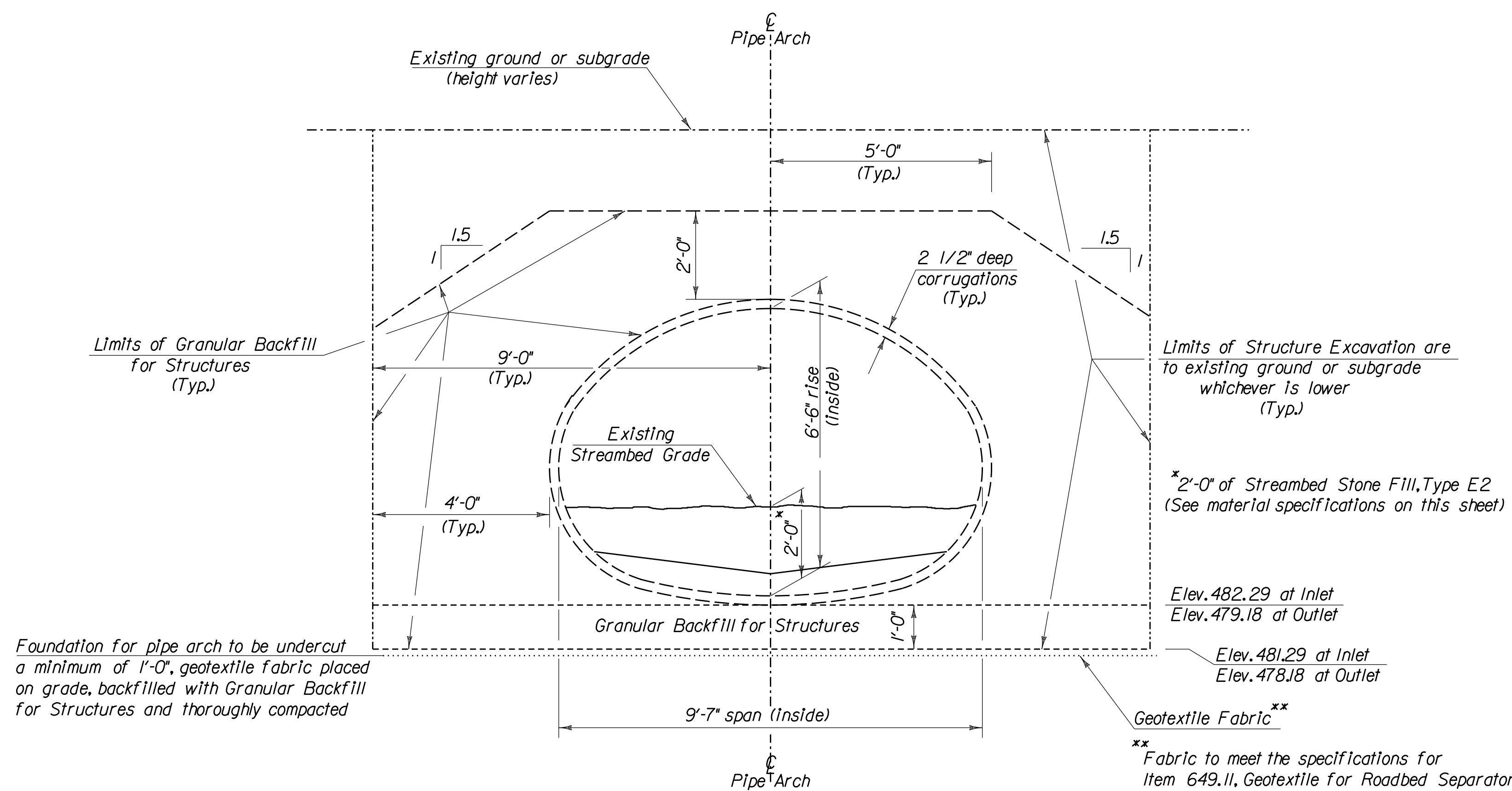
NO. REVISIONS BY DATE				DES DWN	DATE NOV 2020	SCALE AS SHOWN	Town of East Montpelier T.H. 3 - Center Road TH Structures Grant Program FY 2018 BC 1853	Boring Layout and Logs	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 13 OF 23
				DRN KJ							
				CHK DWN							
				APPD							





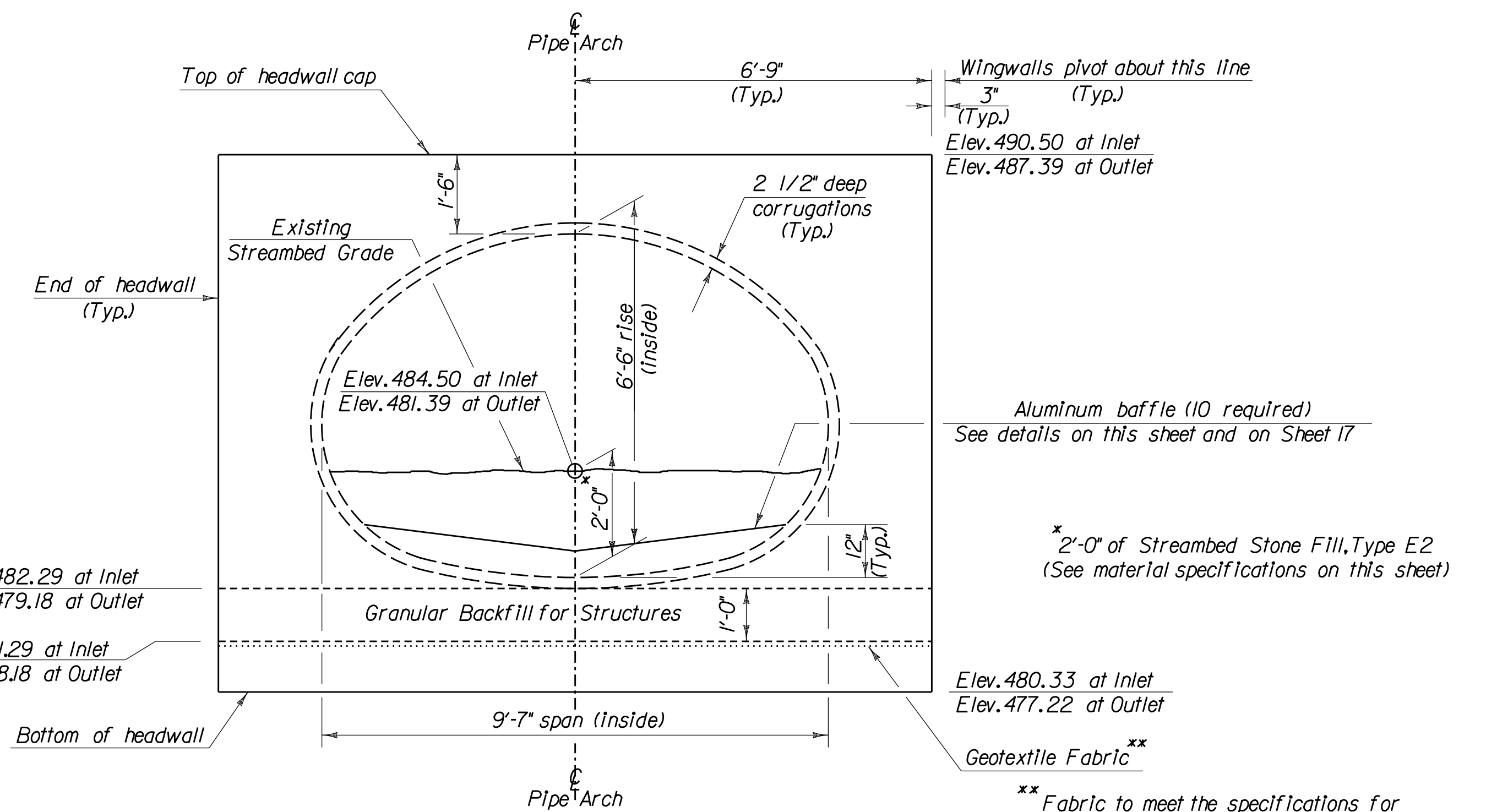
NO.	REVISIONS	BY	DATE	DES	DATE	SCALE	Town of East Montpelier TH 3 – Center Road TH Structures Grant Program FY 2018 BC 1853	Plan and Elevation	Newton Technical Services 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 14 OF 23
				DWN	November 2020	As Noted					
				DRN							
				CHK							
				APPD							





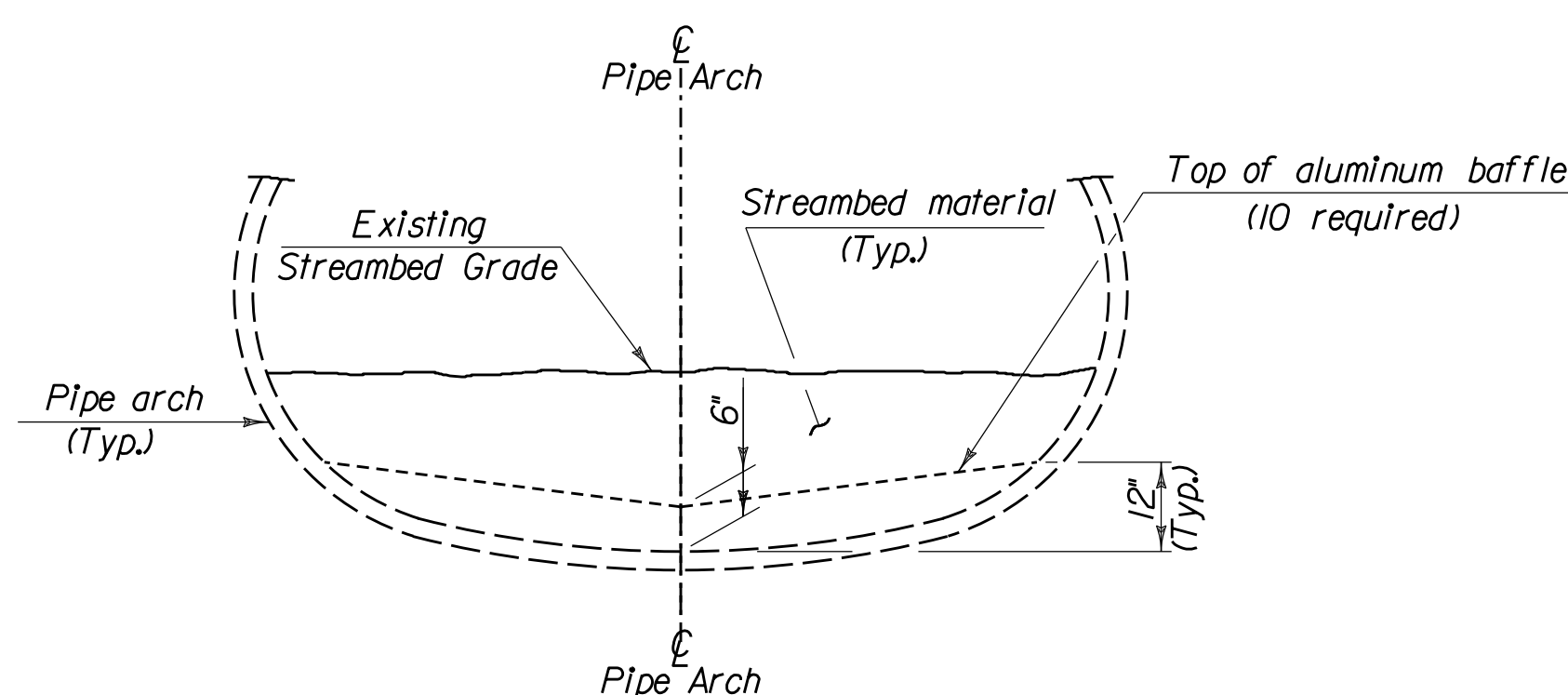
LIMITS OF EXCAVATION and BACKFILL for PIPE ARCH

1/2" = 1'-0"



INSTALLATION DETAILS AND ELEVATIONS

1/2" = 1'-0"

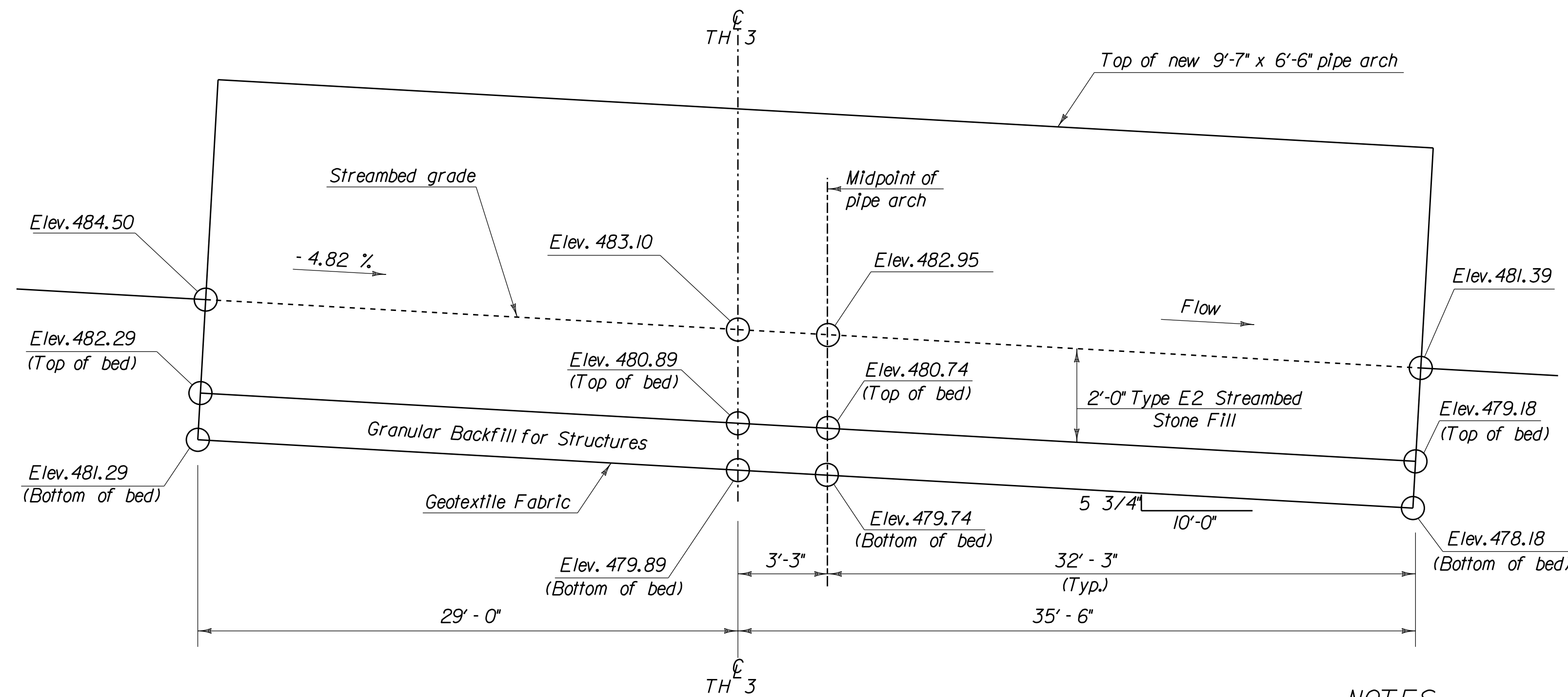


BAFFLE DETAILS

1/2" = 1'-0"

**NOTES:**

1. One baffle to be placed at each end of the structure, and the other 8 to be placed along the invert as shown on CONTECH's shop drawings. (See Sheets 17 and 18)
2. CONTECH to furnish baffles, brackets and all hardware to attach baffles to the invert of the pipe arch. Brackets to be installed on the downstream side of the baffle.
3. The Contractor shall install the baffles; all work including any field drilling required, and installation of the baffles shall be included under the Item, Assembly of New Structure.
4. Specifications for Type E2 Streambed Stone Fill: The longest dimension of the stone shall be at least 24 inches, and at least 50 percent of the volume of the stone in place shall have a least dimension of 18 inches, and at least 25 percent of the particles shall have a maximum dimension of 2 inches and be well-graded material.



SCHEMATIC DIAGRAM WITH ELEVATIONS

Not to Scale

**NOTES**

1. Elevations shown for "Top of Bed" take into account the 2 1/2" (0.21') depth of corrugations
2. Headwalls not shown for clarity

NO.	REVISIONS	BY	DATE	DES	DATE	SCALE	Town of East Montpelier Center Road – T.H. 3 TH Structures Grant Program FY 2018, Project BC - 1853	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 15 OF 23
				DWN	May 2019	As Noted				
				KKJ						
				DWN						
				DWN						



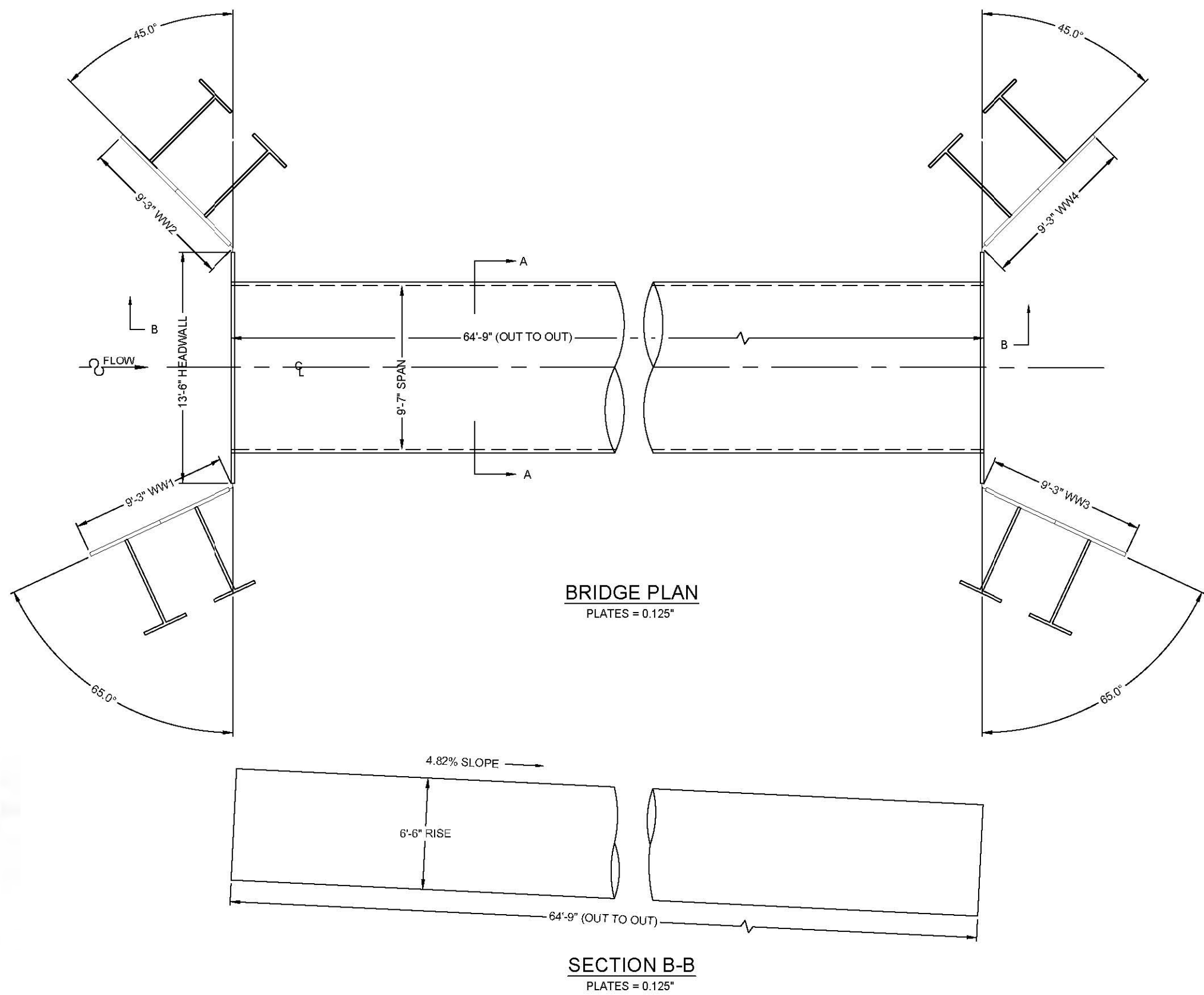
# ALUMINUM STRUCTURAL PLATE PIPE ARCH EAST MONTPELIER VT TH 3 CENTER ROAD EAST MONTPELIER, VT

661138-INDEX	
PAGE NUMBER	PAGE TITLE
1	COVER SHEET
2	PLAN VIEW
3	CROSS SECTION
4	PLAN VIEW 2
5	ELEVATION VIEW
6-8	DETAILS
9	SPECIFICATIONS
10	PLATE LAYOUT

PRE-661138-010-ALSPPA-CON-B  
CONTECH PROJECT ID # 661138

## I - GENERAL

- 1.0 STANDARDS AND DEFINITIONS
- 1.1 STANDARDS - ALL STANDARDS REFER TO LATEST EDITION UNLESS OTHERWISE NOTED.
- 1.1.1 ASTM B-864 "STANDARD SPECIFICATION FOR CORRUGATED ALUMINUM STRUCTURAL PLATE" (AASHTO DESIGNATION M-215).
- 1.1.2 AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES - SECTION 12 DIVISION I - DESIGN.
- 1.1.3 AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES - SECTION 26 DIVISION II - CONSTRUCTION.
- 1.2 DEFINITIONS
- 1.2.1 OWNER - IN THESE SPECIFICATIONS THE WORD "OWNER" SHALL MEAN TOWN OF EAST MONTPELIER, VT.
- 1.2.2 ENGINEER - IN THESE SPECIFICATIONS THE WORD "ENGINEER" SHALL MEAN THE ENGINEER OF RECORD OR OWNER'S DESIGNATED ENGINEERING REPRESENTATIVE.
- 1.2.3 MANUFACTURER - IN THESE SPECIFICATIONS THE WORD "MANUFACTURER" SHALL MEAN CONTECH ENGINEERED SOLUTIONS, LLC 800-338-1122.
- 1.2.4 CONTRACTOR - IN THESE SPECIFICATIONS THE WORD "CONTRACTOR" SHALL MEAN THE FIRM OR CORPORATION UNDERTAKING THE EXECUTION OF ANY INSTALLATION WORK UNDER THE TERMS OF THESE SPECIFICATIONS.
- 1.2.5 APPROVED - IN THESE SPECIFICATIONS THE WORD "APPROVED" SHALL REFER TO THE APPROVAL OF THE ENGINEER OR HIS DESIGNATED REPRESENTATIVE.
- 1.2.6 AS DIRECTED - IN THESE SPECIFICATIONS THE WORD "AS DIRECTED" SHALL REFER TO THE DIRECTIONS TO THE CONTRACTOR FROM THE OWNER OR HIS DESIGNATED REPRESENTATIVE.
- 2.0 GENERAL CONDITIONS
- 2.1 THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL AND EQUIPMENT AND PERFORM ALL WORK AND SERVICES EXCEPT THOSE SET OUT AND FURNISHED BY THE OWNER, NECESSARY TO COMPLETE IN A SATISFACTORY MANNER THE SITE PREPARATION, EXCAVATION, FILLING, COMPACTION, GRADING AS SHOWN ON THE PLANS AND AS DESCRIBED THEREIN. THIS WORK SHALL CONSIST OF ALL MOBILIZATION, CLEARING AND GRADING, GRUBBING, STRIPPING, REMOVAL OF EXISTING MATERIAL UNLESS OTHERWISE STATED, PREPARATION OF THE LAND TO BE FILLED, FILLING OF THE LAND, SPREADING AND COMPACTION OF THE FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING OF THE CUT AND FILL AREAS TO CONFORM WITH THE LINES, GRADES, SLOPES, AND SPECIFICATIONS. THIS WORK IS TO BE ACCOMPLISHED UNDER THE OBSERVATION OF THE OWNER OR HIS DESIGNATED REPRESENTATIVE.
- 2.2 PRIOR TO BIDDING THE WORK, THE CONTRACTOR SHALL EXAMINE, INVESTIGATE AND INSPECT THE CONSTRUCTION SITE AS TO THE NATURE AND LOCATION OF THE WORK, AND THE GENERAL AND LOCAL CONDITIONS AT THE CONSTRUCTION SITE, INCLUDING WITHOUT LIMITATION, THE CHARACTER OF SURFACE OR SUBSURFACE CONDITIONS AND OBSTACLES TO BE ENCOUNTERED ON AND AROUND THE CONSTRUCTION SITE AND SHALL MAKE SUCH ADDITIONAL INVESTIGATION AS HE MAY DEEM NECESSARY FOR THE PLANNING AND PROPER EXECUTION OF THE WORK.
- IF CONDITIONS OTHER THAN THOSE INDICATED ARE DISCOVERED BY THE CONTRACTOR, THE OWNER SHALL BE NOTIFIED IMMEDIATELY. THE MATERIAL WHICH THE CONTRACTOR BELIEVES TO BE A CHARGED CONDITION SHALL NOT BE DISTURBED SO THAT THE OWNER CAN INVESTIGATE THE CONDITION.
- 2.3 THE CONSTRUCTION SHALL BE PERFORMED UNDER THE DIRECTION OF THE ENGINEER.
- 2.4 ALL ASPECTS OF THE STRUCTURE DESIGN AND SITE LAYOUT INCLUDING FOUNDATIONS, BACKFILL, END TREATMENTS AND NECESSARY SCOUR CONSIDERATION SHALL BE PERFORMED BY THE ENGINEER.
- ANY INSTALLATION GUIDANCE PROVIDED HEREIN SHALL BE ENDORSED BY THE ENGINEER OR SUPERSEDED BY THE ENGINEER'S PLANS AND SPECIFICATIONS.



**CONTECH**  
ENGINEERED SOLUTIONS LLC  
www.contechES.com  
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45399  
800-338-1122 513-645-7000 513-645-7303 FAX

**CONTECH**  
STRUCTURAL PLATE

ALUMINUM STRUCTURAL PLATE PIPE ARCH  
9'-7" SPAN x 6'-6" RISE  
EAST MONTPELIER VT TH 3 CENTER ROAD  
EAST MONTPELIER, VT

PROJECT No.	661138	SER. No.	010	DATE	10/21/2020
DESIGNED		CHECKED		APPROVED	
CHECKED	MJO	APPROVED			
SHEET NO.	2	OF	10		

## II - ALUMINUM STRUCTURAL PLATE PIPE ARCH

### 1.0 GENERAL

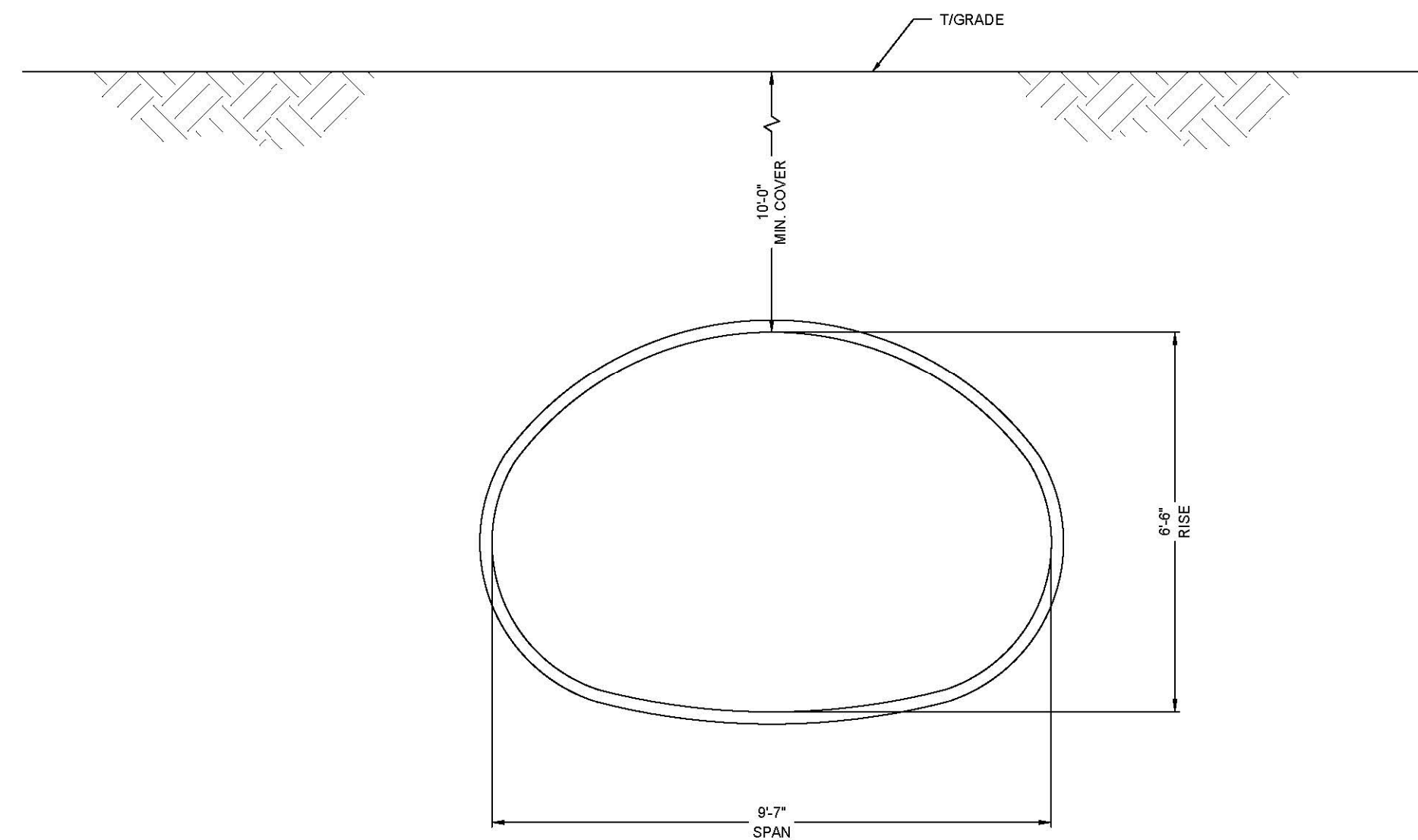
- 1.1 Manufacturer shall fabricate the aluminum structural plate pipe arch as shown on the plans. Fabrication shall conform to the requirements of ASTM B-864 and shall consist of plates, ribs, and appurtenant items.
- Plate thickness, and end treatment shall be as indicated on the plans. All manufacturing processes including corrugating, punching, curving and required galvanizing shall be performed within the United States of America.
- 1.2 The contractor shall verify all field dimensions and conditions prior to ordering materials.

### 2.0 DIMENSIONS

- Span: 9'-7"  
Haunch Gauge: 0.125
- Rise: 6'-6"  
Crown Gauge: 0.125
- 2.1 The proposed structure shall be an ALUMINUM PIPE ARCH with the above dimensions.
- 2.2 All plan dimensions on the contract drawings are measured in a true horizontal plane unless otherwise noted.

### 3.0 ASSEMBLY AND INSTALLATION

- 3.1 Bolts and nuts shall conform to the requirements of ASTM A-307 or ASTM A-449. The box culvert shall be assembled in accordance with the plate layout drawings provided by the manufacturer and per the manufacturer's recommendations.
- Bolts shall be tightened using an applied torque of between 100 and 150 ft.-lbs.
- 3.2 The pipe arch shall be installed in accordance with the plans and specifications, the manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 28 Division II - Construction.
- 3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the Engineer.
- 3.4 Bedding preparation is critical to both structure performance and service life. The bed should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.
- 3.5 Bedding shall provide a minimum of 4,000 psf bearing capacity. Foundation details for bearing capacity less than 4,000 psf shall be approved by the Engineer.
- 3.6 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloaded and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.
- 3.7 The structure shall be backfilled using clean well graded granular material that meets the requirements for soil classifications A-1, A-2-4, A-2-5 or A-3 modified to be more select than AASHTO M-145. See the information on sheet 9.
- Backfill must be placed symmetrically on each side of the structure in 6 to 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per AASHTO T-180.
- 3.8 Construction loads that exceed highway load limits are not allowed to cross the structure without approval from the Engineer.
- Normal highway traffic is not allowed to cross the structure until the structure has been backfilled and paved. If the road is unpaved, cover allowance to accommodate rutting shall be as directed by the Engineer.



CROSS SECTION A-A

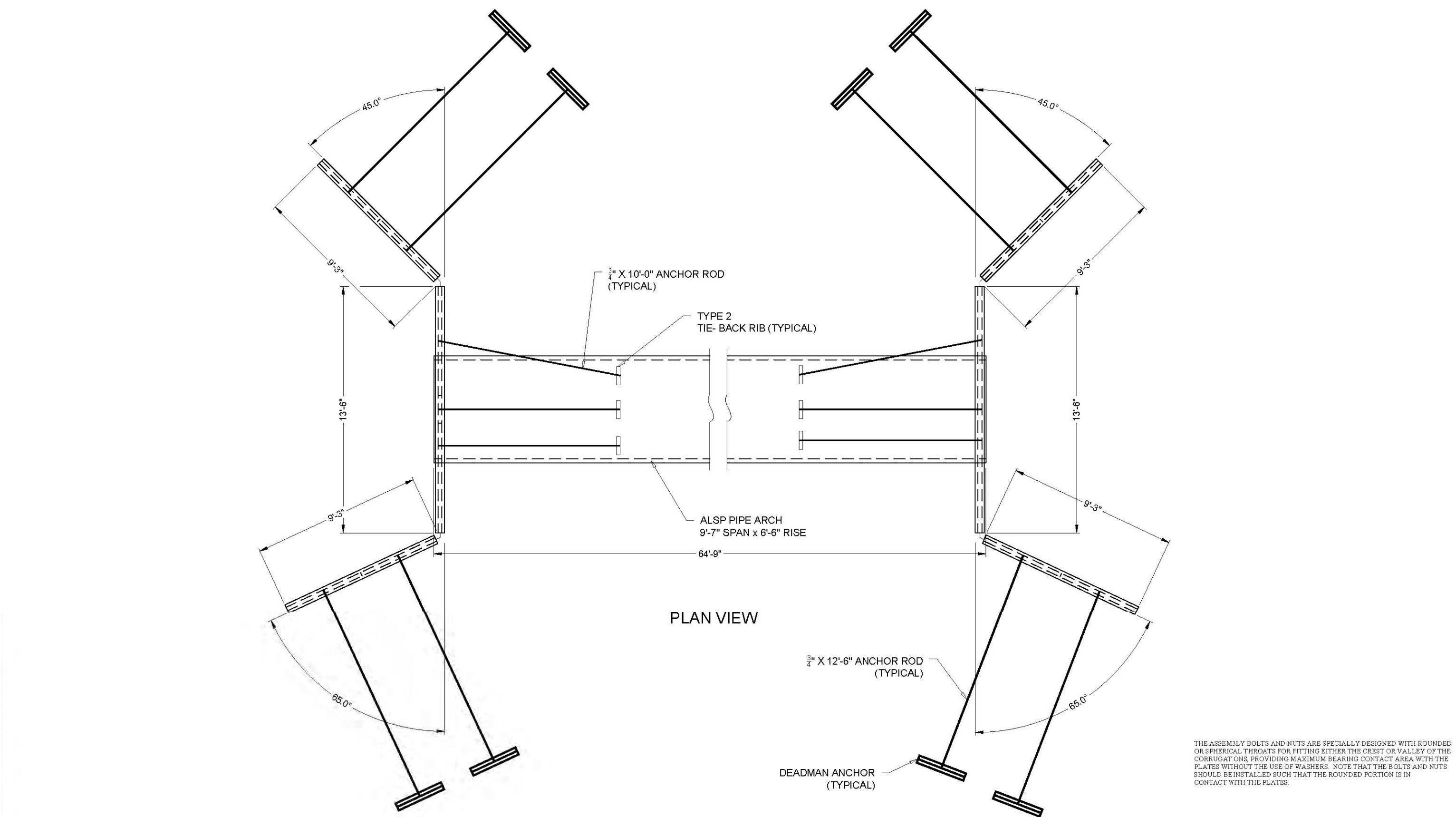
- NOTES
- \*MEASUREMENTS ARE TO THE INSIDE CRESTS OF THE CORRUGATION.
  - \*DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
  - \*THE MINIMUM COVER OUTSIDE OF ROADWAY SHOULDER IS 1'-6".

**CONTECH**  
ENGINEERED SOLUTIONS LLC  
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**CONTECH**  
STRUCTURAL PLATE

ALUMINUM STRUCTURAL PLATE PIPE ARCH  
9'-7" SPAN x 6'-6" RISE  
EAST MONTPELIER VT TH 3 CENTER ROAD  
EAST MONTPELIER, VT

PROJECT No.	661138	SER. No.	010	DATE	10/21/2020
DESIGNED		CHECKED		APPROVED	
CHECKED	MJO	APPROVED			
SHEET NO.	3	OF	10		



THE ASSEMBLY BOLTS AND NUTS ARE SPECIALLY DESIGNED WITH ROUNDED OR SPHERICAL THROATS FOR FITTING EITHER THE CREST OR VALLEY OF THE CORRUGATIONS PROVIDING MAXIMUM BEARING CONTACT AREA WITH THE PLATES WITHOUT THE USE OF WASHERS. NOTE THAT THE BOLTS AND NUTS SHOULD BE INSTALLED SUCH THAT THE ROUNDED PORTION IS IN CONTACT WITH THE PLATES.

**CONTECH**  
ENGINEERED SOLUTIONS LLC  
www.contechES.com  
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45399  
800-338-1122 513-645-7000 513-645-7303 FAX

**CONTECH**  
STRUCTURAL PLATE

ALUMINUM STRUCTURAL PLATE PIPE ARCH  
9'-7" SPAN x 6'-6" RISE  
EAST MONTPELIER VT TH 3 CENTER ROAD  
EAST MONTPELIER, VT

PROJECT No.	661138	SER. No.	010	DATE	10/21/2020
DESIGNED		CHECKED		APPROVED	
CHECKED	MJO	APPROVED			
SHEET NO.	4	OF	10		

NO.	REVISIONS	BY	DATE

DES	DWN
DRN	KKJ
CHK	DWN
APPD	

DATE	AS NOTED
SCALE	As noted

Town of East Montpelier  
T.H. 3 - Center Road  
TH Structures Grant Program  
FY 2018 BC 1853

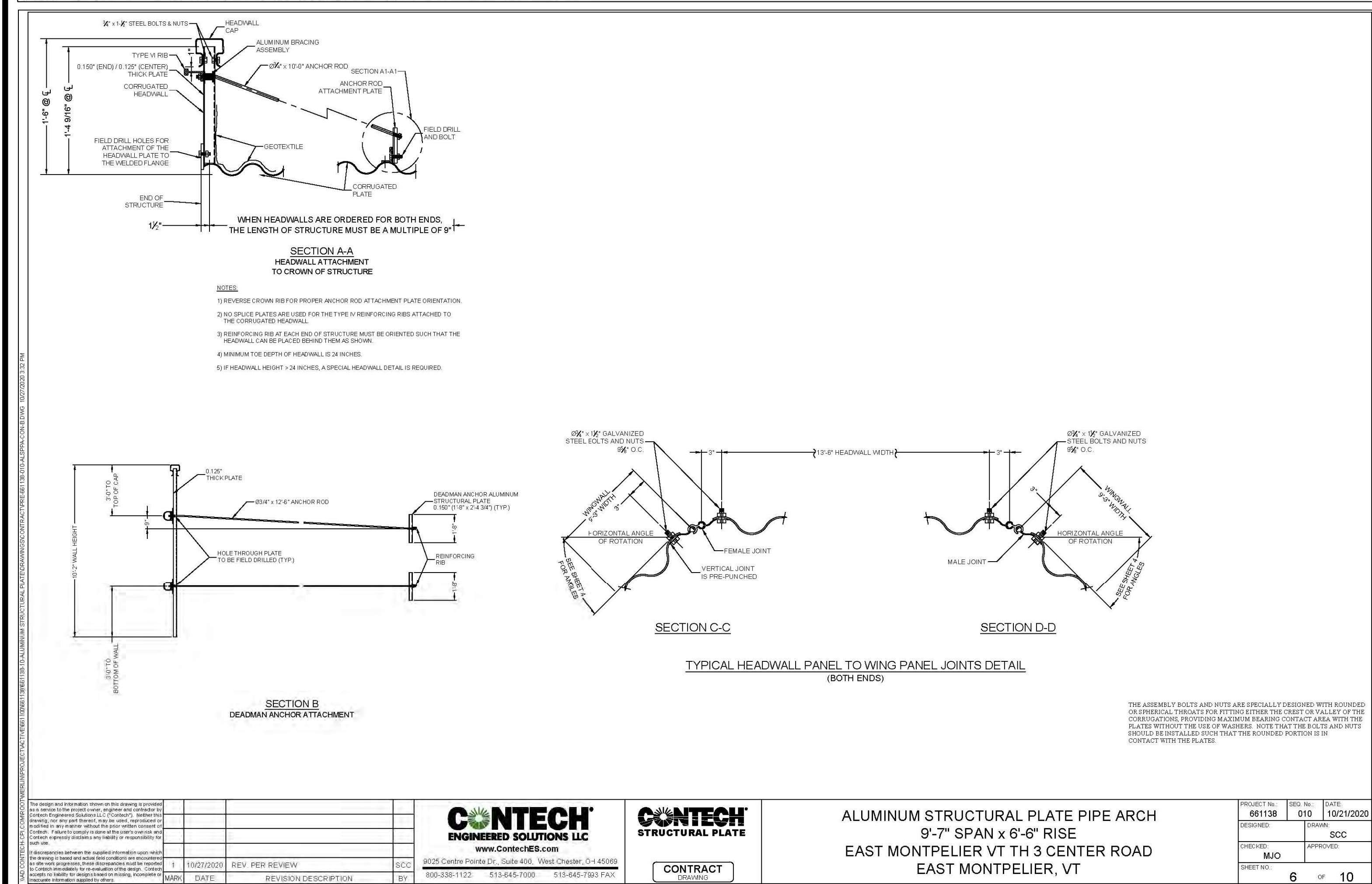
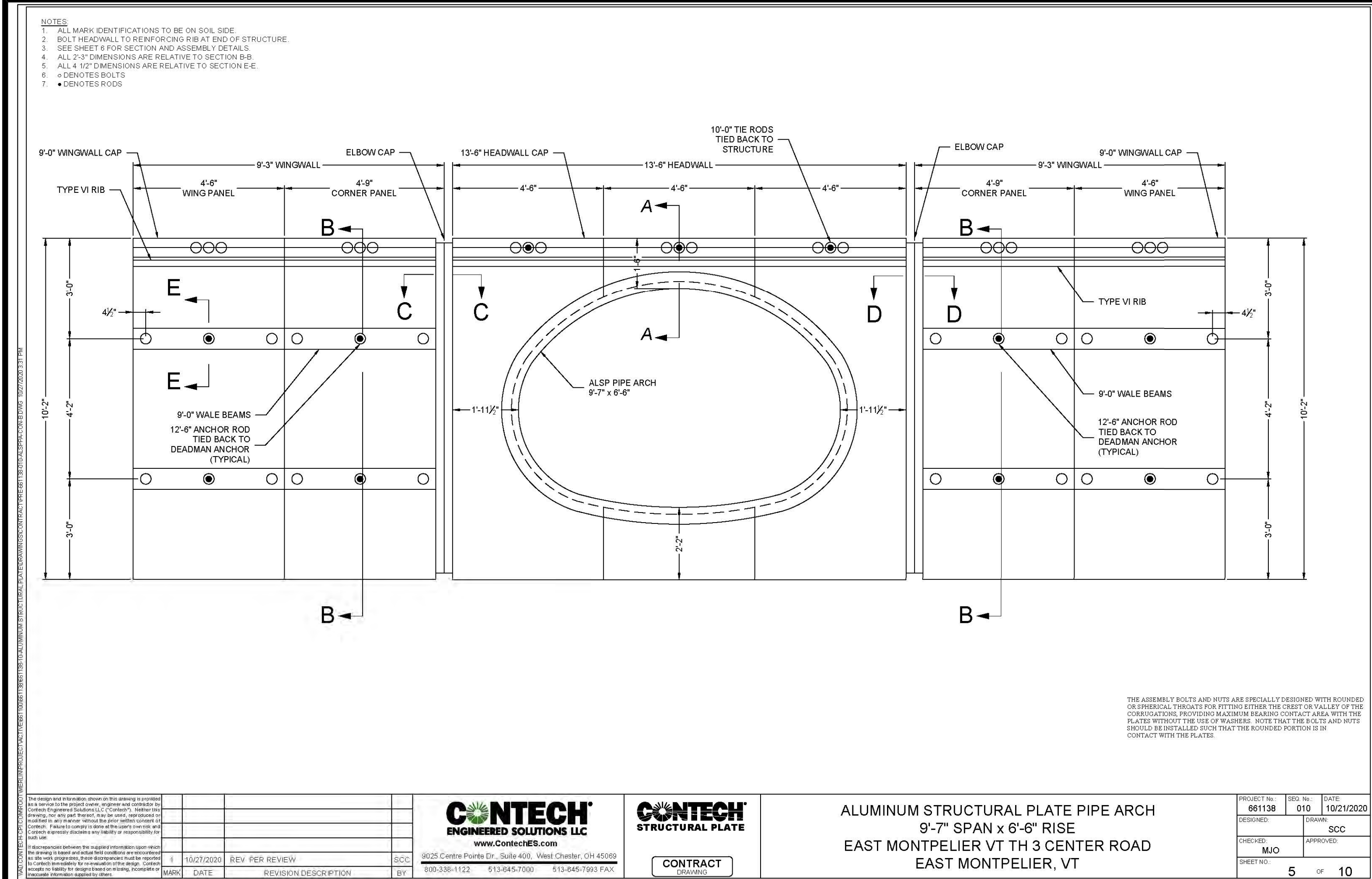
Culvert Manufacturers Details

Newton Technical Services, LLC  
728 South Barre Road  
Barre, VT 05641  
(802) 476-6900

Chase & Chase Surveyors & Septic Designers, Inc.  
301 North Main St., Suite 301  
Barre, VT 05641  
(802) 479-9636

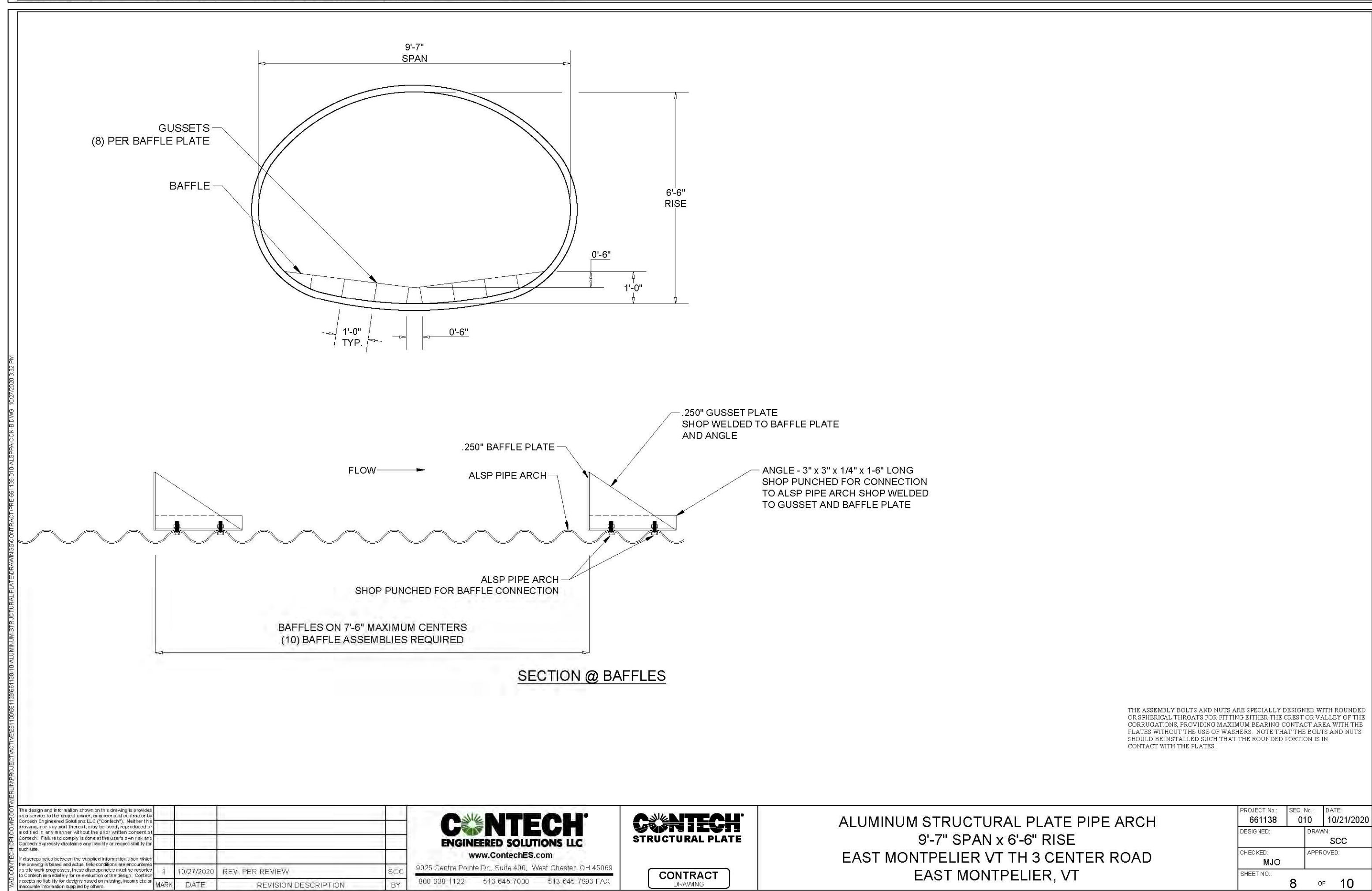
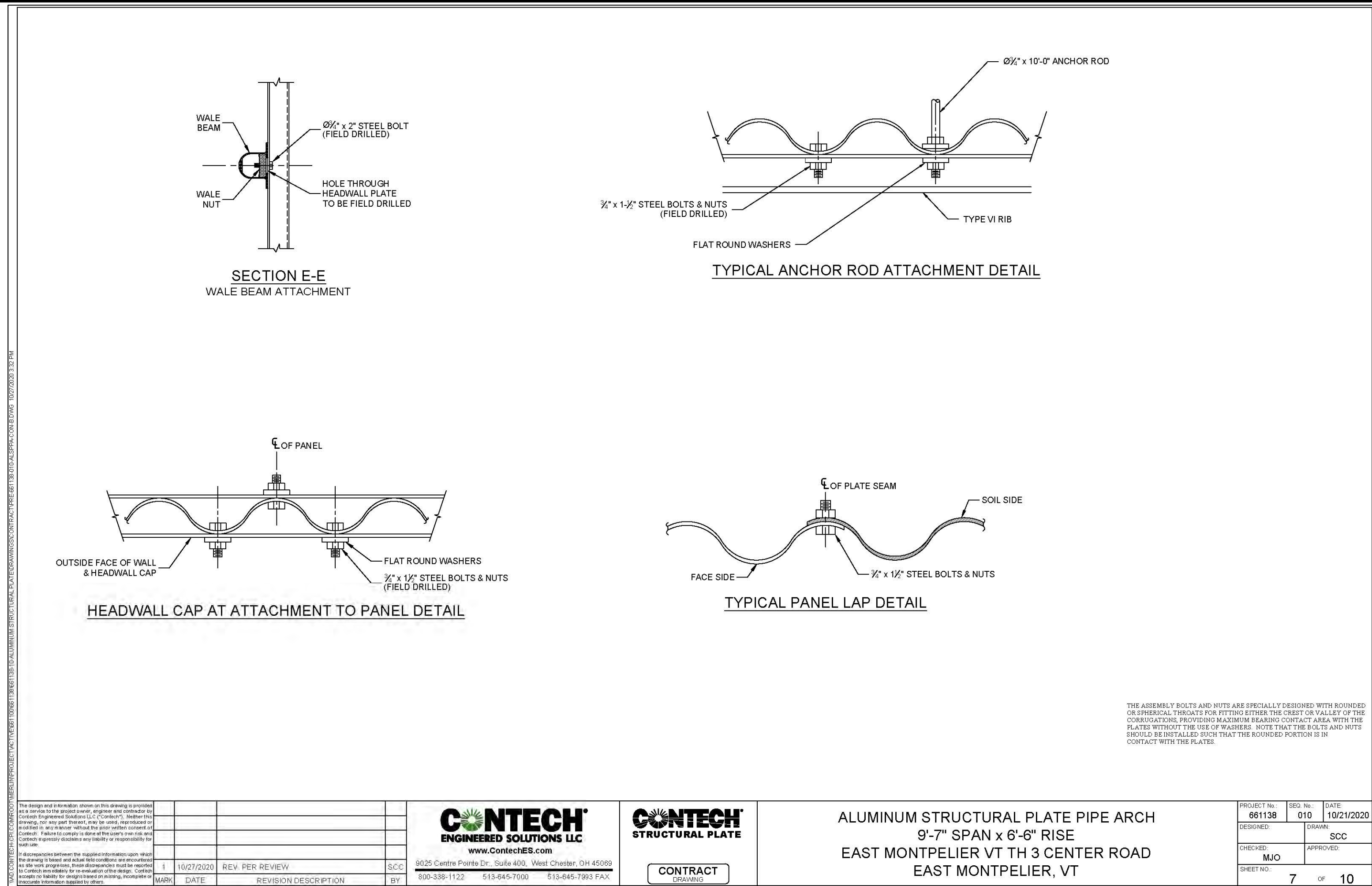
SHEET 16 OF 23





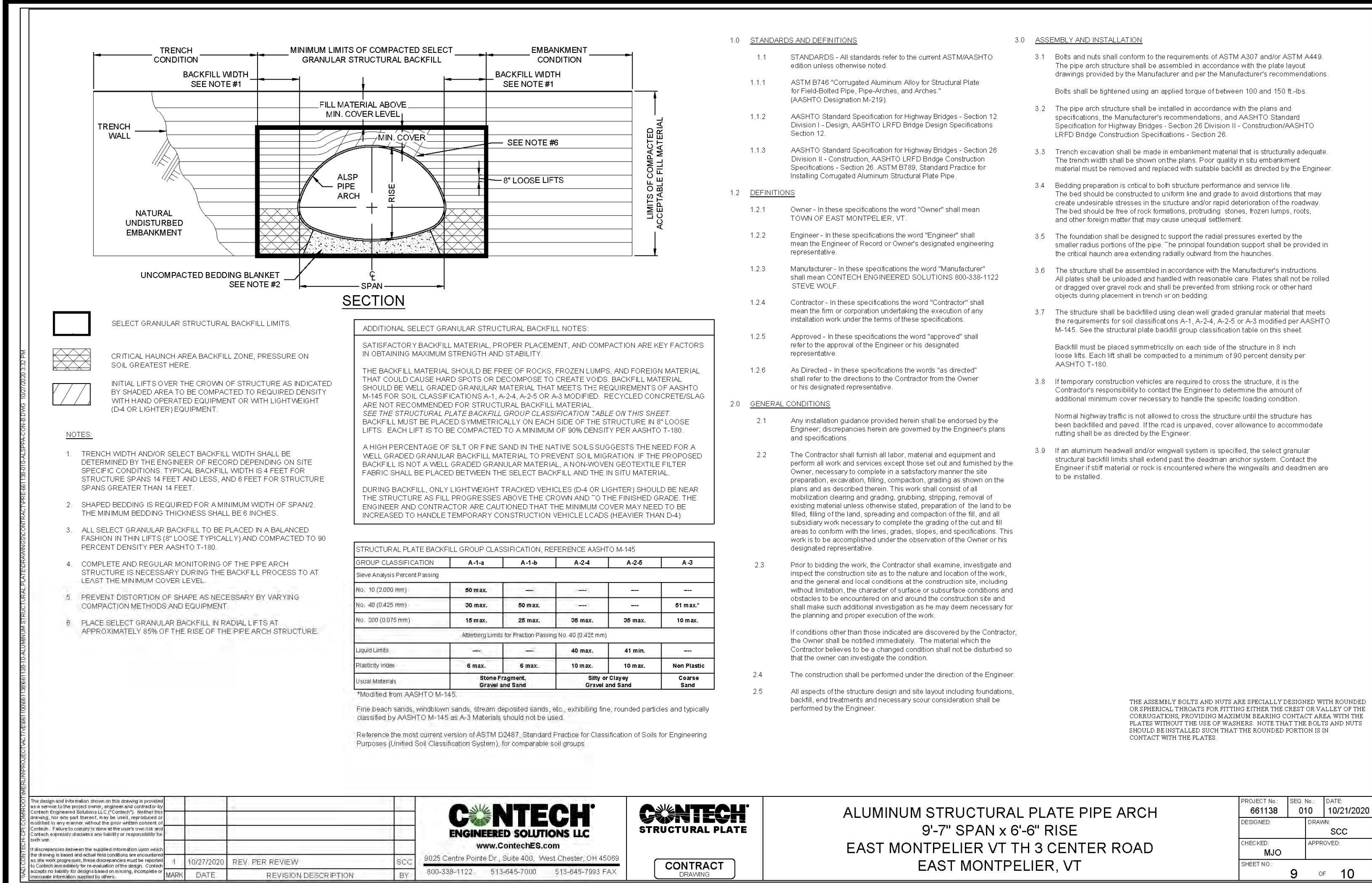
NO.	REVISIONS	BY	DATE	DES	DWN	DATE	SCALE	
				DRN	KKJ	AS NOTED	As noted	
				CHK	DWN			
				APPD				

Town of East Montpelier  
T.H. 3 - Center Road  
TH Structures Grant Program  
FY 2018 BC 1853



Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 17 OF 23
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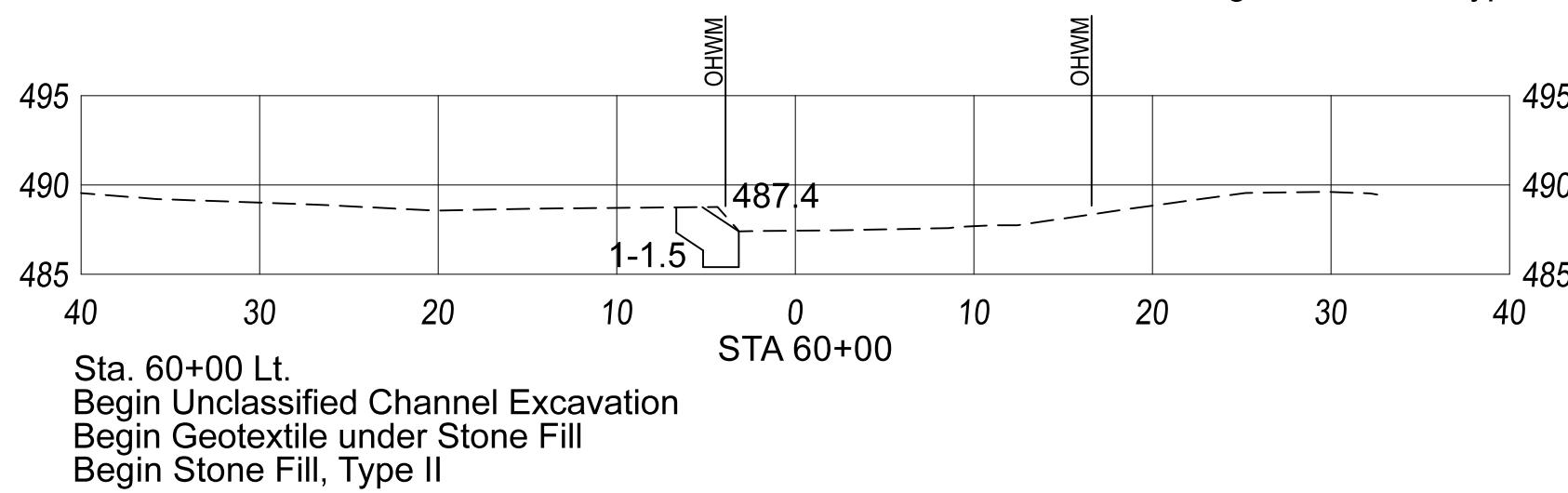
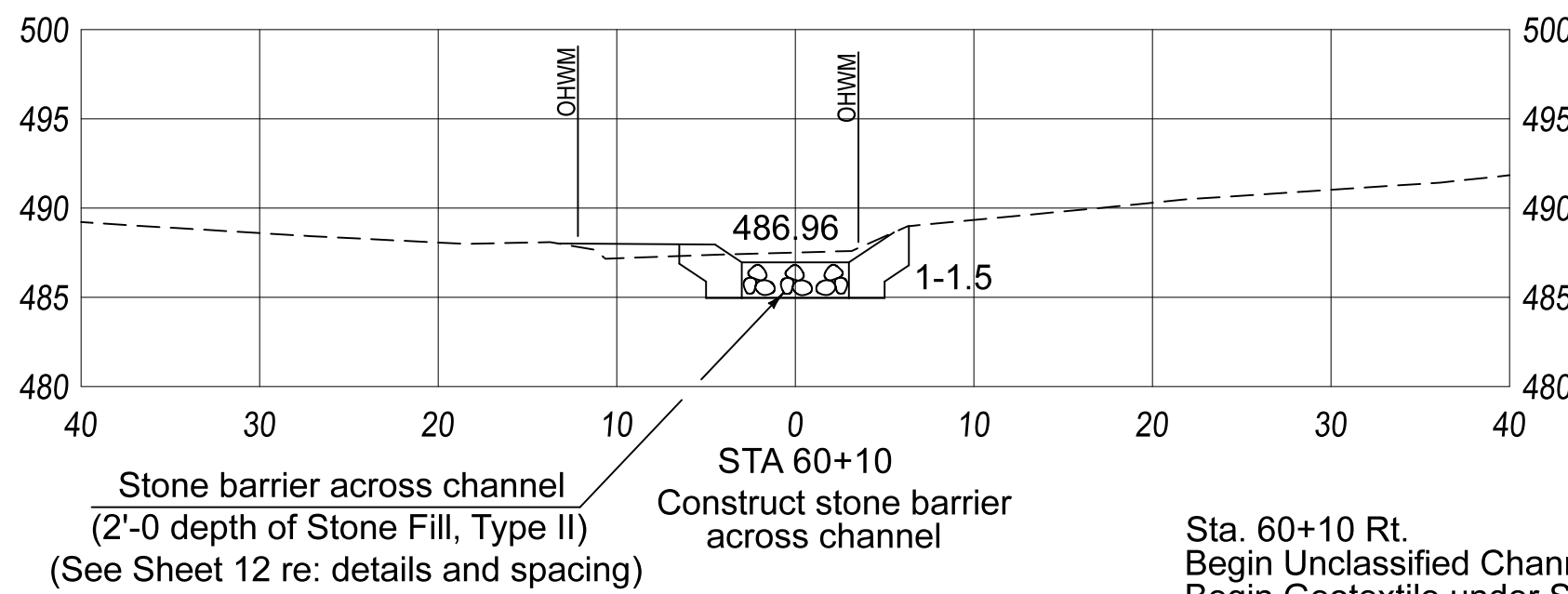
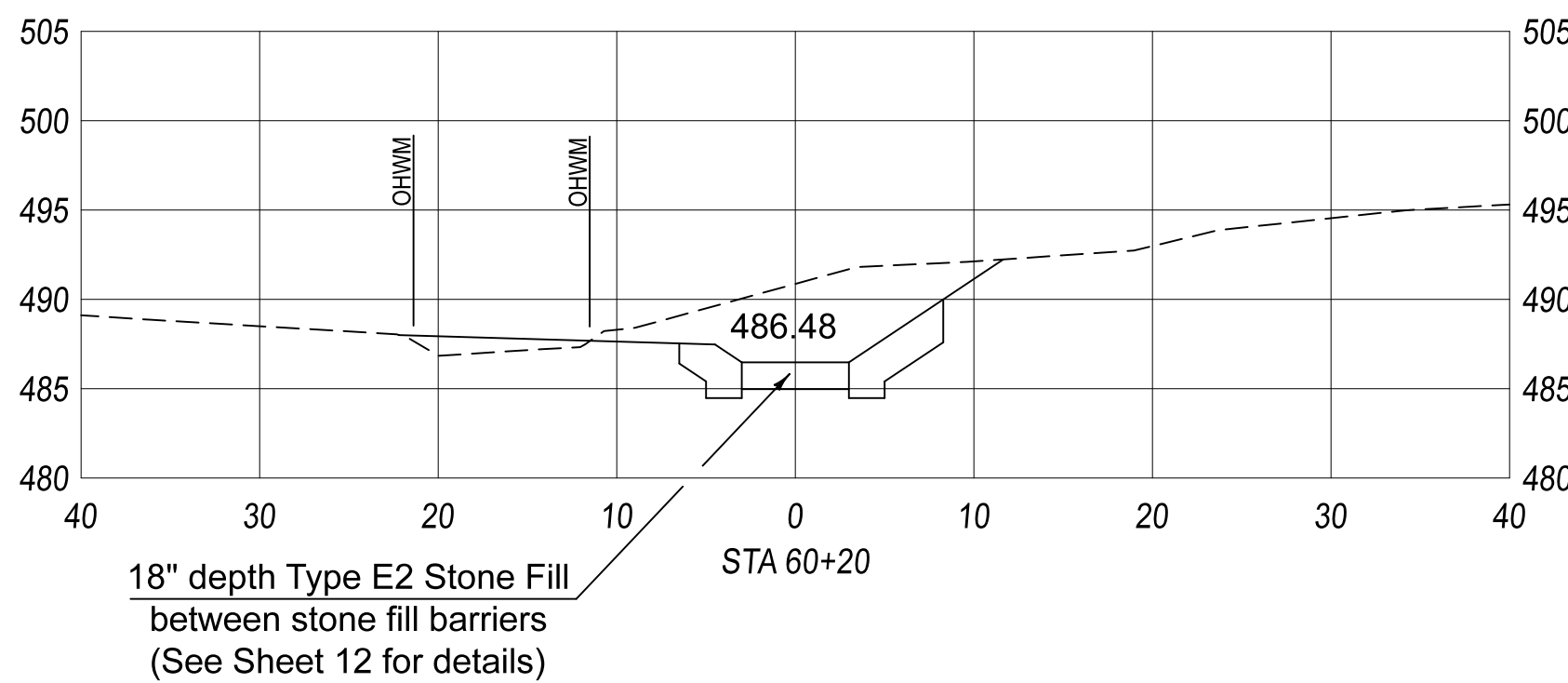
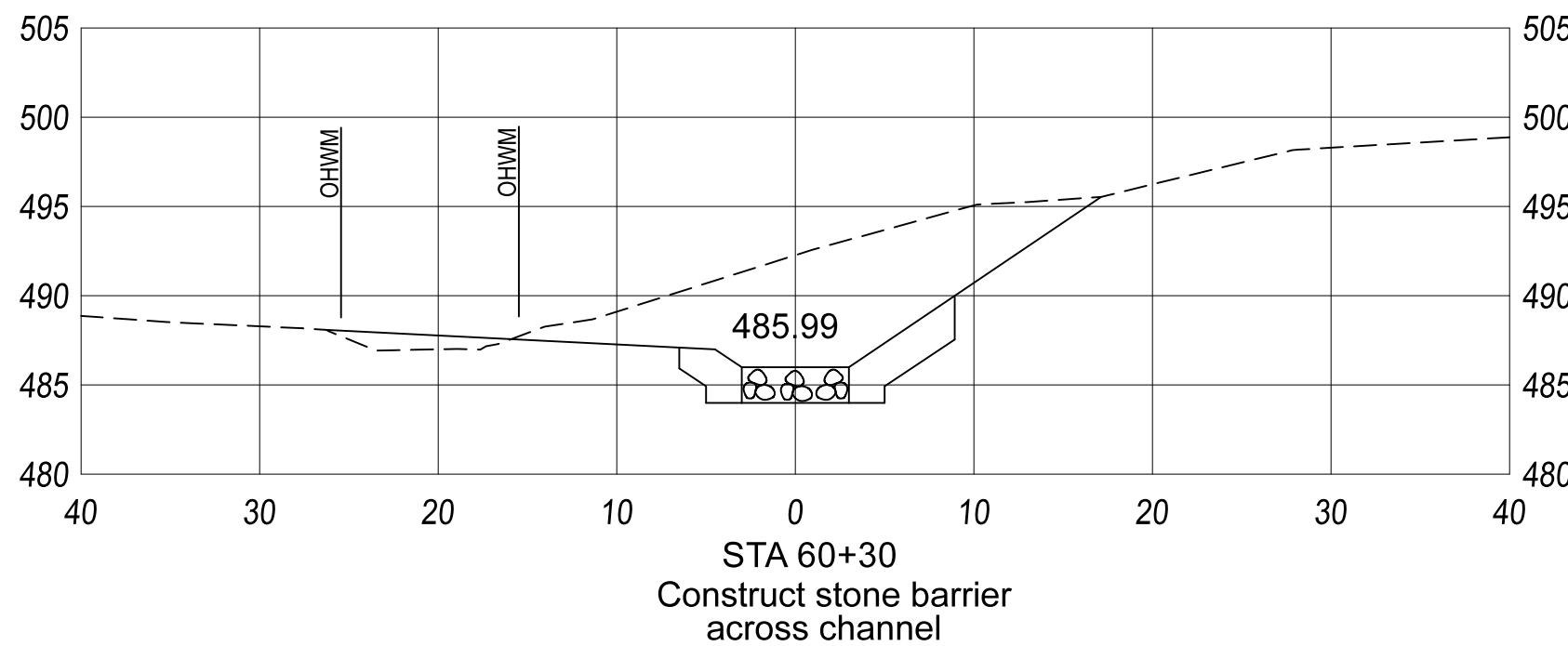
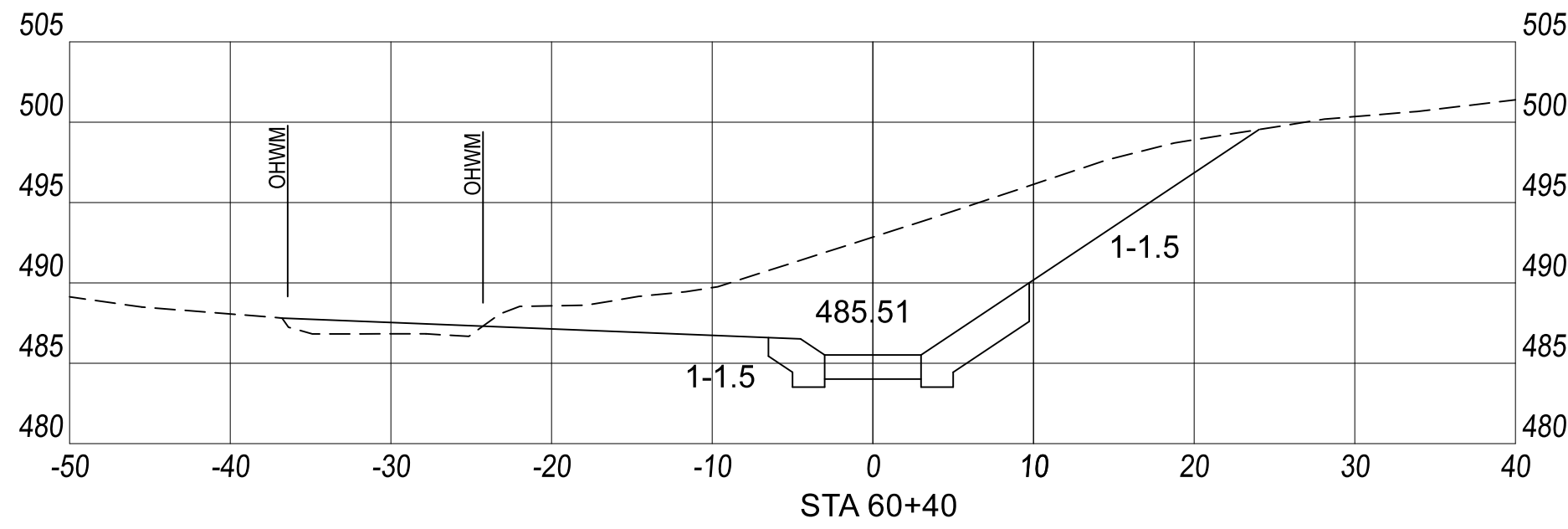




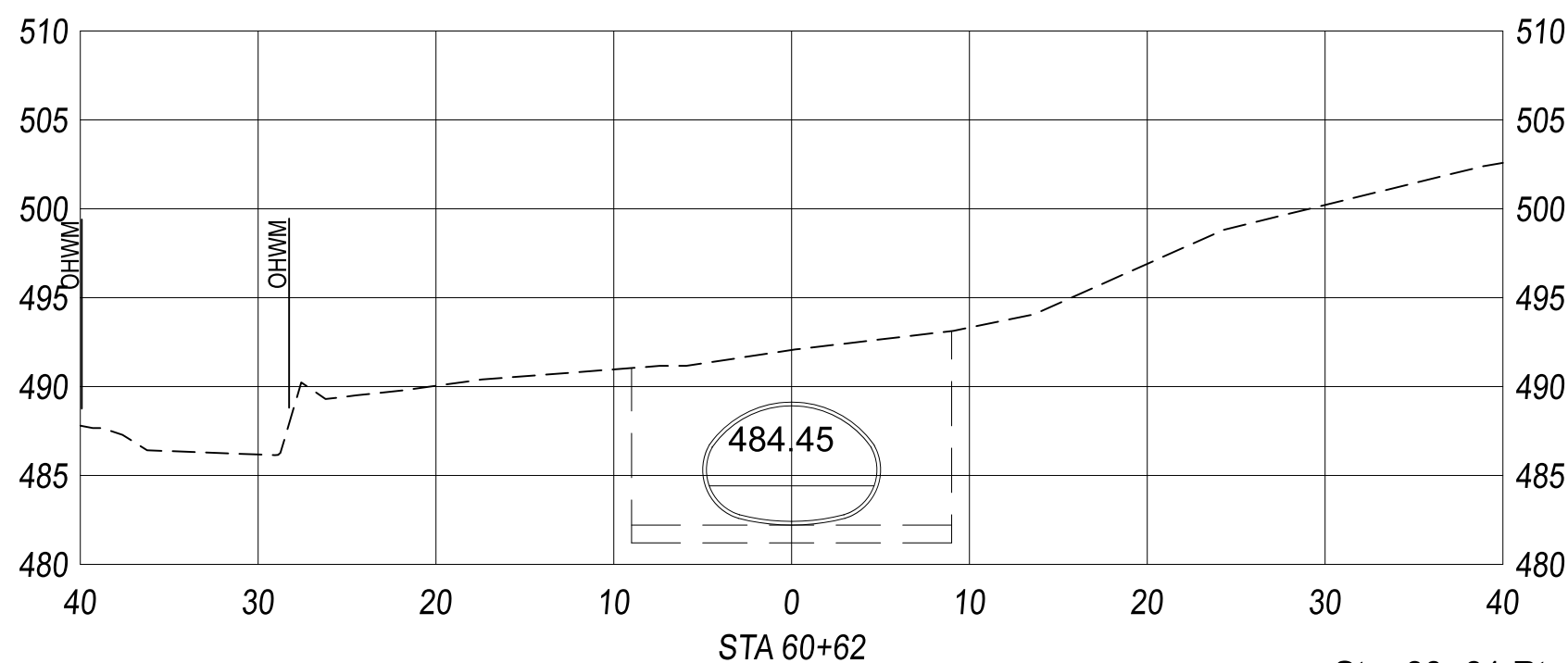
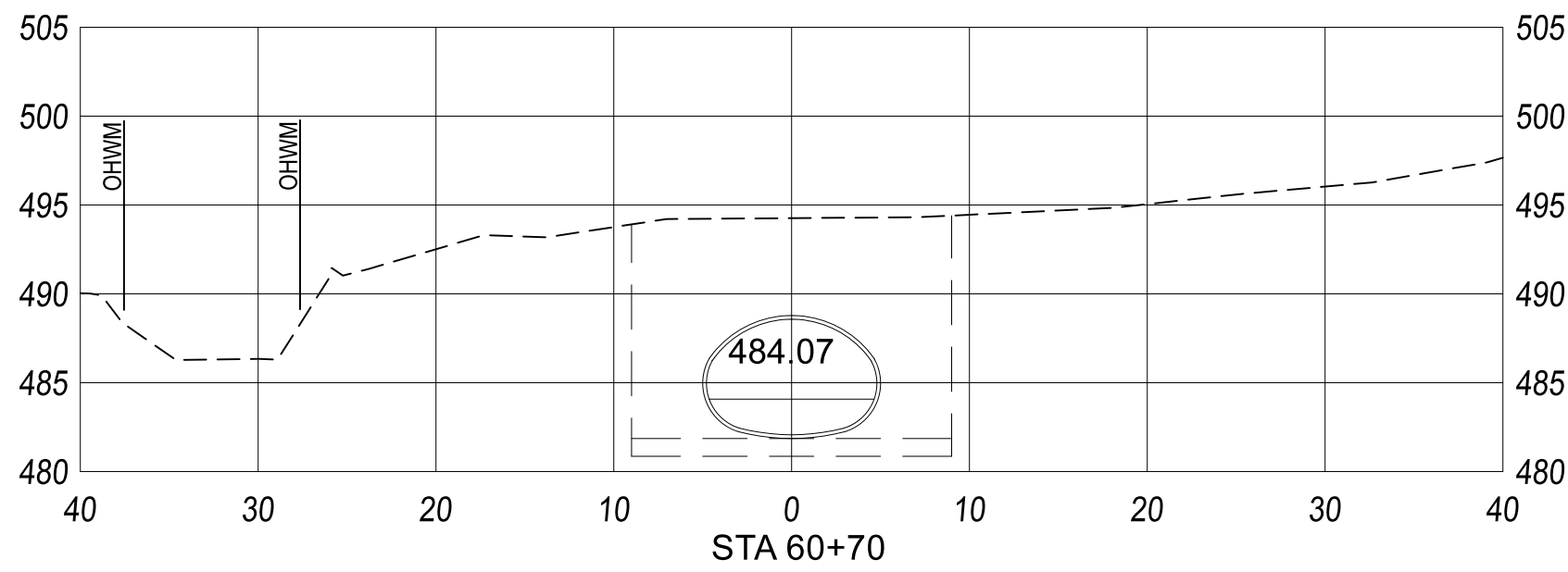
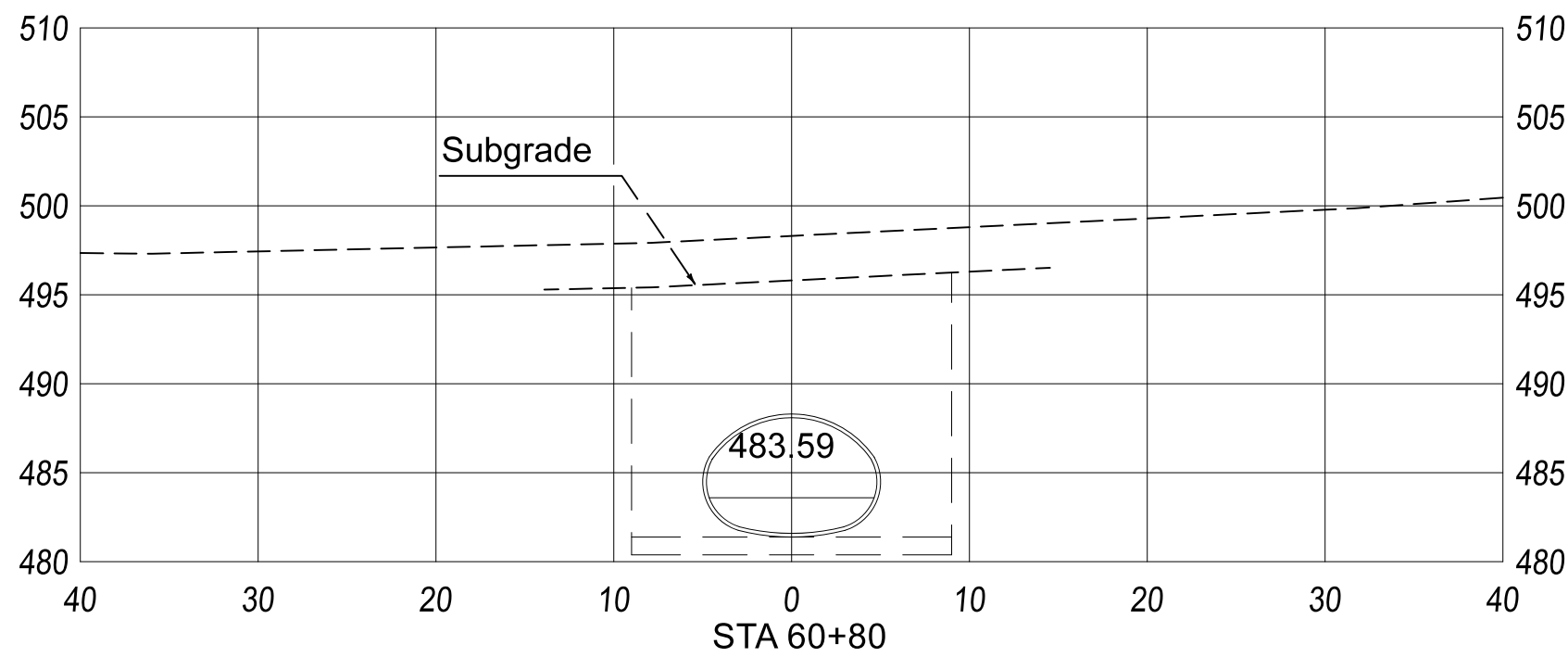








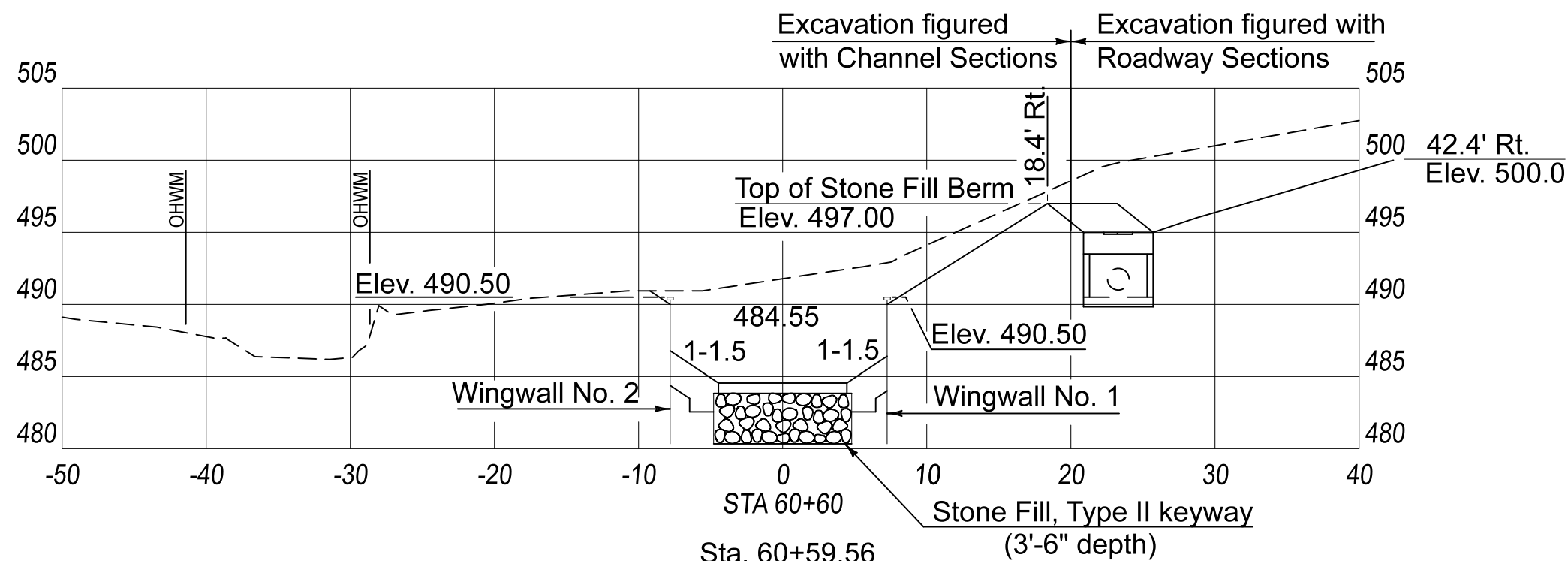
NOTES:  
1. Elevations shown at Q of channel are Finished Streambed Grade Elevations  
2. Bottom of Bed Elevations are 3.21' below Finished Streambed Grade Elevations



Sta. 60+61 Lt.  
End Geotextile under Stone Fill  
End Stone Fill, Type II

Sta. 60+61.06  
Begin New 9'-7" x 6'-6" Pipe Arch

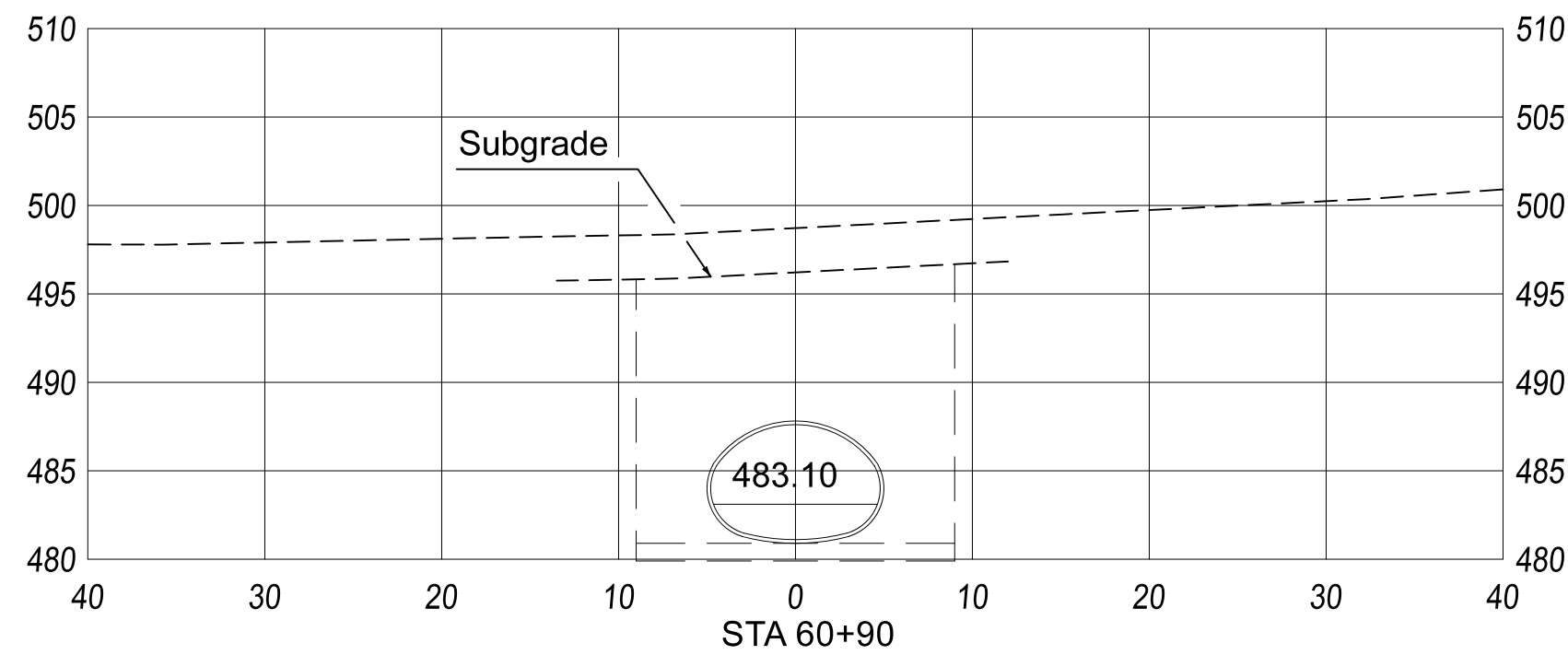
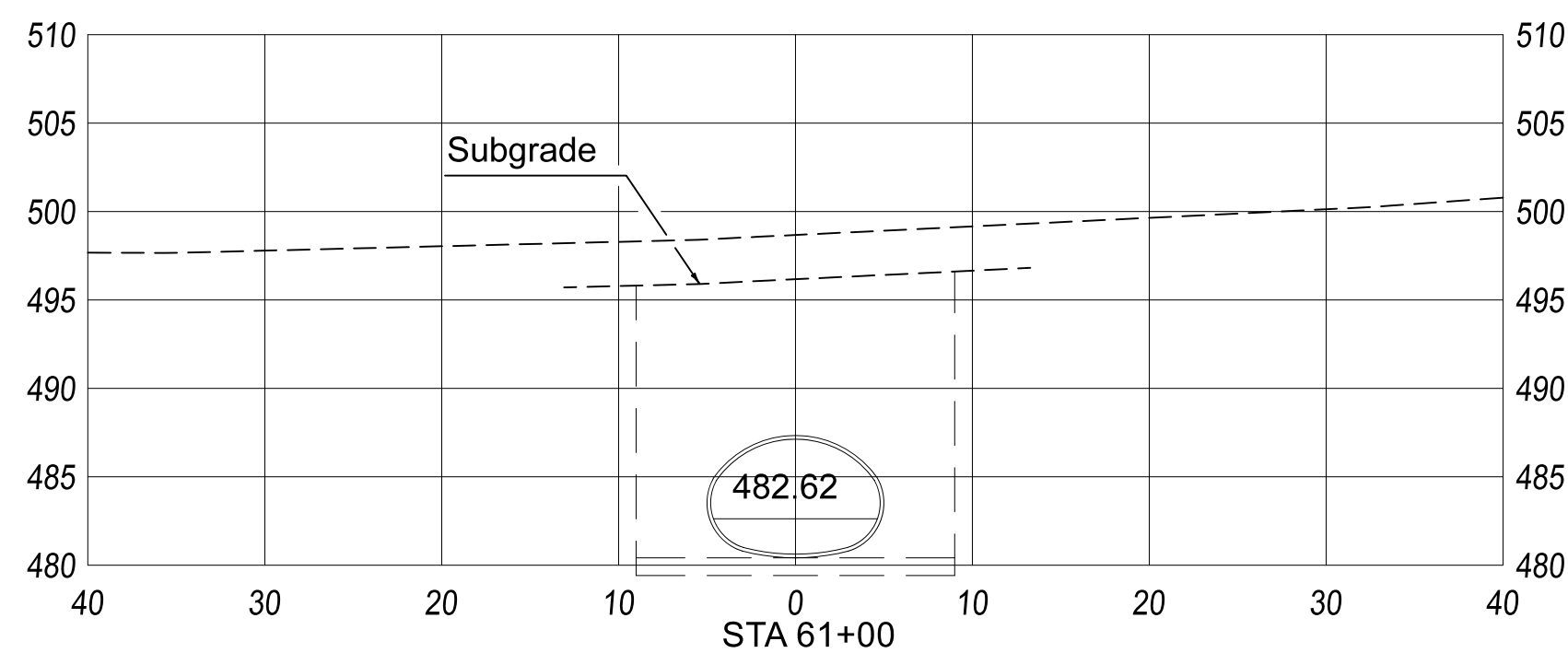
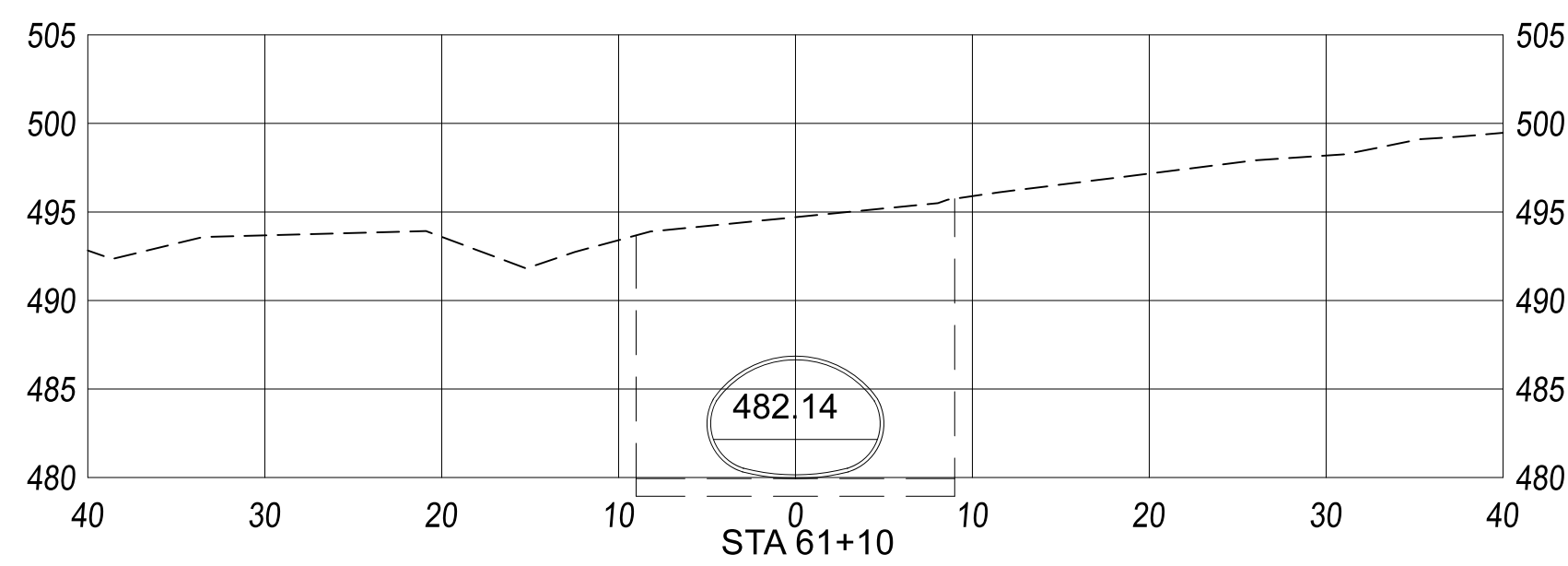
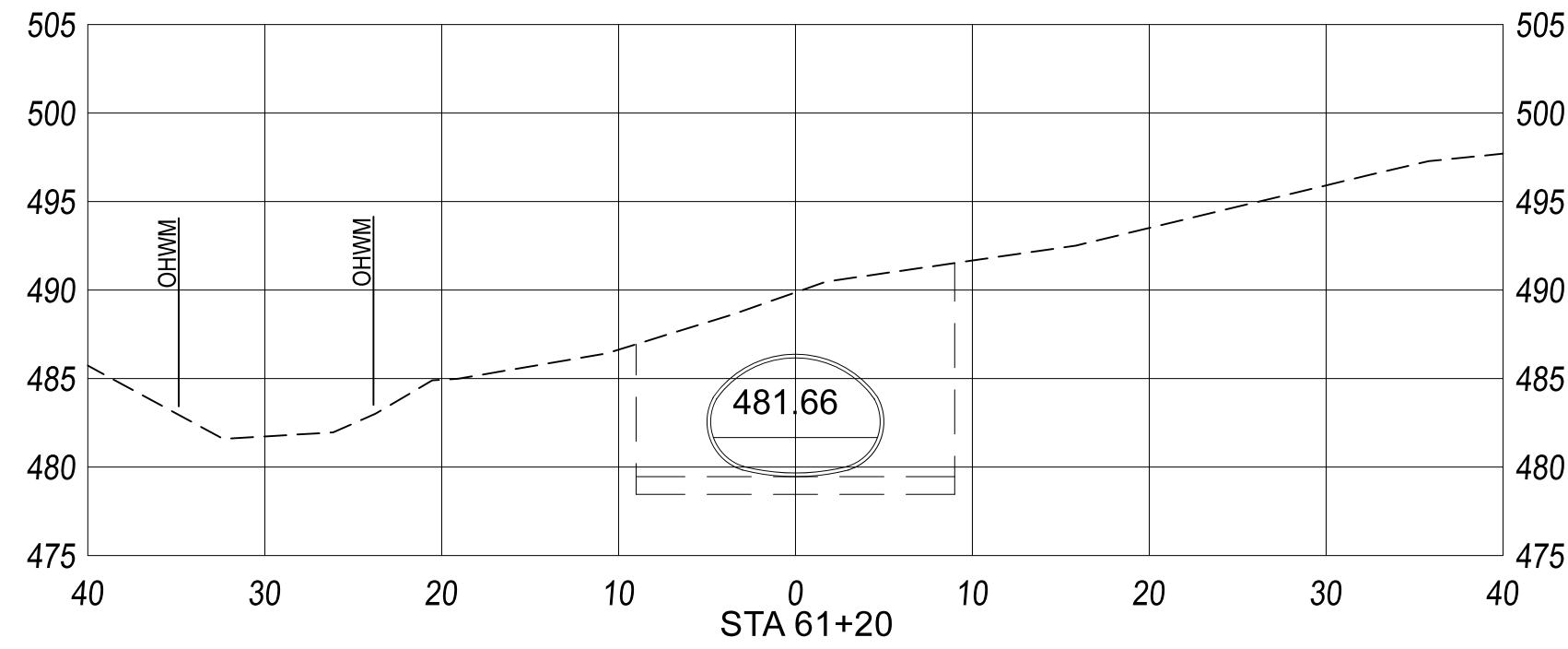
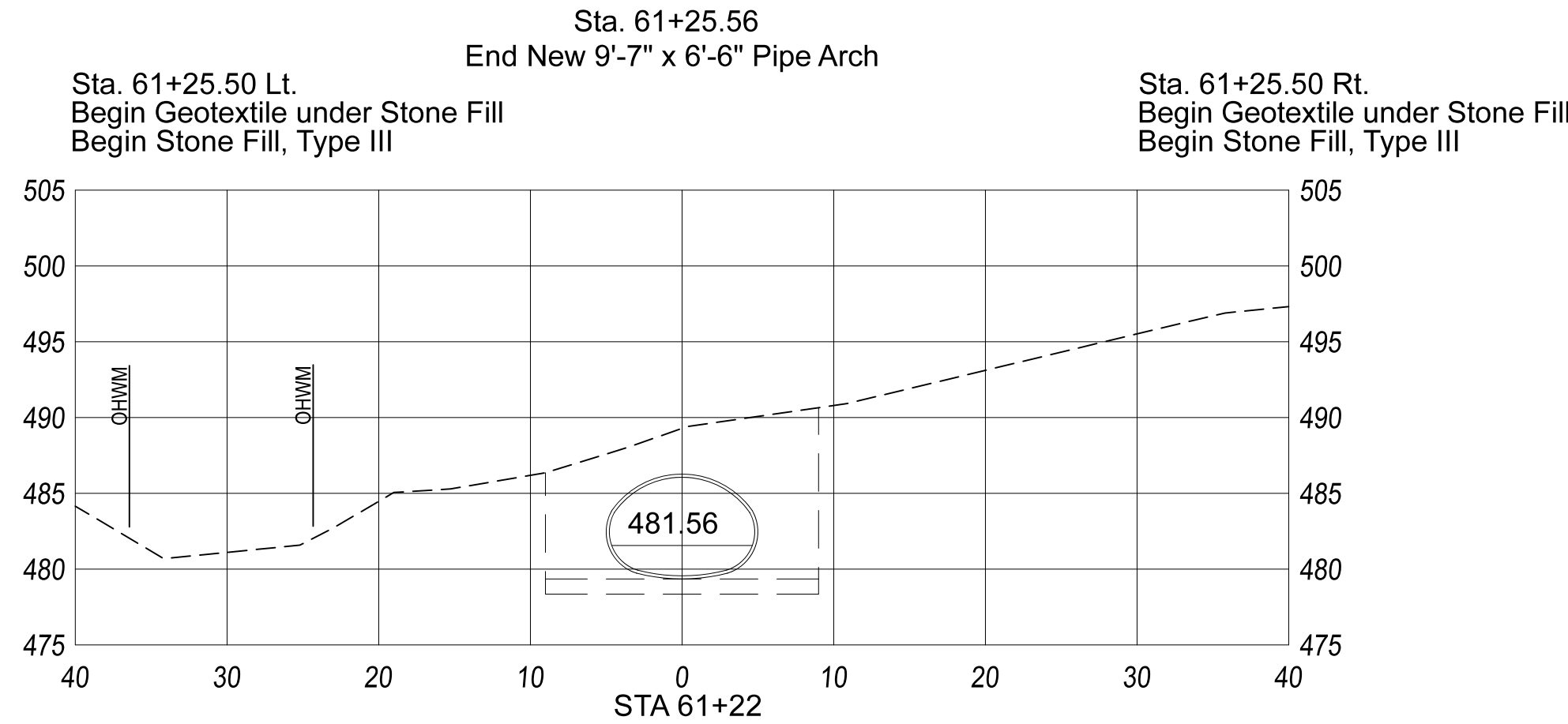
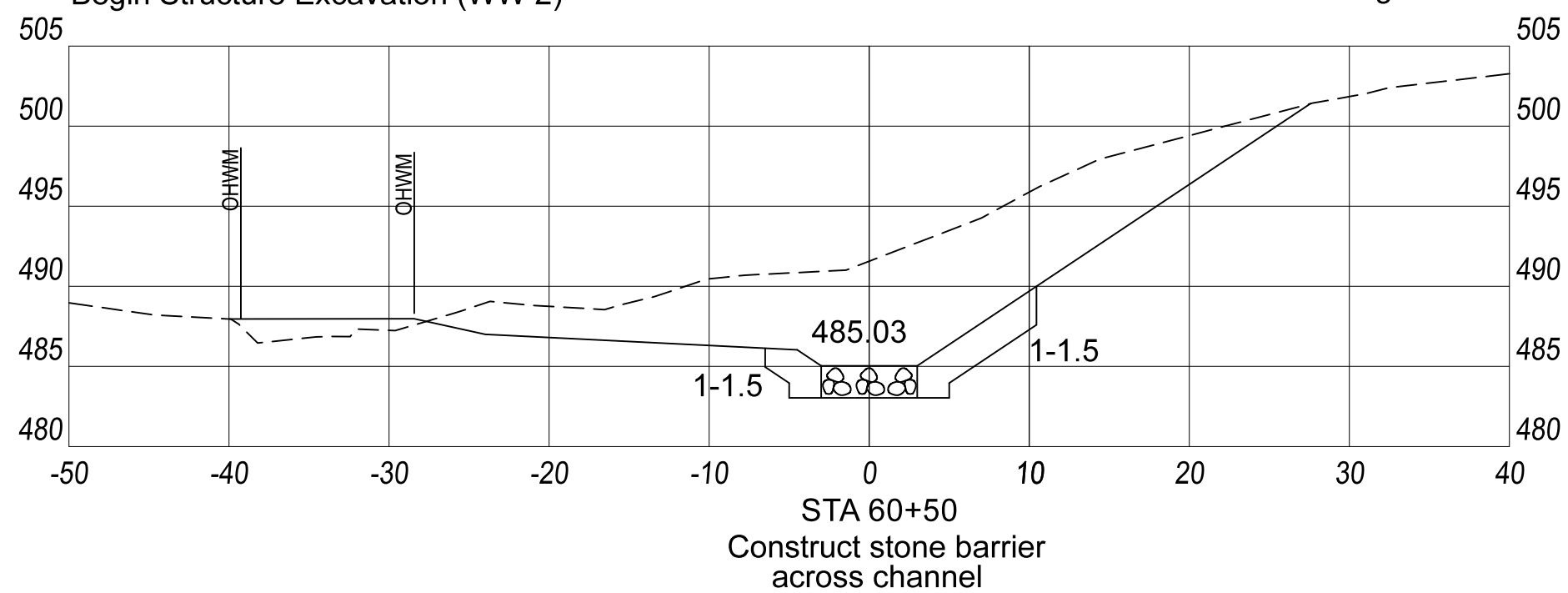
Sta. 60+61 Rt.  
End Geotextile under Stone Fill  
End Stone Fill, Type II



Sta. 60+52 Lt.  
Begin Structure Excavation (WW 2)

Sta. 60+59.56  
End Unclassified Channel Excavation  
Begin Structure Excavation (Pipe Arch)

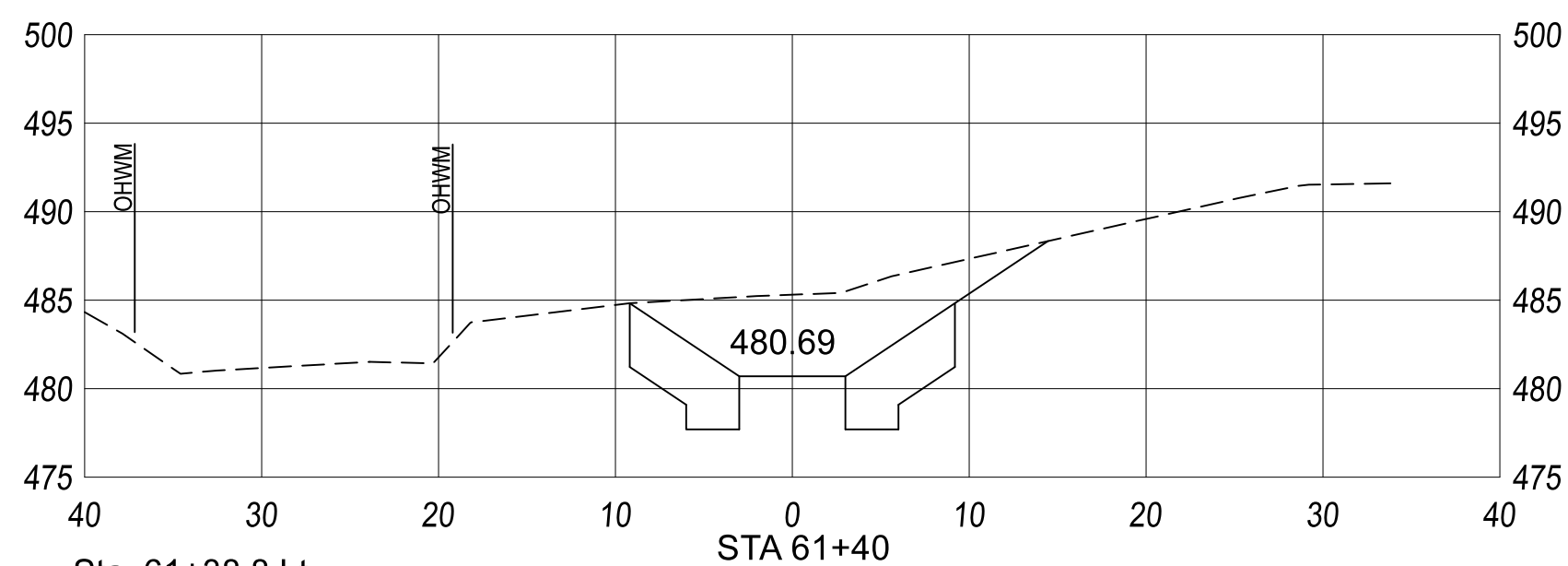
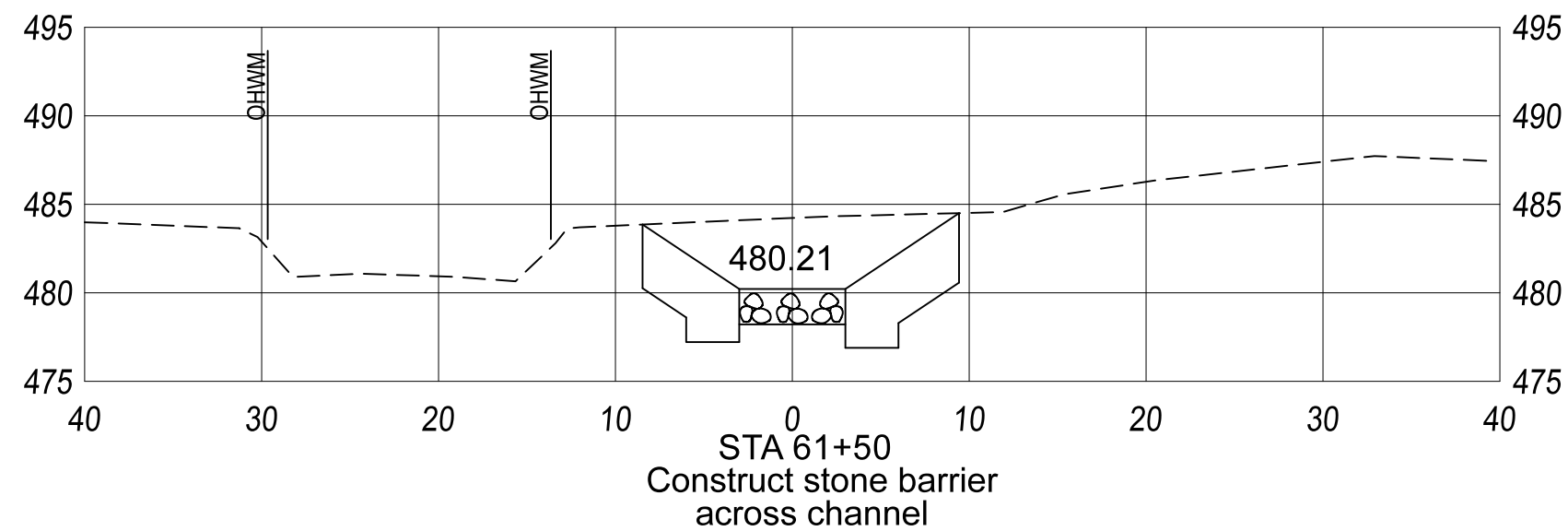
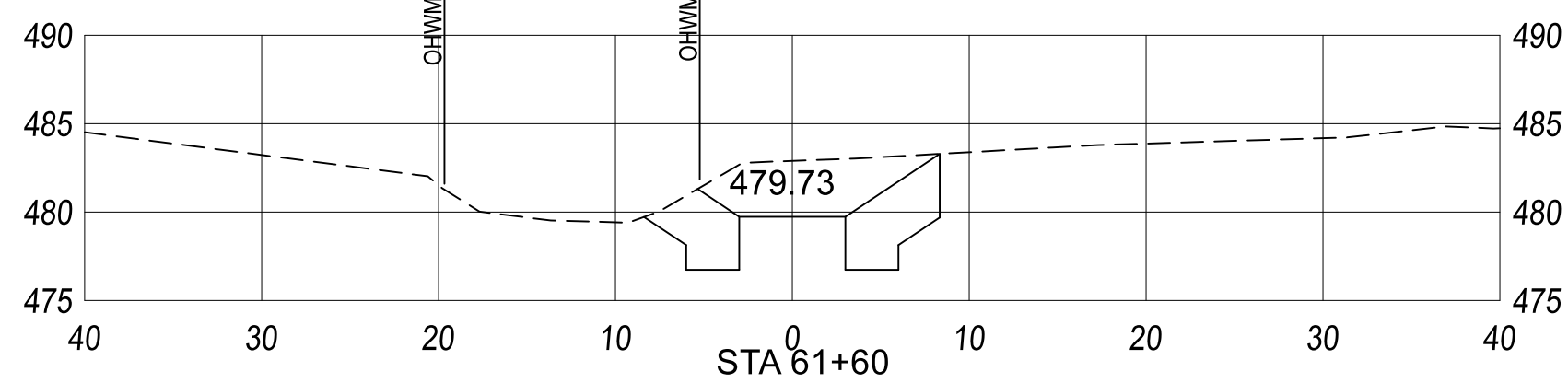
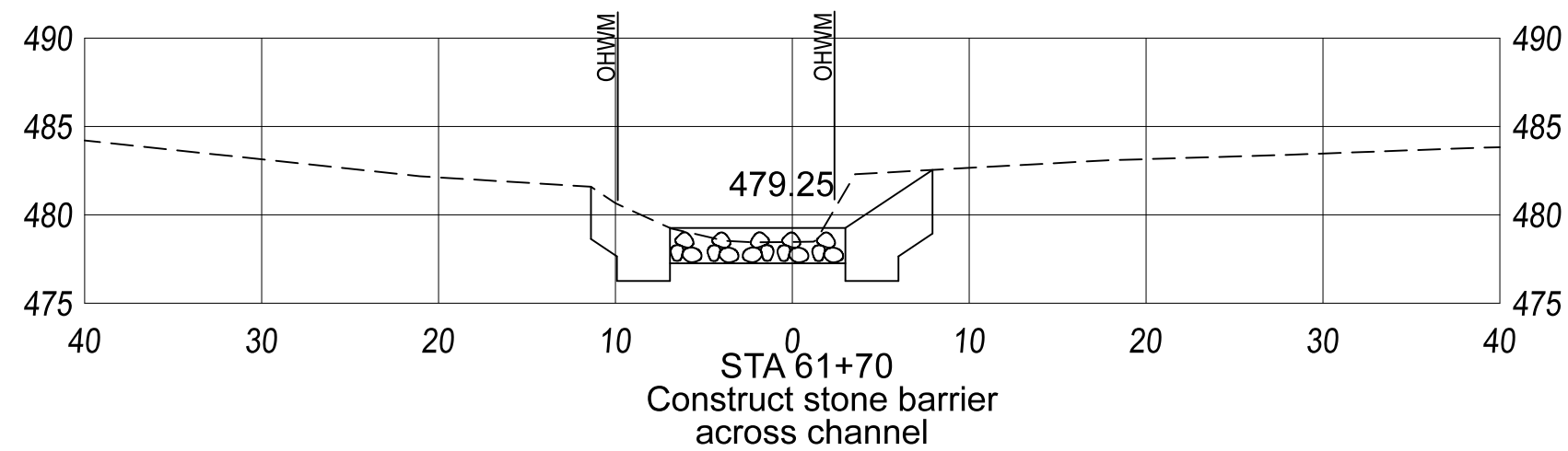
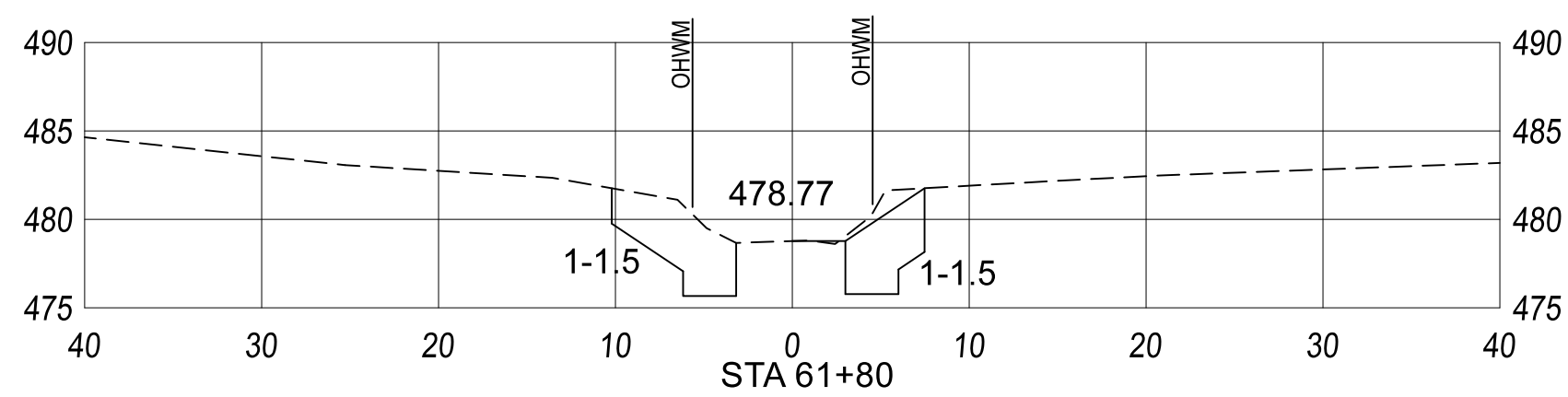
Sta. 60+51 Rt.  
Begin Structure Excavation (WW 1)



NO.	REVISIONS	BY	DATE	DES	DATE	SCALE	Town of East Montpelier T.H. 3 - Center Road TH Structures Grant Program FY 2018 BC 1853	Channel Cross-Sections	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 20 of 23
				DWN	NOV 2020	AS NOTED					
				DRN							
				CHK							
				APPD							

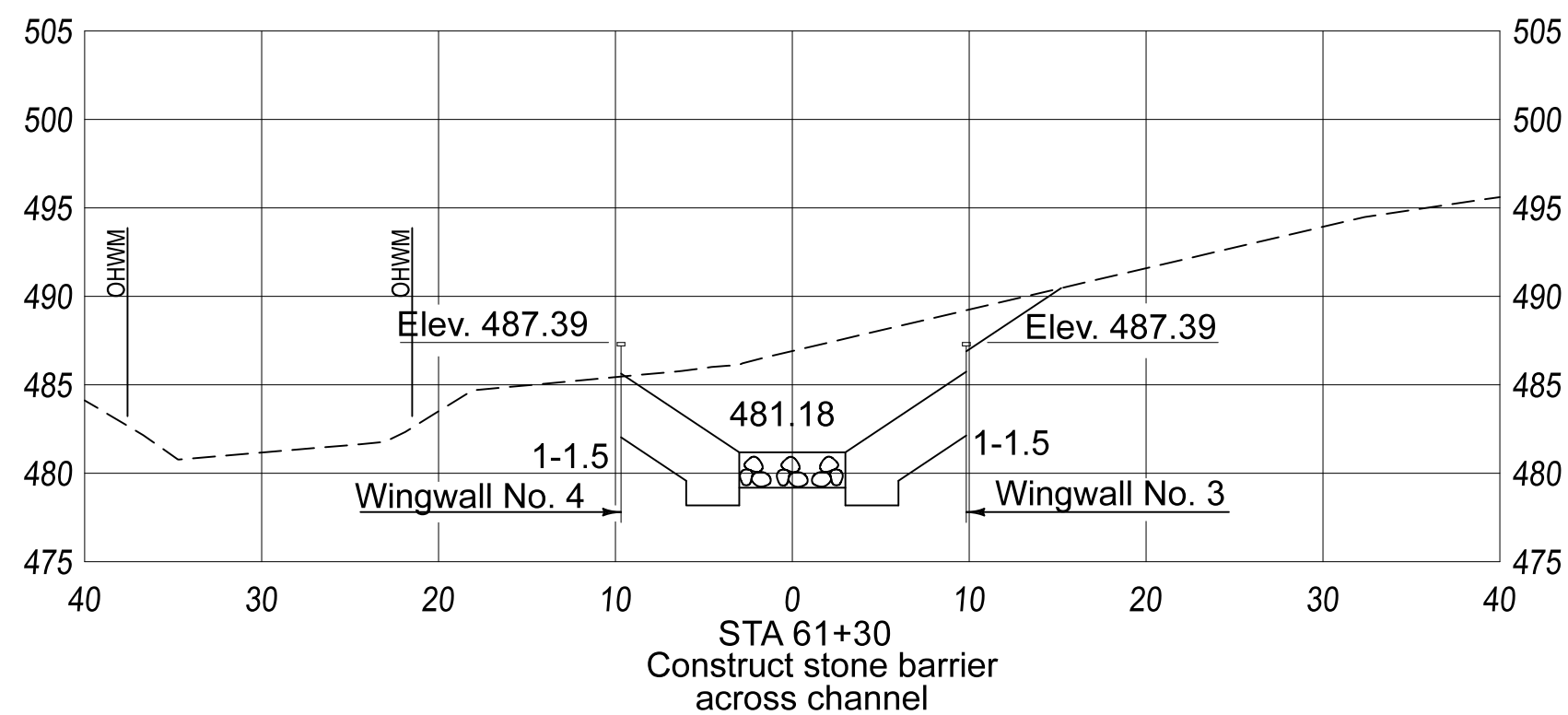
Sta. 61+80 Lt.  
End Unclassified Channel Excavation  
End Geotextile under Stone Fill  
End Stone Fill, Type III

Sta. 61+80 Rt.  
End Unclassified Channel Excavation  
End Geotextile under Stone Fill  
End Stone Fill, Type III



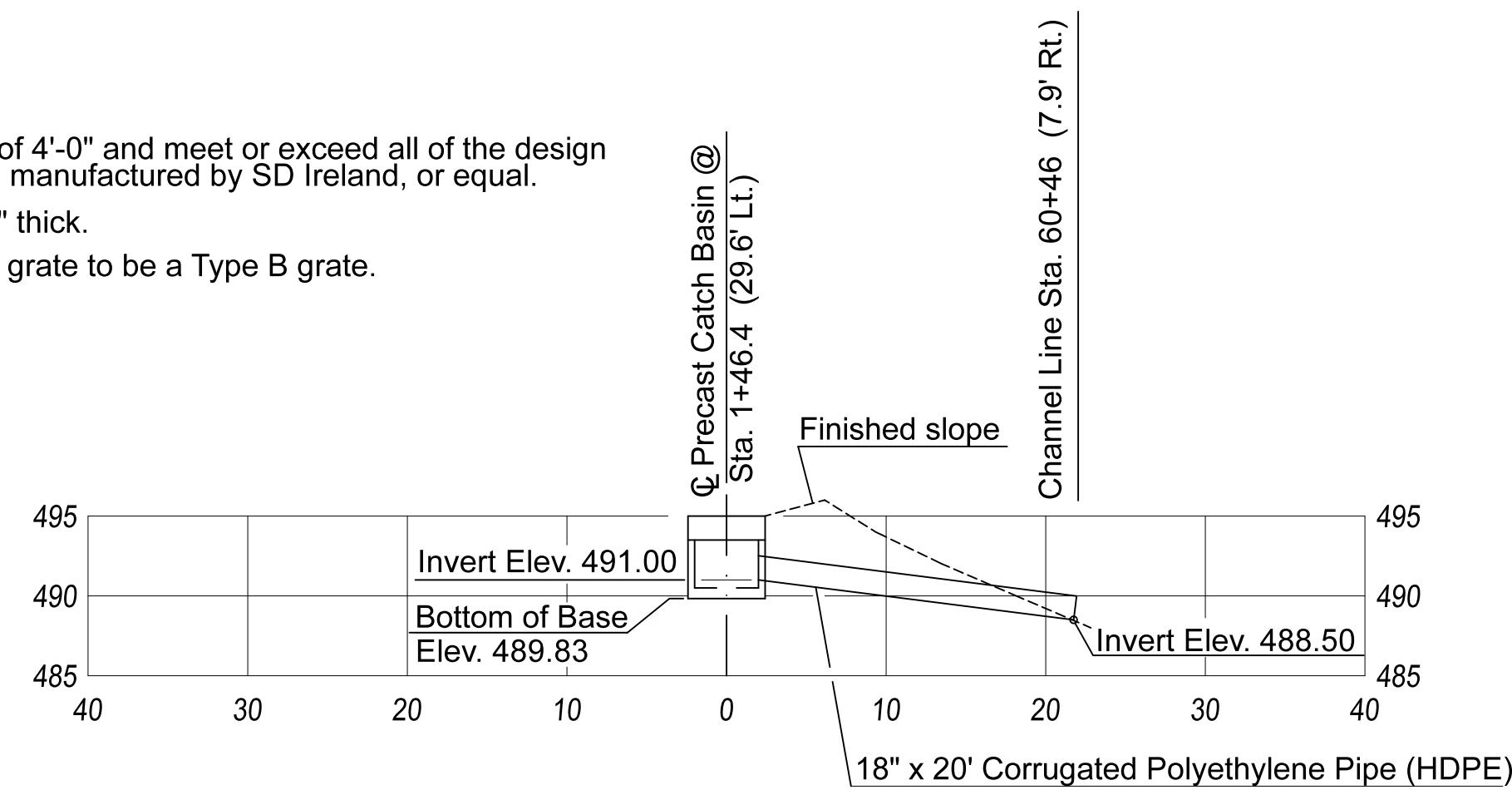
Sta. 61+38.8 Lt.  
End Structure Excavation (WW 4)

Sta. 61+33.7 Rt.  
End Structure Excavation (WW 3)



NOTES:

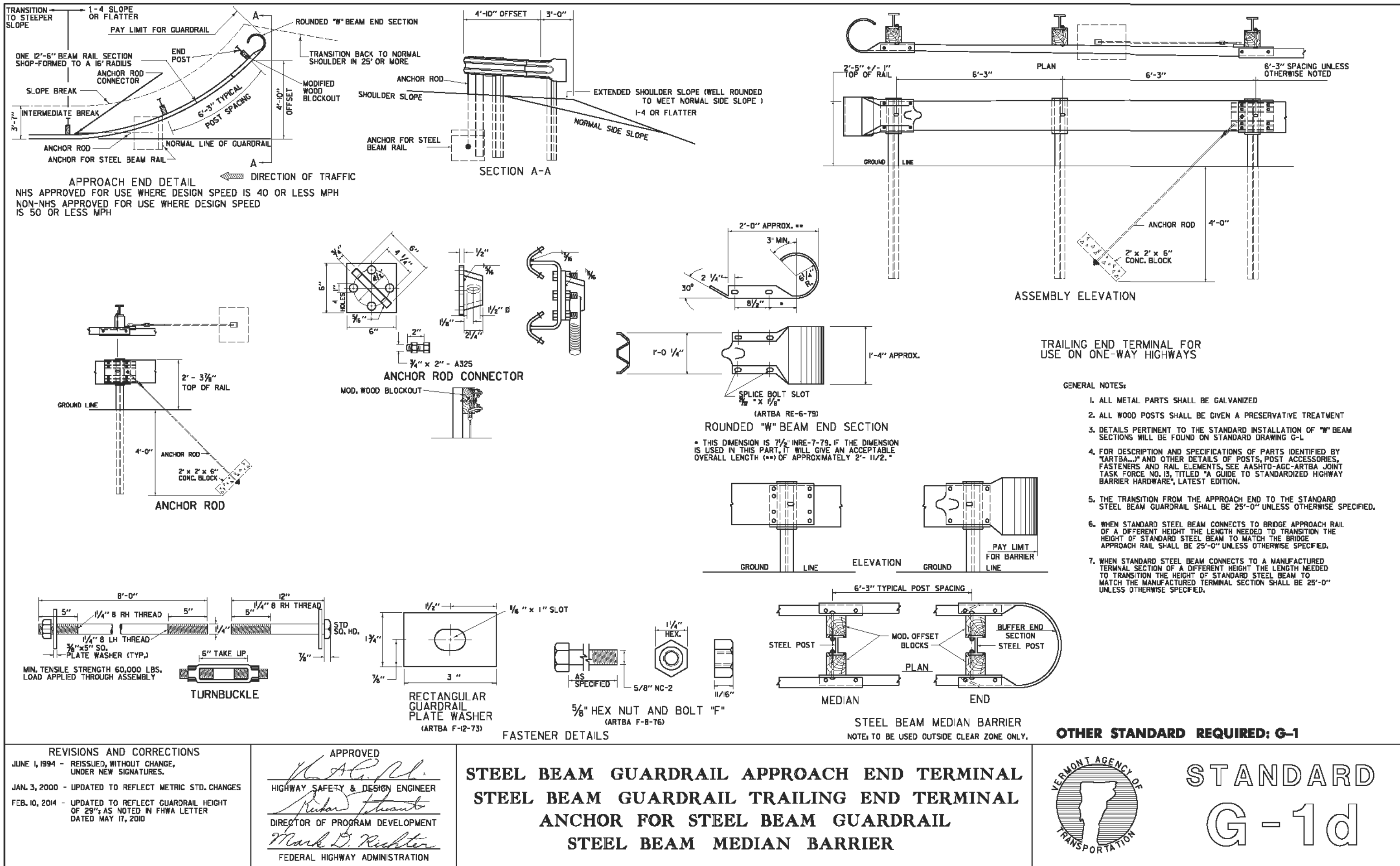
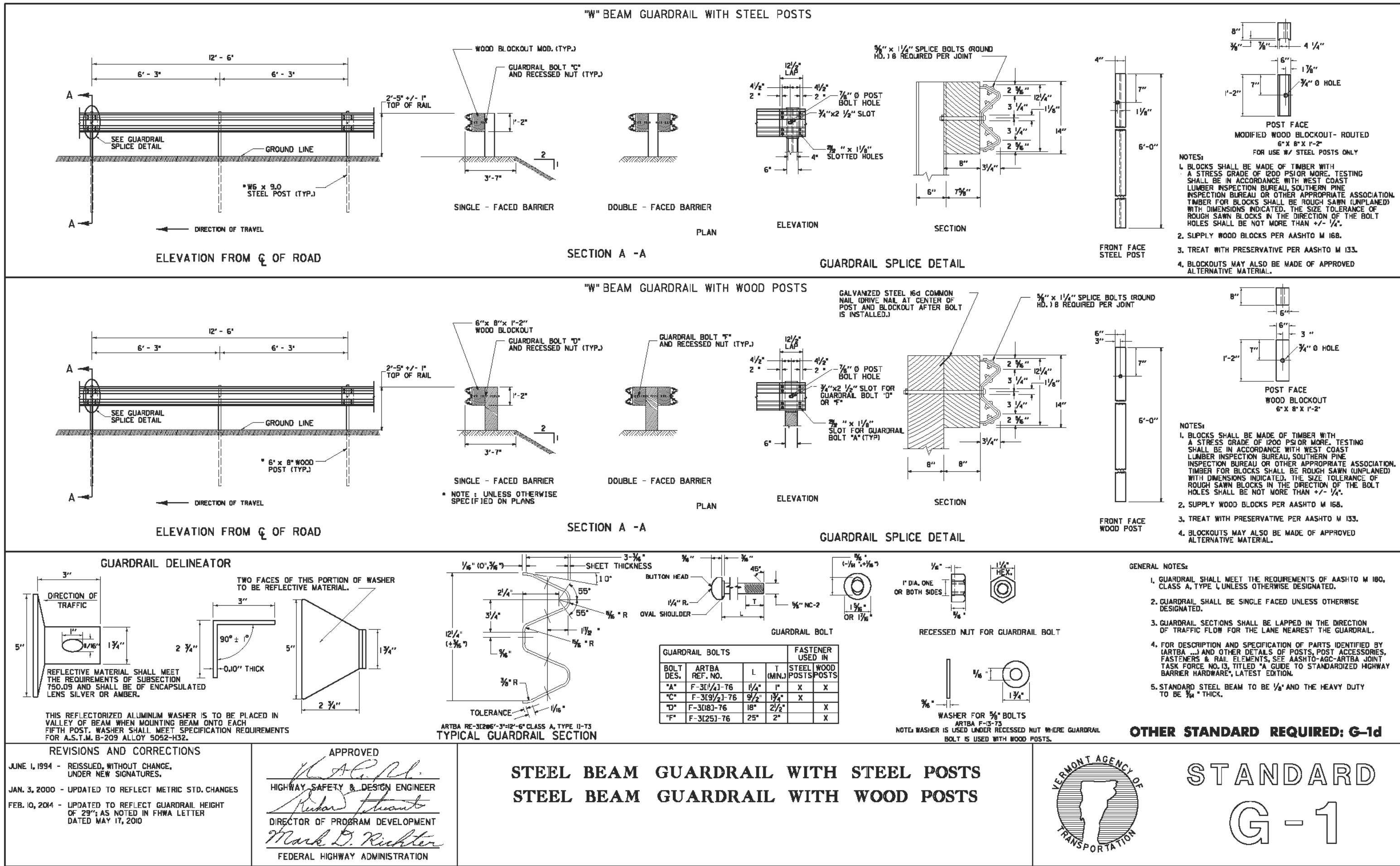
1. Precast Drop Inlet to have an ID of 4'-0" and meet or exceed all of the design parameters for a 48" Manhole as manufactured by SD Ireland, or equal.
2. Precast Drop Inlet Top to be 1'-6" thick.
3. Frame and Grate to be cast iron; grate to be a Type B grate.



Culvert Profile

NO.	REVISIONS	BY	DATE	DES	DATE	SCALE				
				DWN	NOV 2020	AS NOTED	Town of East Montpelier	Channel Cross-Sections	Newton Technical Services, LLC	Chase & Chase Surveyors & Septic Designers, Inc.
				DRN			T.H. 3 - Center Road		728 South Barre Road	301 North Main St., Suite 301
				CHK			TH Structures Grant Program		Barre, VT 05641	Barre, VT 05641
				APPD			FY 2018 BC 1853		(802) 476-6900	(802) 479-9636





NO.	REVISIONS	BY	DATE	DES	DWN	DATE	SCALE	Town of East Montpelier T.H. 3 - Center Road TH Structures Grant Program FY 2018 BC 1853	Standards	Newton Technical Services, LLC 728 South Barre Road Barre, VT 05641 (802) 476-6900	Chase & Chase Surveyors & Septic Designers, Inc. 301 North Main St., Suite 301 Barre, VT 05641 (802) 479-9636	SHEET 22 of 23
				DRN	KKJ	NOV 2020	Not to scale					
				CHK	DWN							
				APPD								