STATE OF VERMONT
AGENCY OF TRANSPORTATION

Scoping Report

(Updated with OLSR Comments Addressed)

FOR

Brattleboro IM 091-1(82)

I91 (@Exit 1) Br. 4 N & S over US 5

September 14, 2021

I. Site Information

Bridges 4 N & S are located on I 91 in the Town of Brattleboro at Exit 1 at the intersection of I91 and US 5. The existing conditions were gathered from a combination of a Site Visit, the Inspection Report, the Route Log and the existing Survey. See correspondence in the Appendix for more detailed information.

Roadway Classification	Principal Arterial - Interstate
Bridge Type	2 Span Rolled Beam
Bridge Spans	96 ft. - 96 ft.
Bridge Skew	48 degrees – 33 min.
Year Built	1959
Ownership	State of Vermont

Need

The following is a list of the deficiencies of Brattleboro Br. 4 N&S and I91 at this location.

1. The curbs and deck fascia's are heavily spalled. Fascia concrete has fallen onto US 5 below. There are a few plywood bulkheads installed by the District in the superstructures of both BR 4 N&S in several locations above US 5 as there have been deck popouts on the underside of the deck.

2. The shoulder bridge widths are substandard and rated as functionally deficient as the shoulder widths do not meet current Interstate standards.

Traffic

A traffic study of this site was performed by the Vermont Agency of Transportation. The traffic volumes are projected for the years 2023 and 2043. The traffic data for I91 BR. 4N & S is shown below. See the full traffic report in the appendix.

I91 Br. 4N	2023	2043
TRAFFIC DATA		
AADT	7500	8200
DHV	1100	1200
ADTT	840`	1400
%T	9.4	15.6
%D	100	100
Flexible ESAL	11,385,000	26,843,000

I91 Br. 4S	2023	2043
TRAFFIC DATA		
AADT	9500	10,400
DHV	1700	1900
ADTT	1100	2000
%T	10.0	16.6
%D	100	100
Flexible ESAL	15,757,000	38,953,000

Design Criteria

The design standards for this bridge project are the Vermont State Standards, dated October 22, 1997. Minimum standards are based on an ADT > 2000 and a design speed of 65 mph.

Design Criteria	Source	Existing Condition	Minimum Standard	Comment
Approach Lane and Shoulder Widths	Green Book Chapter 8.2	NB 4-12-12-10 SB 3-12-12-12-5	NB 4-12-12-10 SB 4-12-12-12-10	SB On Ramp
Bridge Lane and Shoulder Widths	Green Book Chapter 8.2	NB 3-12-12-3 SB 3-12-12-12-5	NB 4-12-12-10 SB 4-12-12-12-10	SB On Ramp
Clear Zone Distance	Green Book		14' fill / 12' cut 1:3, 12' cut 1:4	
Superevelvation	AASHTO Green Book Table 3.10b	Normal Crown	8% (max), 6% (max) at side roads	
Speed	VSS Section 5.3	65 MPH	65 MPH	
Horizontal Alignment	AASHTO Green Book Table 3-10b	Tangent	A 7% bank is appropriate for a 350 ft. radius	
Vertical Grade	VSS Table 5.6	NB & SB +1.814%	7% (max) for mountainous terrain	
K Values for Vertical Curves	VSS Table 5.1	N/A	25 mph 20 crest/30 sag 30 mph 30 crest/40 sag	
Vertical Clearance Issues	Green Book	NB 17"-6" SB 14'-0"	14'-3" (min)	
Stopping Sight Distance	Breen Book	Does not appear to be limited by bridge.	150'	
Bicycle/Pedestrian Criteria	Green Book	N/A	N/A	
Bridge Railing	Structures Manual Section 13	Two rail curbed mounted box beam	TL-2	
Hydraulics	VTrans Hydraulics Section	N/A	N/A	
Structural Capacity	SM, Ch. 3.4.1	Inv. H 66 Op H 99	Design Live Load: HL-93	

Inspection Report Summary

Deck Rating	5	Fair Condition – Recommend replace deck.
Superstructure Rating	7	Fair Condition
Substructure Rating	6	Fair Condition
Paint	6	Complete Painting with General Cleaning Required

From the Structure Inspection, Inventory, and Appraisal Sheet:

5/22/18

Wearing Surface
New bituminous concrete surface (mill/fill) placed in 2018 after above inspection.

Deck (Prior to 2018 Paving project)
Large areas of moderate to heavy saturation w/ fine map cracks and light efflorescence staining throughout. Large areas of spalling with exposed reinforcing near the center of both spans.

Curbs
Concrete w/ granite facing: Large delams throughout, spalling w/ heavy scaling and voids along the facing joint. Large areas of spalling w/ exposed reinforcing mostly surrounding the curb joint ends. Some areas of spalling have left the granite facing unsupported.

Fascia
Large delams throughout and scattered large areas of spalling w/ exposed reinforcing. Spalling has caused some minor undermining of a few guardrail posts and exposed anchor bolts.

Asphaltic Plug Joint
New asphaltic plug joints installed in 2018.

Steel Beams
Scattered paint peel w/ minor rust scale throughout.

Paint
Minor paint peel/rusting.

Curtain Walls
Good condition. There is some light efflorescence staining scattered along the top of the walls due to saturation in the soffit.

Abutment Seat/Stem
Good condition.

Wingwalls
Retaining walls have some spalling in the ends due to the deteriorated curbs above.

Piers

Seat/Caps – Some Minor/Moderate Distress
The West end has map cracking w/ light efflorescence staining. The base has some minor spalling w/ exposed reinforcing and surrounding delams. Some undermining of the fascia bearing of span 1 on Br. 4S.

Columns – Fairly Good Condition
The center column has small delams areas w/ rust staining surrounding the top and base.

Inspector's Summary Comments:
Spalling continues in the fascia's with large areas of exposed reinforcing and heavy scaling. The deck is heavily saturated and there are large spalled out areas with exposed reinforcing at the center of both spans. This structure should be considered for a deck replacement project. The delamed and saturated concrete in the west end of Br. 4S of abutment 2 and the pier cap should be removed and patched.

Hydraulics

This is a dry crossing over US 5.

Utilities

Underground:
-Green Mountain Power Company (Electric Services/lighting)
-FirstLight Fiber

Aerial:
-Green Mountain Power Company (Electric)
-FirstLight Fiber

Municipal:
-There is No known Water or Sewer in vicinity of the bridge.

There will most likely be NO utility impacts at this location.

Right-Of-Way

See Plan Sheets at the end of this report.

II. Safety

III. Alternatives Discussion

Both Br. 4 N & S are in similar condition. The general scope of this project is to correct the deficiencies with all four of the fascias as they are rapidly deteriorating and becoming a hazard to traffic below on US 5. Below is a discussion of the condition and needs of the major components of these structures. Given that both bridges are in similar condition, the component discussion applies to both bridges.

Exit 1 Interchange Status

See attached email from the Windham Regional Planning Commission stating there are no current long range plans to update this interchange. Therefore, there is nothing being planned that would affect the current span configurations of the existing bridges.

Deck

Both decks are currently rated a 5. Each deck has a few areas that are heavily saturated with popouts on the underside of the deck. Plywood panels have been installed on the bottom flanges in a few locations. Both decks had membranes installed at some point as per the bridge inspection files. Both decks were paved in 2018, but there is no evidence that any top surface deterioration was repaired or that new membranes were installed. New asphaltic plug joints were installed at both abutments and on each side of the concrete headers at the pier expansion device as a result of the paving project.

During the installation of the asphaltic plug joints after the 2018 paving project, the construction inspector noted the deteriorated condition of the top of the curtainwall and that quickset concrete patching was necessary prior to installation of the asphaltic plug joint. This may be an indication of the condition of the top of the concrete deck.

Given the Inspector's comments from 2018:

"Large areas of moderate to heavy saturation w/ fine map cracks and light efflorescence staining throughout. Large areas of spalling with exposed reinforcing near the center of both spans."

It is estimated the deck **may** have 6-8 years of life left new with a new membrane installed and new pavement. The condition of the top of the concrete deck may be poor given the above inspector's comment. It may be difficult to prepare the top of the concrete deck to accept a new membrane.

It's disappointing that these bridge decks were just paved in 2018 without the proper deck work and membrane application.

Fascia's

The curbs and fascia's of both bridges are in poor condition. These curbs consist of concrete with granite facing on the traffic side. In some locations there are deep pockets in the concrete curb behind the granite. The fascia's are deteriorating and pieces of concrete have fallen on US 5 below. The condition of the deck portion of the overhang is also questionable such that simply replacing the curbs may not be possible.

Deck Pier Expansion Joint

This joint appears to be in good condition at the surface of the deck. The concrete headers are in satisfactory condition and appear to be sound.

Pier Cap and Abutment Bridge Seats

The south abutments are founded on piles drive to ledge. The north abutments are spread footings founded on ledge.

Abutment bridge seats are in good condition. There may be some concrete repairs needed at the fascia bridge seats.

The pier cap of the west end of the southbound bridge is severely spalled and the fascia bearing is undermined.

Bridge Railing

The original bridge railing was replaced at some point with a two-rail galvanized box beam railing. This railing is in good condition. There is a snow fence attached to the bridge railing on the right hand side (facing direction of traffic) of each bridge.

No Action

This alternative leaves the bridge in its current condition. The riding surface should be satisfactory for a couple years until the pavement begins to break up at the areas where the top surface of the deck has begun to deteriorate.

The District could remove all loose deteriorated concrete from the fascia areas until a point where the bridge rail post connection to the deck may be compromised. At that time a complete deck or superstructure replacement could be constructed.

Alternative 1 – Reconstruction of the deck overhangs

This alternative will completely remove the deck overhangs of both bridges. From the photos of the fascia's there is a distinct delamination occurring at the deck/curb line on the fascia. The curb concrete between the granite curb facing and the fascia is complete deteriorated in many locations. If only a partial removal of curb and deck overhang were planned, there is a strong possibility that sound concrete would not be encountered and complete removal of the deck overhang would be required.

Both NB and SB bridge decks are rated a 5 – Fair Condition. It is estimated that this deck has 6-8 years of life remaining **(at most)** with the possibility that full depth holes could develop within 3-5 years.

It is questionable whether it is cost effective to construct completely new fascia's on both bridges when the remainder of the deck between the fascia beam consists of 60 year old concrete that has had a rating of 5 for at least the past 6 years.

Alternative 2 – New Deck

This alternative will completely replace the existing deck constructed on the existing steel beams. The steel beams are W36 x 300 w/cover plates top and bottom. The cover plate ends are tapered and the fatigue stress range should be checked at the ends of these cover plates. A link slab can be constructed over the pier in order to eliminate the expansion joint and provide protection of the pier caps.

The steel beams were last painted in 1992 and are in need of new paint. Keeping the existing structural steel will require a painting project every 25-30 years.

This bridge is listed as functionally deficient due to the width of the shoulders. This deficiency cannot be corrected easily as all substructures include in-line wingwalls and would need to be widened.

Alternative 3 – New Superstructure

This alternative will completely replace the existing superstructures with new continuous weathering steel beam/girder superstructures. This design will eliminate the bridge deck expansion joints at the piers which will significantly extend the life of the piers and abutments along with eliminating the need of painting every 25-30 years.

This bridge is listed as functionally deficient due to the width of the shoulders. This deficiency cannot be corrected easily as all substructures include in-line wingwalls and would need to be widened.

IV. Maintenance of Traffic

The Vermont Agency of Transportation reviews each new project to determine suitability for the Accelerated Bridge Program, which focuses on faster delivery of construction plans, permitting, and Right-of-Way, as well as faster construction of projects in the field. One practice that will help in this endeavor is closing bridges for portions of the construction period, rather than providing temporary bridges. In addition to saving money, the intention is to minimize the closure period with faster construction techniques and incentives to contractors to complete projects sooner. The Agency will consider the closure option on most projects where rapid reconstruction or rehabilitation is feasible. The use of prefabricated elements in new bridges will also expedite construction schedules. This can apply to decks, superstructures and substructures. Accelerated Construction provides enhanced safety for the workers and the travelling public while maintaining project quality.

Option 1: Close Bridge

NB bridge

The northbound bridge could be closed and all traffic required to take Exit 1 and follow US 5 north through downtown Brattleboro to VT 9 which leads to an on ramp to I91 at Exit 2. Truck turning movements would be difficult if not prohibited at the US 5 (Canal St.)/VT 9 (High St.) intersection in downtown Brattleboro. An alternate route would be to continue further north along US 5 to the roundabout and entrance to I91 at Exit 3. This closure would add a tremendous amount of traffic to downtown Brattleboro and more than likely create a gridlock at several locations.

SB Bridge

The southbound bridge could be closed, and all traffic required to take Exit 1 and follow US 5 south to Massachusetts to the MA Hwy 10 and access I91 via Exit 28A in

Bernardston, MA. Another alternative here is to modify the US 5 north traffic on ramp to I91 SB to accept southbound US 5 traffic.

Option 2: Temporary Bridge

A two lane temporary bridge could be installed in the median between the NB and SB bridges.

NB bridge
The NB traffic could be detoured onto the temporary bridge while the NB superstructure is replaced.

SB Bridge
The SB traffic could also be detoured onto the temporary bridge while the SB superstructure is replaced. The jughandle SB on ramp would most probably need to be closed as there is not adequate space to construct a merge lane. There is an additional SB on ramp on US 5 south of the I91 bridges that currently accommodates NB US 5 traffic. This access could be temporarily reconstructed to handle the I-91 SB on ramp for bothe directions of US 5 traffic. There are also two other I91 SB access points in Brattleboro within 3.5 miles of Exit 1.

The advantage of a two lane temporary bridge would be the continuation of two lanes of traffic in the NB and SB direction.

Option 3: Crossovers

There is adequate room north and south of these bridges to construct crossovers for construction of a new deck or replacement of the superstructures. The elevation of the northbound and southbound lanes of I91 in this are such that crossovers are a possibility.

Option 3: Phased Construction

This option would be advantageous only for Alternative 1 – Reconstruction of the deck overhangs. This option would reduce traffic to one lane in the NB and one lane with a merge lane for the SB traffic.

V. Alternatives Summary

- Alternative 1: Reconstruct the deck overhangs.
- Alternative 2: Construction of a new concrete deck on the existing steel beams.
- Alternative 3: Construction of new continuous span superstructures.

VI. Cost Matrix[1]

Brattleboro IM 091-1(82)		Alt 1 Do Nothing (Add Bunks/Fascia Screens)	Alt 2	Alt 3	Alt 4
			New Overhang w/Deck Patching	New Deck	New Deck & Superstructure
			Phase Construction	Temporary Bridge/ Crossovers	Temporary Bridge/ Crossovers
	Bridge Cost	$25,000-$200,000	$967,745	$1,350,780	$2,352,100
	Roadway	$0	$276,500	$317,130	$317,130
	Maintenance of Traffic	$0	$192,250	$757,250	$757,250
	Bridge Painting	$0	$0	$1,150,000	$0
	Construction Costs	$0	$1,436,495	$3,575,160	$3,326,480
	Construction Engineering + Contingencies	$0	$215,475	$425,000	$498,980
	Total Construction Costs w CEC	**$0**	**$1,651,970**	**$4,000,160**	**$3,825,460**
	Preliminary Engineering[2]	**$0**	**$250,000**	**$325,000**	**$375,000**
	Right-of-Way	**$0**	**$0**	**$0**	**$0**
	Total Project Costs	$25,000-$200,000	$1,901,970	$4,325,160	$4,200,460
SCHEDULING	Project Development Duration[3]	NA	8 months	8 months	8 months
	Construction Duration	NA	6 months	2 Construction Seasons	2 Construction Seasons
	Closure Duration (If Applicable)	NA	N/A	N/A	N/A
ENGINEERING	Typical Section - Roadway (feet)	NB -30 ft/ SB 45 ft	NB 30 ft. / SB 45 ft.	NB 30 ft. / SB 45 ft.	NB 30 ft. / SB 45 ft.
	Typical Section - Bridge (feet)	NB 30 ft. / SB 45 ft.	NB 30 ft. / SB 45 ft.	NB 30 ft / SB 45 ft.	NB 30 ft. / SB 45 ft.
	Traffic Safety	No Change	No Change	No Change	No Change
	Alignment Change	No	No	No	No
	Bicycle Access	N/A	N/A	N/A	N/A
	Hydraulic Performance	N/A	N/A	N/A	N/A
	Design Life	4-5 yrs. (Due to remaining rating)	10-15 yrs. (Due to overall deck rating)	80 years	80 years

[1] Costs are estimates only, used for comparison purposes.
[2] Preliminary Engineering costs are estimated starting from the end of the Project Definition Phase.
[3] Project Development Durations are starting from the end of the Project Definition Phase.

	Utility	No Change	No Change	No Change	No Change

VII. Conclusion

We recommend **Alternative 3 –** New Deck

Structure:

The new concrete deck alternative was chosen for these bridges for the following reasons:

- The existing bridge was built in 1959 and as such is over 60 years old. The concrete decks are saturated in many locations with plywood bunks placed between the existing beams to catch existing and new popouts of the concrete deck.
- The curbs and fascia's are heavily saturated with significant spalling.
- It is doubtful that only portions of the curbs and fascia's could be repaired given the condition of the concrete.
- Even though it is less costly to simply replace the existing concrete deck overhangs at this time, these new overhangs will most probably be replaced with entirely new concrete decks or superstructures within 6-8 years.
- The new decks can be construction as a link slab over the piers to eliminated the deck joints at this location. This will provide protection for the pier extending their useful life.
- Conventional cast-in-place decks can be considered along with transverse or longitudinal full depth precast deck panels.

Roadway Alignment:

Modifying the roadway alignment on I91 is outside the scope of this project and is not required by current design standards.

Interstate Design Standards call for a 4-12-12-10 bridge typical. This 38 ft. wide bridge typical section can not be constructed on the existing abutments and piers. The piers are just long enough to support the existing bridge typical and the abutments were all constructed with straight back wingwalls. All four abutment corners and piers would all need to be widen symmetrically about the centerline of the roadway in order to not affect the roadway alignment.

This alternative will provide a 4-12-12-4 bridge typical on the NB bridge and a 4-12(merge lane) -12-12-4 bridge typical on the SB bridge.

Traffic Control:

We propose closing the NB and SB bridge respectively during their reconstruction. NB two lanes of traffic can be maintained on the two-lane temporary bridge during the reconstruction of the NB structure. The NB off ramp will remain open. Alternatively, A crossover can be constructed maintaining one lane in the I91 NB and SB direction.

SB two lanes of traffic can be maintained on the two lane temporary bridge. The south bound on-ramp just north of the SB bridge will be closed and the SB on ramp just south of the bridge will be slightly reconfigured to provide US 5 SB access to I91. Alternatively, a crossover can be constructed maintaining one lane in the I91 NB and SB direction.

An Accelerated Bridge Construction (ABC) concept for replacing these decks utilizing either transverse of longitudinal deck panels can be considered. This ABC concept may be able to be constructed over separate long weekend closures of the I-91 NB or SB bridges with I-91 through traffic being maintained via the off and on ramps. An in-depth traffic study and analysis would need to be completed to determine the viability of this maintenance of traffic pattern and acceptable level of service during the closures.

VIII. Appendices

Appendix A: Site Pictures

2018 and 2019 Photos

Southbound fascia and pier cap spalling at fascia beam

Southbound fascia and pier cap spalling at fascia beam

Typical Fascia Condition

Southbound bridge looking North

Southbound expansion joint at pier

Typical condition of underside of deck

Typical condition of underside of deck

Typical condition of underside of deck

Appendix B: Regional Planning Letter on Exit 1

From: Sue Fillion
To: Cassino, Jackie
Cc: McCarthy, JB; ccampany
Subject: RE: Question regarding Brattleboro IM 091-1(82)
Date: Thursday, June 11, 2020 1:21:02 PM

EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.

Hi Jackie,

Our DPW Director got back to me to say that he is not aware of any plans to upgrade of modify the interchange.

Best regards,
Sue

Sue Fillion
Planning Director
Town of Brattleboro
230 Main Street, Suite 202
Brattleboro, VT 05301
Ph. 802.251.8112

From: Cassino, Jackie <Jackie.Cassino@vermont.gov>
Sent: Thursday, June 11, 2020 11:35 AM
To: Sue Fillion <sfillion@brattleboro.org>
Cc: McCarthy, JB <JB.McCarthy@vermont.gov>; ccampany <ccampany@windhamregional.org>
Subject: RE: Question regarding Brattleboro IM 091-1(82)

That sounds like a plan- thank you Sue.

Jackie Cassino | Planning Coordinator
Policy, Planning & Intermodal Development Vermont Agency of Transportation
219 N. Main Street | Barre, VT 05641
802-272-2368 |
jackie.cassino@vermont.gov
vtrans.vermont.gov

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AGENCY OF TRANSPORTATION

From: Sue Fillion <sfillion@brattleboro.org>
Sent: Wednesday, June 10, 2020 4:07 PM
To: Cassino, Jackie <Jackie.Cassino@vermont.gov>
Cc: McCarthy, JB <JB.McCarthy@vermont.gov>; ccampany <ccampany@windhamregional.org>
Subject: RE: Question regarding Brattleboro IM 091-1(82)

IX. EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.
Hi Jackie,

My apologies for missing this email. I don't believe there is but please give me another day or two to get the final answer from the Director of Public Works. We did do the survey last summer and this never came up.

I'll be back in touch as soon as I hear back from DPW.

Best regards,
Sue

From: Cassino, Jackie <Jackie.Cassino@vermont.gov>
Sent: Wednesday, June 10, 2020 3:34 PM
To: Sue Fillion <sfillion@brattleboro.org>
Cc: McCarthy, JB <JB.McCarthy@vermont.gov>; ccampany <ccampany@windhamregional.org>
Subject: Question regarding Brattleboro IM 091-1(82)

Hi Sue-

Following up on the emails below. We're wondering if Brattleboro has any input on the I91 Br. 4N &S over US 5. (at Exit 1) project- specifically as to whether there are any short-term or long term plans to upgrade or modify the interchange which may have an effect on the two bridges.
Additional details can be found in the email thread below.

Best,
Jackie

Jackie Cassino | Planning Coordinator
Policy, Planning & Intermodal
Development Vermont Agency of
Transportation
219 N. Main Street | Barre, VT 05641
802-272-2368 |
jackie.cassino@vermont.gov
vtrans.vermont.gov

VERMONT
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From: ccampany@windhamregional.org <ccampany@windhamregional.org>
Sent: Tuesday, June 2, 2020 4:39 PM
To: Cassino, Jackie <Jackie.Cassino@vermont.gov>
Cc: 'Sue Fillion' <sfillion@brattleboro.org>
Subject: RE: Question regarding Brattleboro IM 091-1(82)

X. EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.
Hi Jackie. I'm copying Sue Fillion here. Sue – see the attached Community Questionnaire completed in September, 2019.

There's been no discussion within the WRC about modifying the interchange. I don't know about the town. There is a LOT of ledge to contend with there. Not a lot by Pennsylvania/Virginia/West Virginia standards where blowing rocks up is a hobby, but a lot by Vermont standards.

Sue – any thoughts?

From: Cassino, Jackie <Jackie.Cassino@vermont.gov>
Sent: Tuesday, June 2, 2020 4:21 PM
To: ccampany <ccampany@windhamregional.org>
Subject: Question regarding Brattleboro IM 091-1(82)

Hi Chris-

JB McCarthy reached out to me regarding the recently completed scoping report to address issues with the I91 Br. 4N &S over US 5. (at Exit 1). At a meeting last week, the question came up as to whether there are any short-term or long term plans to upgrade or modify the interchange which may have an effect on the two bridges.

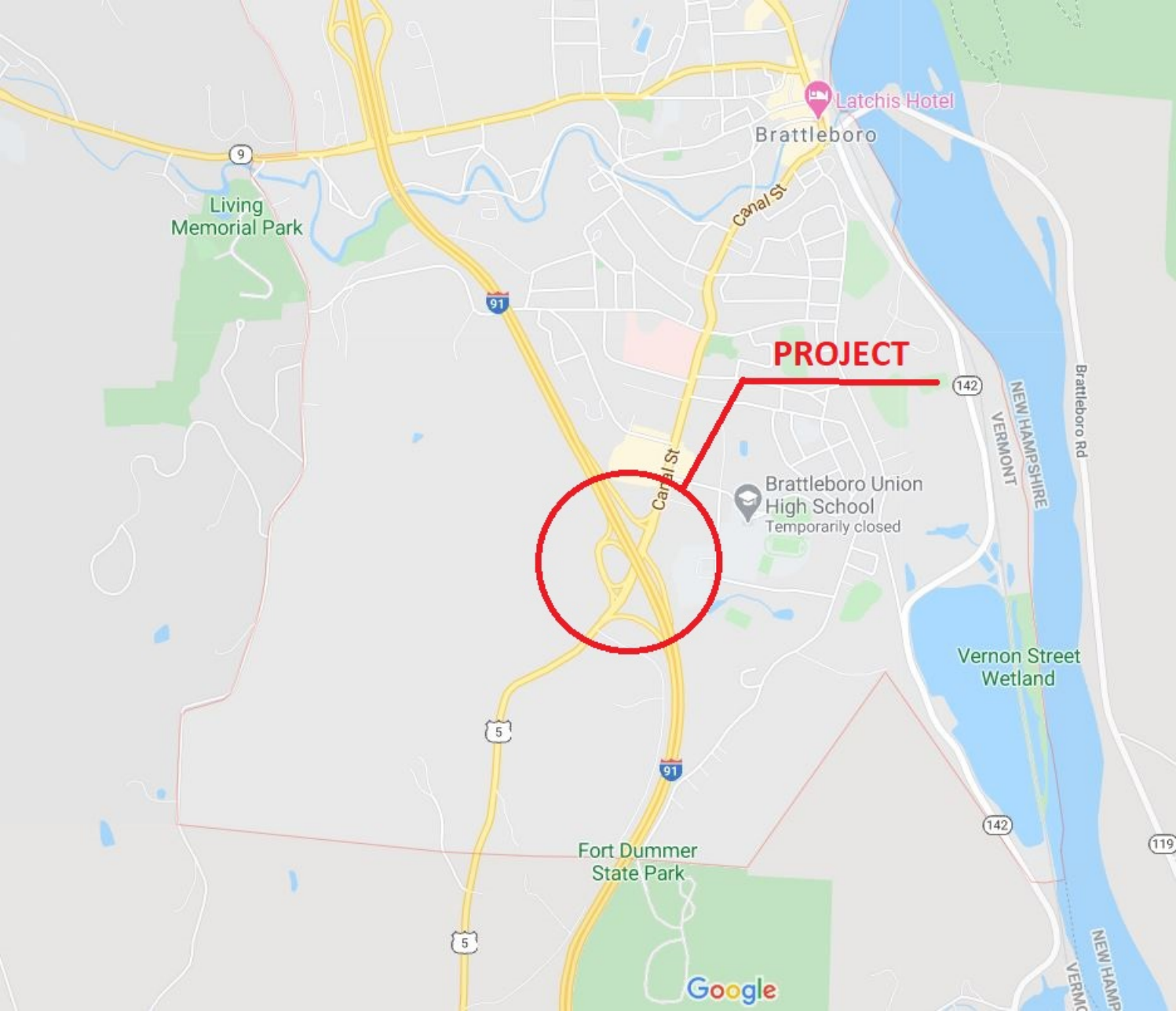
These two bridges need new concrete decks and Br. 4N possibly needs to be widened to include a 10 ft. shoulder on the right hand side. One comment we received was that the on-ramp to head south is on a rather tight radius. There are two on ramps to head south on I91 depending on your direction of travel on US 5.

JB asked that I check with you and see if there have been any local or regional discussions, plans, or related projects that identified the need to potentially modify the interchange/issues with the functionality of the interchange. From the engineering perspective, this did not come up in the scoping report. Also, this did not come up in the City's response to the local concerns questionnaire (attached).

If we replace the existing decks we'll have a 60-75 year fix- so if something was identified/in the works, we did not want to move forward with the project and miss a related component that should be also be addressed.

Thanks, Jackie

Jackie Cassino | **Planning Coordinator** Policy,
Planning & Intermodal Development Vermont
Agency of Transportation
219 N. Main Street | Barre, VT 05641
802-272-2368 | jackie.cassino@vermont.gov
vtrans.vermont.gov


Latchis Hotel
Brattleboro
Living
Memorial Park
Canal St
PROJECT
Canal St
Brattleboro Union
High School
Temporarily closed
Brattleboro Rd
NEW HAMPSHIRE
VERMONT
Vernon Street
Wetland
Fort Dummer
State Park
Google
9
91
5
142
119

VERMONT

Brennan Gauthier
VTrans Senior Archaeologist
Vermont Agency of Transportation
Project Delivery Bureau
Environmental Section
1 National Life Drive
Montpelier, VT 05633
tel. 802-279-1460
Brennan.Gauthier@Vermont.gov

To: Lee Goldstein, VTrans Environmental Specialist
From: Brennan Gauthier, VTrans Senior Archaeologist
Date: 8/5/2019
Subject: Brattleboro IM 091-1(82) Archaeological Resource Identification

Lee,

I have completed my field inspection and background research for the pair of I-91 bridges that span US Route 5 in the town of Brattleboro, Windham County, Vermont. Although unscoped, I assumed a wide Area of Potential Effect (APE) in order to identify resources that may be worth identifying if the project scope change to include a larger area.

I have concluded that there are no mappable archaeological resources within the area around bridges 4N and 4S. A field visit was conducted on 7/16/2019 in order to assess disturbance within the APE. This area was heavily altered during the construction of I-91 in 1965/6 and does not retain intact soils. Additionally, this project will be cleared as exempt once the Section 106 request is submitted since it involves work on a facility of the Interstate Highway System as per the ACHP notice of 2005.

Please feel free to reach out with any questions or concerns that may arise as part of this process.

Sincerely,

Brennan

Brennan

VTrans Working to Get You There
Vermont Agency of Transportation

Images and Illustrations

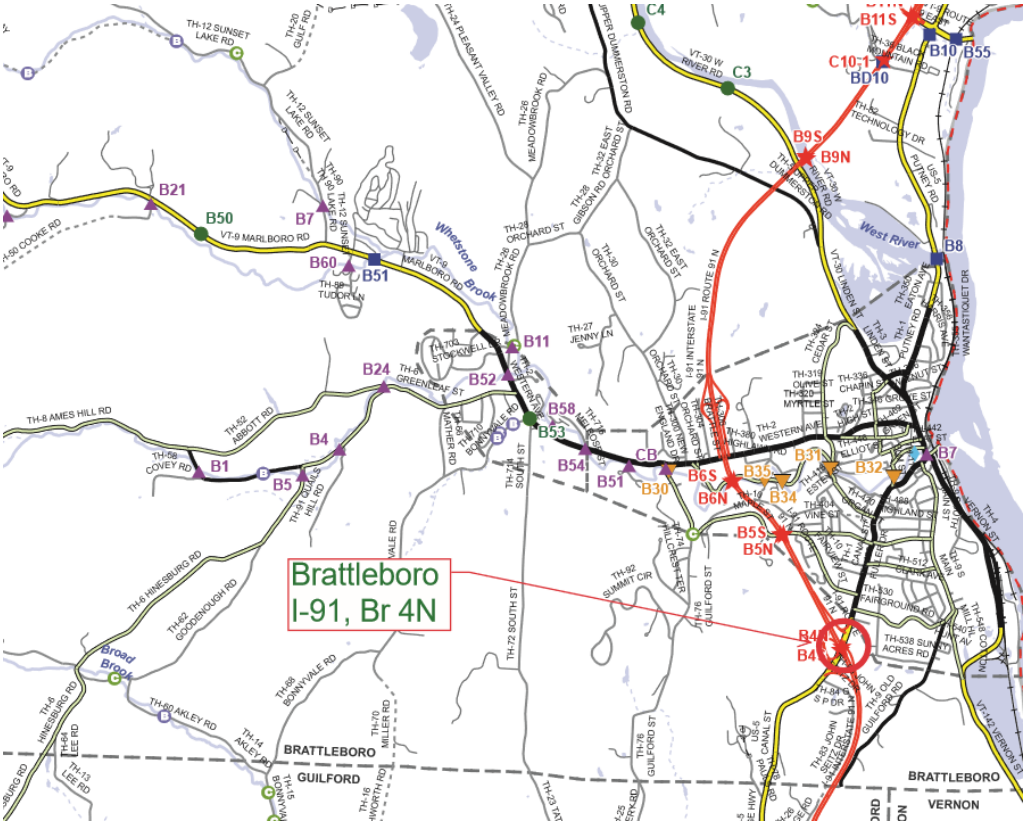


Figure 1: Bridge Locations.

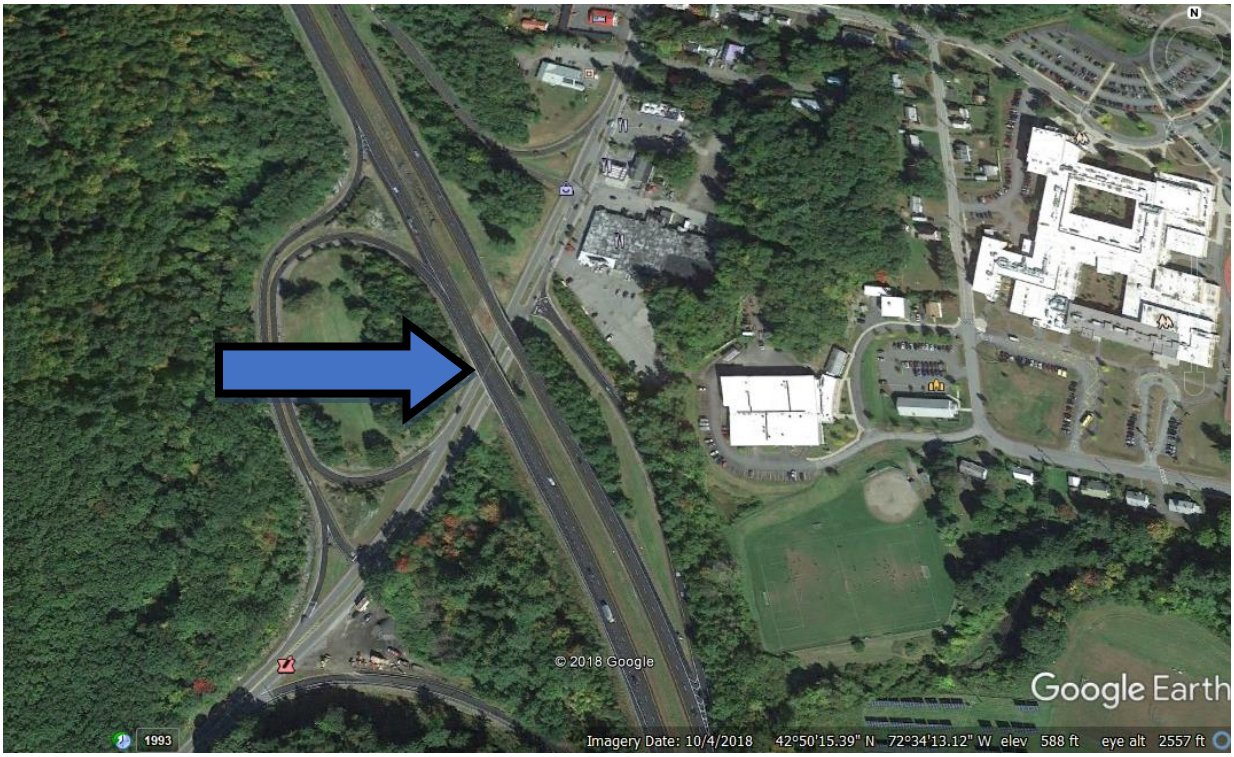


Figure 2: Aerial Image of Bridges.

Figure 3: Bridge 4 N View SW.

Figure 4: Bridge 4S View NE.

Local & Regional Input Questionnaire

Project Summary

This project, IM 091-1(82), focuses on bridges 4N & 4S on Interstate 91 North over US Route 5 in Brattleboro, Vermont. The bridges are deteriorating and are in need of either a major maintenance action or replacement. Potential options being considered for this project include major deck repairs or removal of the existing bridges and replacement with new bridges placed in the same location. It is possible that VTrans will recommend a road closure and detour traffic off of the interstate for the duration of the work. Efforts will be made to limit the detour to State roads.

Community Considerations

1. Are there regularly scheduled public events in the community that will generate increased traffic (e.g. vehicular, bicycles and/or pedestrians), or may be difficult to stage if the bridge is closed during construction? Examples include annual bike races, festivals, parades, cultural events, weekly farmers market, concerts, etc. that could be impacted? If yes, please provide approximate date, location and event organizers' contact info.

   No

2. Is there a "slow season" or period of time from May through October where traffic is less or no events are scheduled?

   Traffic in this area is heavily impacted by the presence of schools and major employers. The "slow season" would be when school is out of session for the summer (late June to mid-August)

3. Please describe the location of the Town garage, emergency responders (fire, police, ambulance) and emergency response routes that might be affected by the closure of the bridge, one-way traffic, or lane closures and provide contact information (names, address, email addresses, and phone numbers.

   The Brattleboro Police Department is located on the north end of Town off of I-91 Exit 3. There are two fire stations, Central Station in downtown Brattleboro and Station 2 located in West Brattleboro. Rescue, Inc. provides ambulance services it is located adjacent to the I-91 Exit 1 northbound on-ramp.

   Brattleboro Police Department
   62 Black Mountain Rd #101, Brattleboro
   Michael Fitzgerald, Chief of Police
   (802) 257-7946
   Michael.Fitzgerald@vermont.gov

Brattleboro Fire Department
103 Elliot Street, Brattleboro
Michael Bucossi, Chief
802-254-4831
mbucossi@brattleboro.org

Rescue Inc.
541 Canal Street, Brattleboro
802) 257-7679
Drew Hazelton, Chief of Operations

Brattleboro Public Works
211 Fairground Round, Brattleboro
Steve Barrett, Public Works Director
802-254-4255
sbarrett@brattleboro.org

4. Are there businesses (including agricultural operations and industrial parks) or delivery services (fuel or goods) that would be adversely impacted either by a detour or due to work zone proximity?

   Exit 1 Industrial Park
   Commonwealth Dairy
   Omega Optical (Delta Campus)
   Brattleboro Memorial Hospital

5. Are there important public buildings (town hall, community center, senior center, library) or community facilities (recreational fields, town green, etc.) close to the project?

   No

6. What other municipal operations could be adversely affected by a road/bridge closure or detour?

   Curbside trash, recycling and compost pickup

7. Are there any town highways that might be adversely impacted by traffic bypassing the construction on other local roads? Please indicate which roads may be affected and their condition (paved/unpaved, narrow, weight-limited bridges, etc), including those that may be or go into other towns.

   Local bypass are not designed to carry high traffic volumes or large trucks, both of which would greatly impact the neighborhoods.

8. Is there a local business association, chamber of commerce, regional development corporation, or other downtown group that we should be working with? If known, please provide name, organization, email, and phone number.

    - Brattleboro Chamber of Commerce – Kate O'Connor, kate@brattleborochamber.com, 802-254-4565
    - Brattleboro Development Credit Corporation – Adam Grinold, agrinold@brattleborodevelopment.com, 802-257-7731 Ex 224
    - Downtown Brattleboro Alliance – Stephanie Bonin, Stephanie@brattleboro.com, 802-257-4886

9. Are there any public transit services or stops that use the bridge or transit routes in the vicinity that may be affected if they become the detour route?

    Connecticut River Transit provide in-town bus service in Brattleboro via the Current. The red line services locations along Route 5 south including Omega Optical in the Delta Campus, the Exit 1 Industrial Park and the Guilford Country Store. This route would be affected by a detour.

Schools

1. Where are the schools in your community and what are their yearly schedules (example: first week in September to third week in June)?

    All public schools are in session generally from the last week of August to third week of June.

    Brattleboro Union High School, Brattleboro Area Middle School, Windham Region Career Center, share a campus. BUHS is located at 131 Fairground Rd., BAMS is at 109 Sunny Acres Road, and the Career Center is at 80 Atwood St. These schools are in the vicinity of the bridge.

    There are three elementary schools in town. Students do not necessarily attend the school located closest to them, instead the elementary school population is divided by the number of students in each grade level and placed in one of the following schools:

    - Academy School, 860 Western Ave.
    - Green Street School – 164 Green St.
    - Oak Grove School – 15 Moreland Ave.

2. Is this project on specific routes that school buses or students use to walk to and from school?

    BUHS, BAMS and the Career Center are regional schools. Buses utilize Interstate 91 as transportation route. Buses also travel Route 5 to/from Guilford.

3. Are there recreational facilities associated with the schools nearby (other than at the school)?

    No

Pedestrians and Bicyclists

1. Is pedestrian and bicycle traffic heavy enough on US Route 5 that it should be accommodated during construction?

   Yes, large employers are in industrial parks south of the bridge. The ability to walk or bike must be preserved.

2. Does the Town have plans to construct either pedestrian or bicycle facilities leading up to the bridge? Please provide any planning documents demonstrating this (scoping study, master plan, corridor study, town or regional plan).

   No

3. In the vicinity of the bridge, is there a land use pattern, existing generators of pedestrian and/or bicycle traffic, or zoning that will support development that is likely to lead to significant levels of walking and bicycling?

   The area east of the bridge is a mix of residential neighborhoods and commercial activity. It is zoned Neighborhood Center with the goal of continuing this mix of uses and supporting higher density housing. The three previously mentioned schools are also located near this bridge. There is significant student pedestrian activity associated with the schools.

Design Considerations

1. Are there any concerns with the alignment of the existing bridge? For example, if the bridge is located on a curve, has this created any problems that we should be aware of?

   No

2. Are there any concerns with the width of the existing bridge?

   No

3. Are there any special aesthetic considerations we should be aware of?

   No

4. Are there any known Hazardous Material Sites near the project site?

   None known.

5. Are there any known historic, archeological and/or other environmental resource issues near the project site?

No known historic, archeological or other environmental resource issues.

6. Are there any utilities (water, sewer, communications, power) attached to the existing bridge? Please provide any available documentation.

   Nothing is attached to the existing bridge. Water and sewer mains run underground.

7. Are there any existing, pending, or planned municipal utility projects (communications, lighting, drainage, water, wastewater, etc.) near the project that should be considered?

   No

8. Are there any other issues that are important for us to understand and consider?

Land Use & Zoning

1. Please provide a copy of your existing and future land use map or zoning map, if applicable.

   See attached.

2. Are there any existing, pending or planned development proposal that would impact future transportation patterns near the bridge? If so, please explain.

   No

3. Is there any planned expansion of public transit or intercity transit service in the project area? Please provide the name and contact information for the relevant public transit provider.

   None known

Communications

1. Please identify any local communication outlets that are available for us to use in communicating with the local population. Include weekly or daily newspapers, blogs, radio, public access TV, Facebook, Front Page Forum, etc. Also include any unconventional means such as local low-power FM.

   Daily Newspaper: Brattleboro Reformer
   Weekly Newspaper: The Commons
   Citizen Journalism Websites:
   iBrattleboro – www.ibrattleboro.org
   Front Porch Forum - https://frontporchforum.com/areas/219
   Radio: WTSA - https://wtsaradio.com/
   WKVT - https://brattfm.com/

Community Radio: WVEW - https://www.wvew.org/
Facebook: Town of Brattleboro

2. Other than people/organizations already referenced in this questionnaire, are there any others who should be kept in the loop as the project moves forward?

   Brattleboro Memorial Hospital
   Windham Southeast Supervisory Union

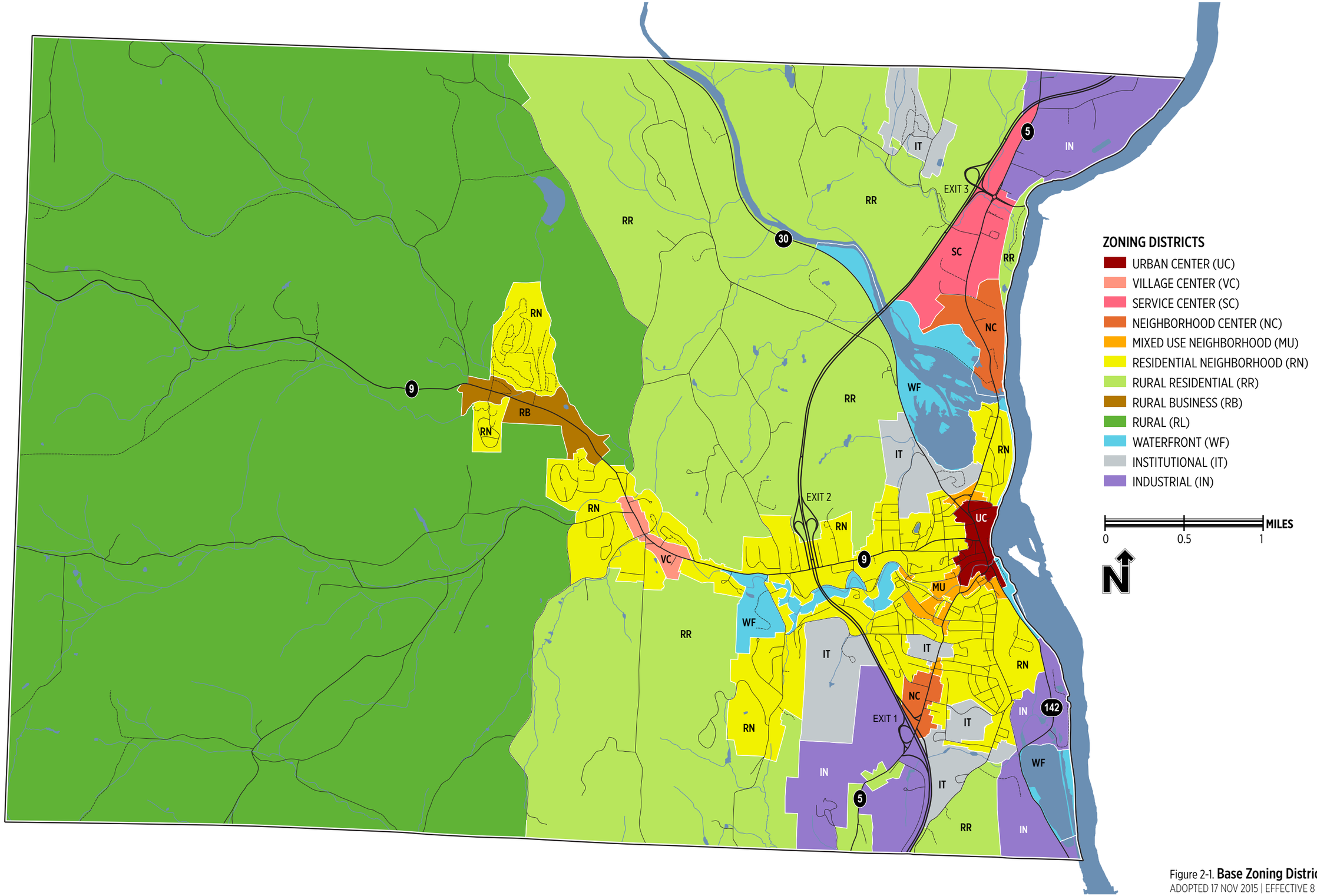


Figure 2-1. **Base Zoning District Map**
ADOPTED 17 NOV 2015 | EFFECTIVE 8 DEC 2015

Goldstein, Lee

From: Fernandez, Gabrielle
Sent: Thursday, August 15, 2019 10:53 AM
To: Goldstein, Lee; Obenauer, Kyle
Subject: Brattleboro IM 091-1(82) exempt resource ID

Hi Lee:

This project (Brattleboro IM 091-1(82)) is considered EXEMPT for above-ground historic resources per the Section 106 Exemption Regarding Effects to the Interstate Highway System adopted by the Advisory Council on Historic Preservation on March 10, 2005. (See Federal Register Vol.70/No.46)

The determination of effect for the overall project will be based on findings for archaeology.

Kyle will update VPINS to note that the project is exempt for above ground resources and Historic review is complete for this project.

Kyle will save this email in the project's NEPA/Specialist Reviews/Historic folder.

Thanks,
Gabrielle

Gabrielle Fernandez | AOT Technical Apprentice IV
Vermont Agency of Transportation
1 National Life Drive
Montpelier, VT 05603
(802) 793-3738

AGENCY OF TRANSPORTATION **OFFICE MEMORANDUM**

HIGHWAY DIVISION- TRAFFIC RESEARCH

TO: Daniel Beard, Structures Project Manager

FROM: Maureen Carr, Traffic Analysis Engineer MC
By: Colin Philbrook, Traffic Analysis Technician CCP

DATE: August 6, 2019

RE: Brattleboro IM 091-1(82)
- I-91 Exit 1- BR #4N
- I-91 Exit 1- BR #4S
- US 5- MM 0.0000 ~ 1.1410

Please find on the following page the requested traffic data for the above referenced 2023 project. The data consists of complete data for 2023 and 2043, including 20-year (2023 ~ 2043) and 40-year (2023 ~ 2063) ESALs.

~Section #1- I-91 Exit 1: BR #4N
~Section #2- I-91 Exit 1: BR #4S
~Section #3- US 5: Guilford T/L to I-91 Exit 1 Ramp C
~Section #4- US 5: I-91 Exit 1 Ramp C to I-91 Exit 1 Ramp E
~Section #5-US 5: I-91 Exit 1 Ramp E to I-91 Exit 1 Ramp G/Convenience Store
~Section #6- US 5: I-91 Exit 1 Ramp G/Convenience Store to Fairground Road

If you have any questions please call me at 522-4089.

AADT = Annual Average Daily Traffic
DHV = Design Hour Volume
ADTT = Average Daily Truck Traffic
%T = Percentage of Trucks during Peak Hour
%D = Highest Directional Percentage during Peak Hour
ESAL = Equivalent Single Axle Load

CC: Data Analysis Files

Section	AADT		DHV		%T		%D		ADTT		ESALs	
	2023	2043	2023	2043	2023	2043	2023	2043	2023	2043	(2023 ~ 2043)	(2023 ~ 2063)
1	7500	8200	1100	1200	9.4	15.6	100	100	840	1400	11,385,000	26,843,000
2	9500	10,400	1700	1900	10.0	16.6	100	100	1100	2000	15,757,000	38,953,000
3	8900	9800	1000	1100	3.8	5.0	58	58	450	660	4,095,000	9,584,000
4	11,200	12,300	1300	1400	5.0	6.7	67	67	750	1100	6,174,000	14,501,000
5	11,900	13,000	1300	1400	4.9	6.7	72	72	760	1100	5,969,000	14,030,000
6	13,000	14,300	1400	1500	3.4	4.7	54	54	870	1300	6,454,000	15,281,000

VERMONT

State of Vermont
Program Development Division
One National Life Drive
Montpelier, VT 05633-5001
vtrans.vermont.gov

Agency of Transportation

[phone] 802-279-2562
[fax] 802-828-2334
[ttd] 800-253-0191

To: Project File

From: James Brady, VTrans Environmental Biologist

Date: October 23, 2019

Subject: Brattleboro IM 091-1(82) - Natural Resource ID

I have completed my natural resource report for the above referenced project. My evaluation has included wetlands, wildlife habitat, agricultural soils and rare, threatened and endangered species.

Bridges 0004N and 0004S, Interstate 91

Wetlands/Watercourses
There are no wetlands or watercourses within the review area.

Wildlife Habitat
There is very limited wildlife habitat at this location.

Rare, Threatened and Endangered Species
The only listed species in the project area is the federally threatened northern long-eared bat. The bridge does not provide useful roosting habitat, so restrictions caused by this animal are unlikely.

Agricultural Soils
The area of review is mapped as statewide significant agricultural soils. However, the area in question is likely fill from the construction of the interstate.

Brattleboro IM 091-1(82)

Existing Utilities within Project Limits Report 08-14-2019

Bridge 4N/S on Interstate 91 in Brattleboro, Vt.

AERIAL

-Green Mountain Power Company (Electric)

-FirstLight Fiber

UNDERGROUND

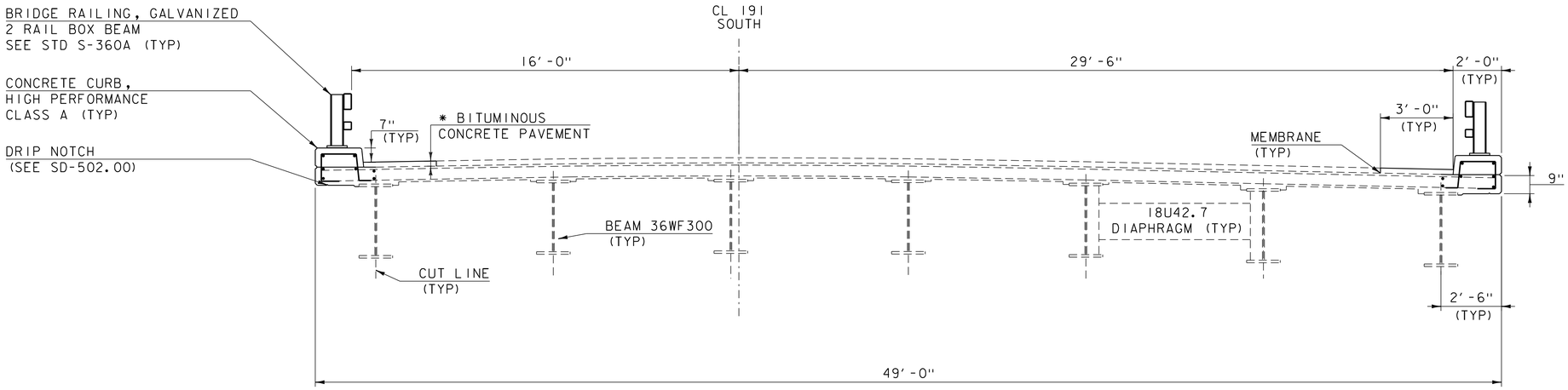
-Green Mountain Power Company (Electric Services/lighting)

-FirstLight Fiber

MUNICIPAL

There is No known Water or Sewer in vicinity of the bridge.

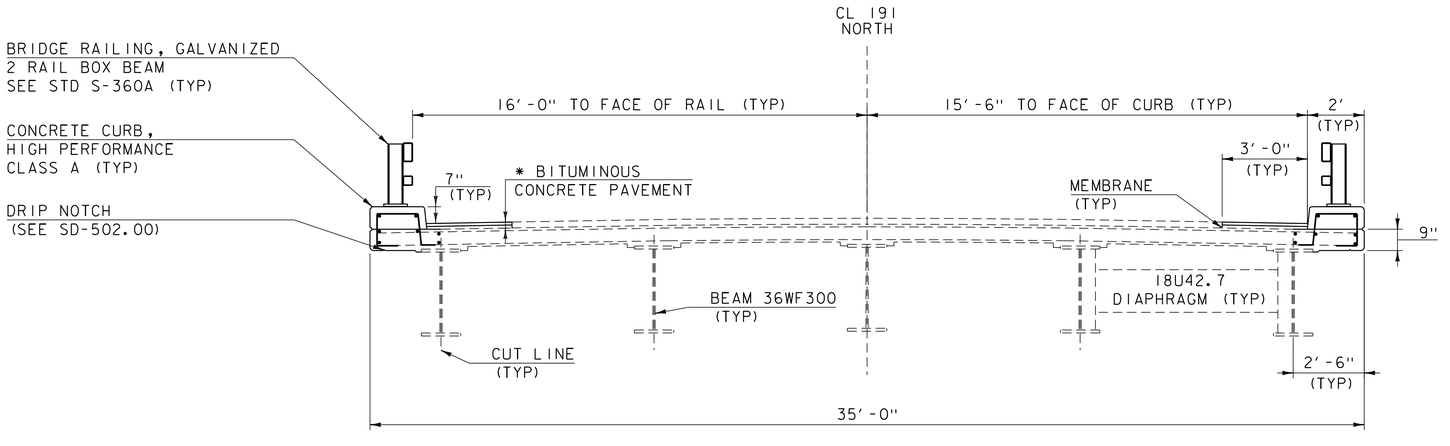
- **There will most likely be NO utility impacts at this location.**



* BITUMINOUS CONCRETE
1?" TYPE IVB OVER
1?" TYPE IVB

BRIDGE TYPICAL SECTION SOUTH BOUND

SCALE 3/8" = 1'-0"



* BITUMINOUS CONCRETE
1?" TYPE IVB OVER
1?" TYPE IVB

BRIDGE TYPICAL SECTIONS NORTH BOUND

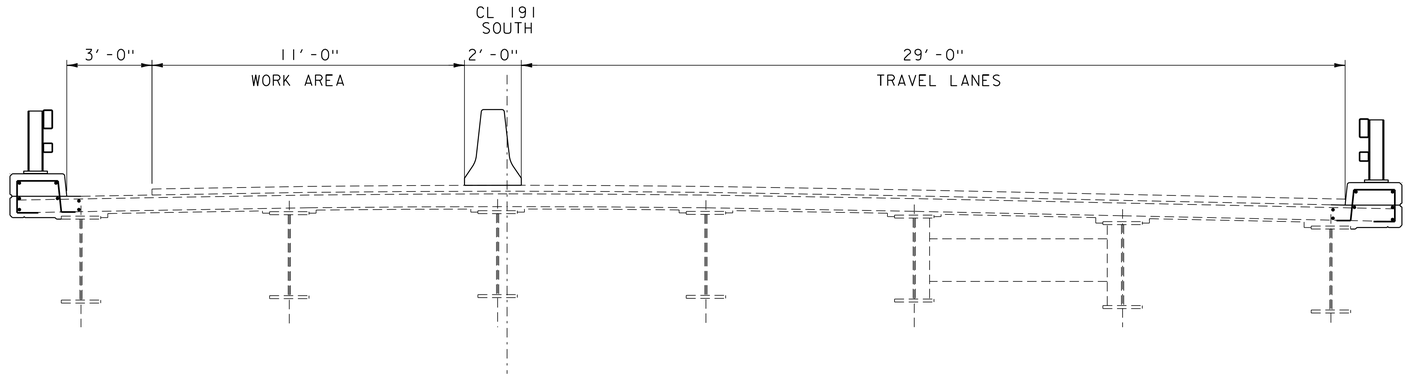
SCALE 3/8" = 1'-0"

MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROWS	+/- 1"

PROJECT NAME: BRATTLEBORO
PROJECT NUMBER: IM 091-1(82)

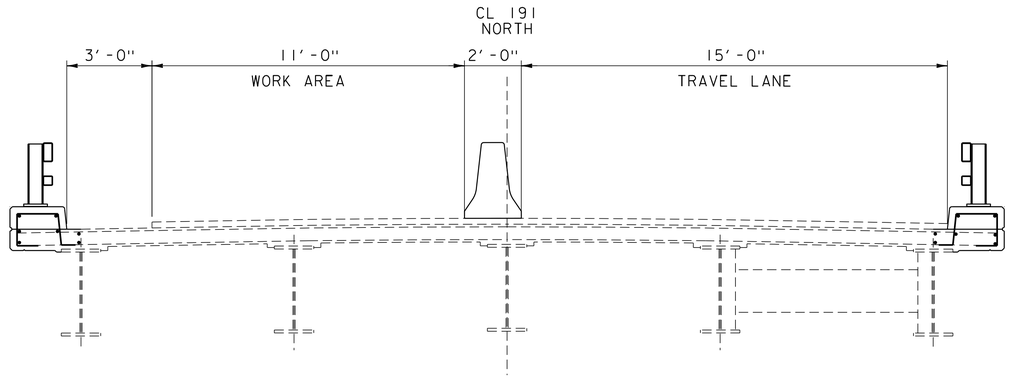
FILE NAME: 19a220/sl9a220typ.dgn
PROJECT LEADER: JB McCarthy
DESIGNED BY: HI Salls
EXISTING TYPICAL SHEET

PLOT DATE: 23-MAR-2020
DRAWN BY: HI Salls
CHECKED BY: JB McCarthy
SHEET 2 OF 23



PHASE ONE SOUTH BOUND

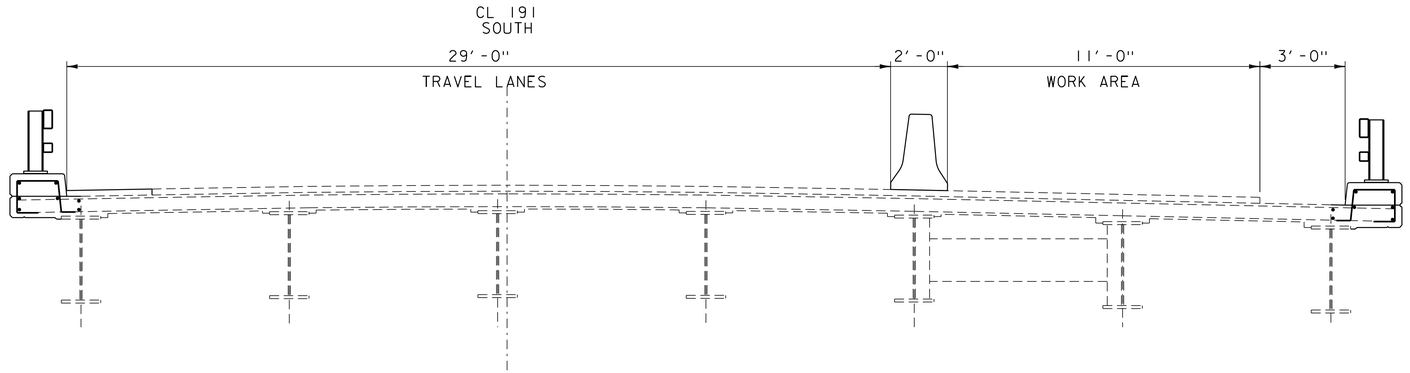
SCALE 3/8" = 1'-0"



PHASE ONE SECTIONS NORTH BOUND

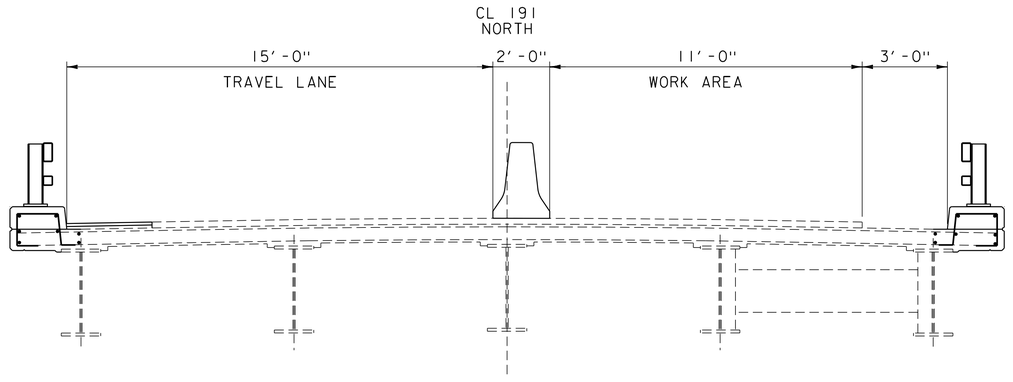
SCALE 3/8" = 1'-0"

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)
FILE NAME: 19a220/sl9a220typ.dgn	PLOT DATE: 23-MAR-2020
PROJECT LEADER: JB McCarthy	DRAWN BY: HI Salls
DESIGNED BY: HI Salls	CHECKED BY: JB McCarthy
PHASE ONE TYPICALS	SHEET 3 OF 23



PHASE TWO SECTION SOUTH BOUND

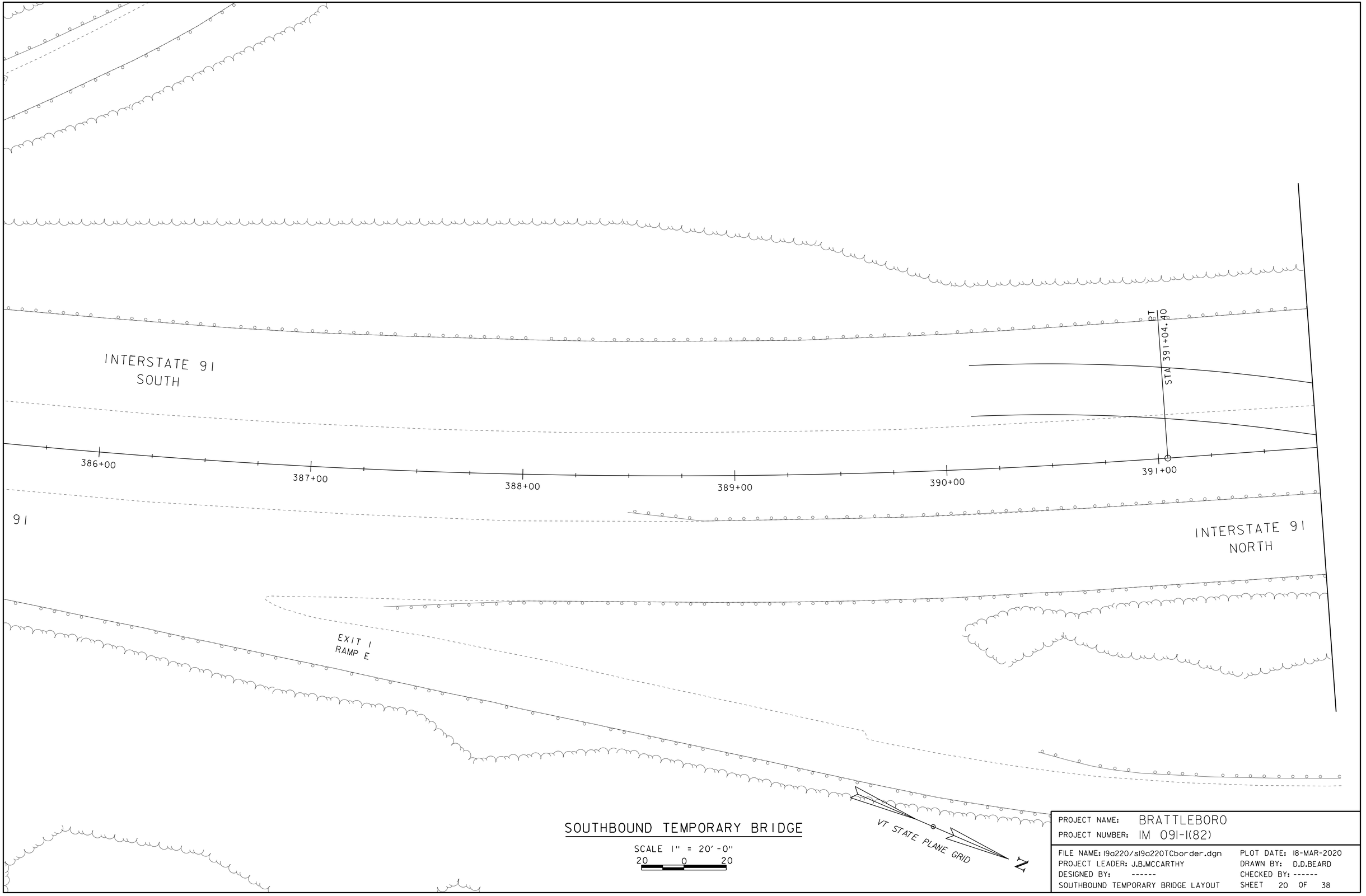
SCALE 3/8" = 1'-0"



PHASE TWO SECTIONS NORTH BOUND

SCALE 3/8" = 1'-0"

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)
FILE NAME: 19a220/sl9a220typ.dgn	PLOT DATE: 23-MAR-2020
PROJECT LEADER: JB McCarthy	DRAWN BY: HI Salls
DESIGNED BY: HI Salls	CHECKED BY: JB McCarthy
PHASE TWO TYPICALS	SHEET 4 OF 23

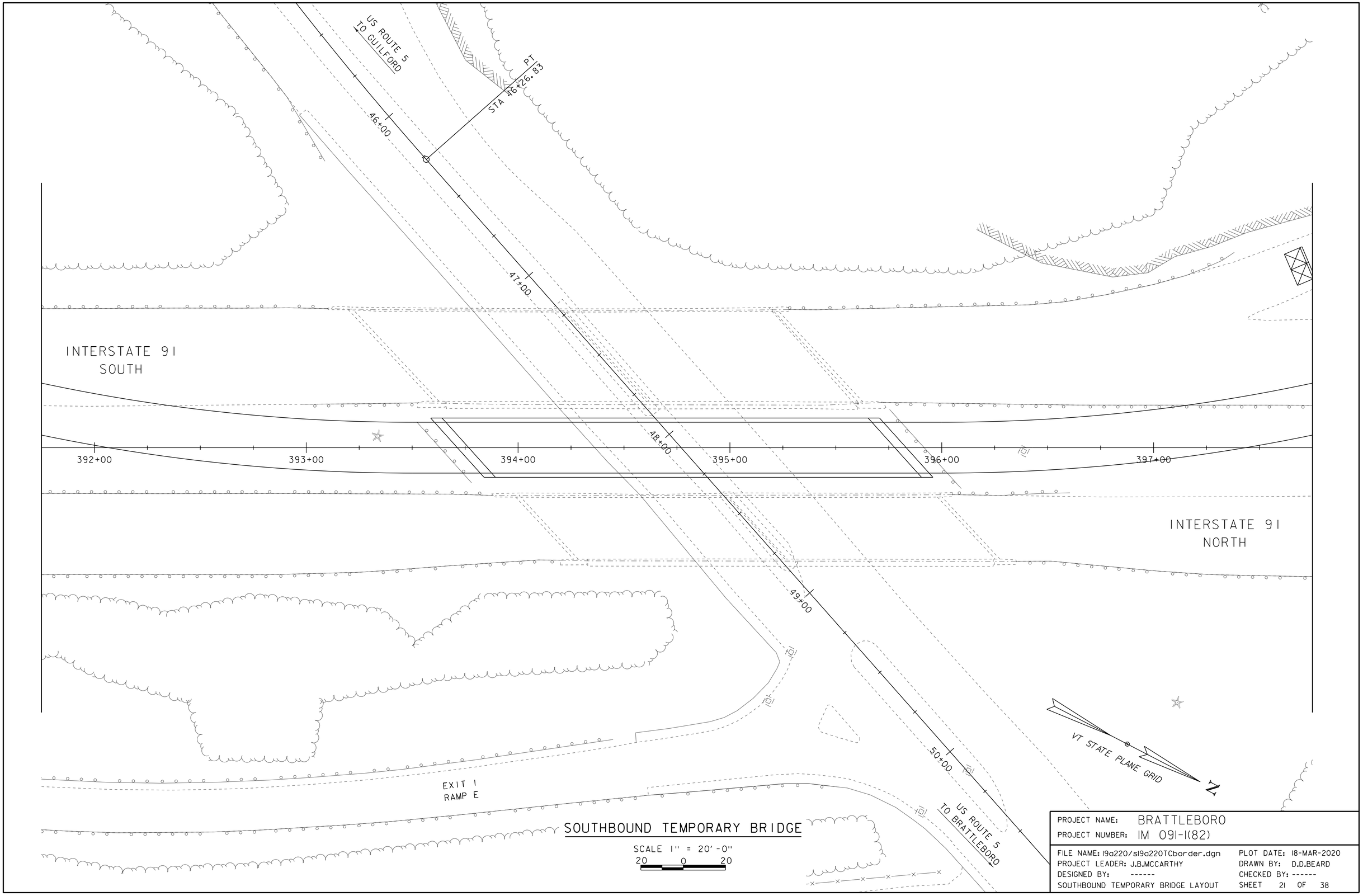


SOUTHBOUND TEMPORARY BRIDGE

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)

FILE NAME: I9a220/sI9a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
SOUTHBOUND TEMPORARY BRIDGE LAYOUT	SHEET 20 OF 38



SOUTHBOUND TEMPORARY BRIDGE

SCALE 1" = 20'-0"

20 0 20

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)
FILE NAME: I9a220/sI9a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
SOUTHBOUND TEMPORARY BRIDGE LAYOUT	SHEET 21 OF 38

EXIT 1
RAMP D

EXIT 1
RAMP B

INTERSTATE 91
SOUTH

IN

398+00

399+00

400+00

401+00

402+00

403+00

INTERSTATE 91
NORTH

SOUTHBOUND TEMPORARY BRIDGE

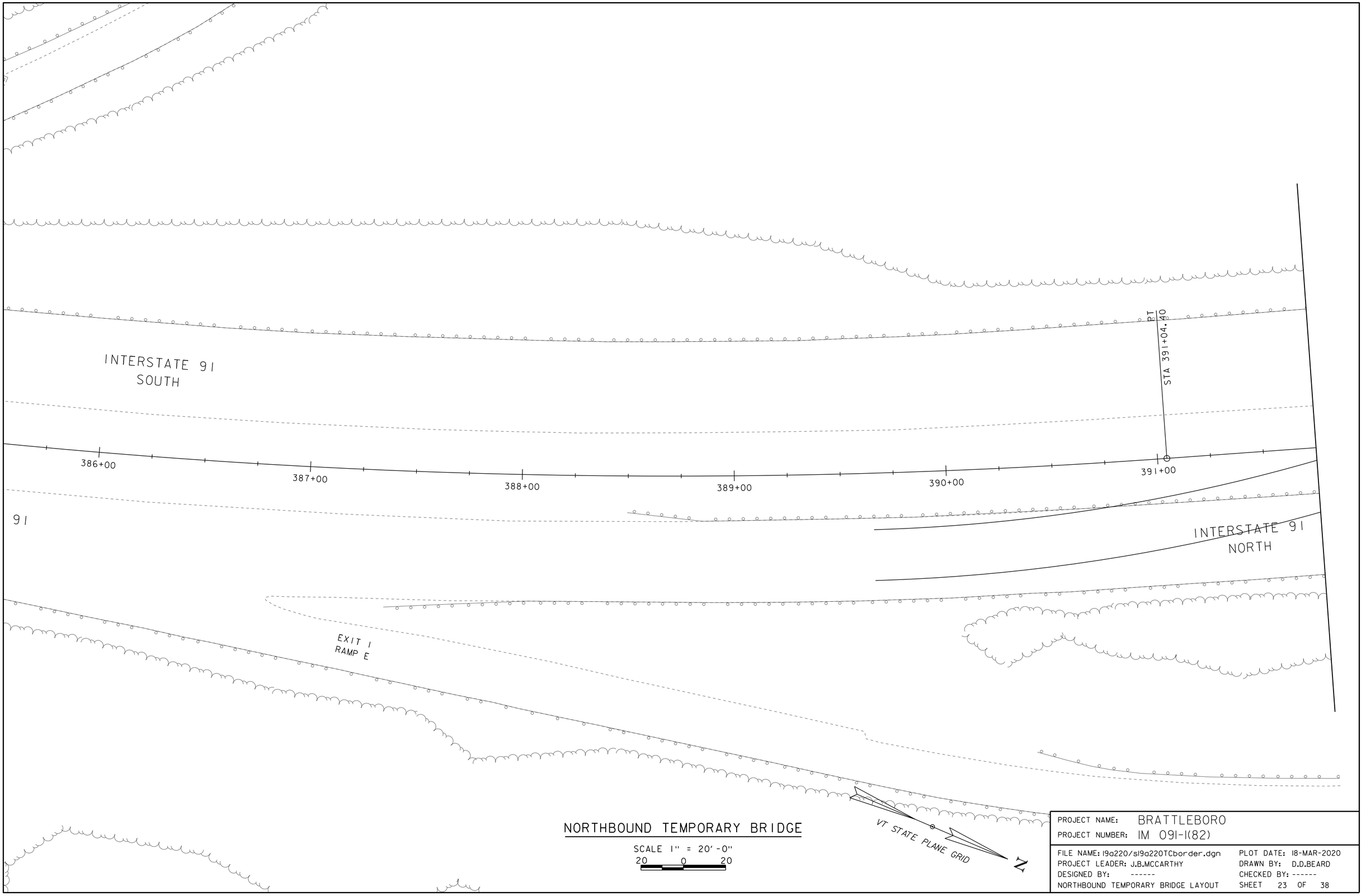
SCALE 1" = 20'-0"
20 0 20

VT STATE PLANE GRID

PROJECT NAME: BRATTLEBORO
PROJECT NUMBER: IM 091-1(82)

FILE NAME: 19a220/sl9a220TCborder.dgn
PROJECT LEADER: J.B.MCCARTHY
DESIGNED BY: ------
SOUTHBOUND TEMPORARY BRIDGE LAYOUT

PLOT DATE: 18-MAR-2020
DRAWN BY: D.D.BEARD
CHECKED BY: ------
SHEET 22 OF 38



NORTHBOUND TEMPORARY BRIDGE

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)
FILE NAME: I9a220/sI9a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
NORTHBOUND TEMPORARY BRIDGE LAYOUT	SHEET 23 OF 38

US ROUTE 5
TO GUILFORD

PI
STA 46+26.83

46+00

47+00

INTERSTATE 91
SOUTH

392+00

393+00

394+00

48+00

395+00

396+00

397+00

INTERSTATE 91
NORTH

49+00

50+00

EXIT 1
RAMP E

US ROUTE 5
TO BRATTLEBORO

VT STATE PLANE GRID

N

NORTHBOUND TEMPORARY BRIDGE

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: BRATTLEBORO
PROJECT NUMBER: IM 091-1(82)

FILE NAME: I9a220/sI9a220TCborder.dgn
PROJECT LEADER: J.B.MCCARTHY
DESIGNED BY: ------
NORTHBOUND TEMPORARY BRIDGE LAYOUT

PLOT DATE: 18-MAR-2020
DRAWN BY: D.D.BEARD
CHECKED BY: ------
SHEET 24 OF 38

EXIT 1
RAMP D

EXIT 1
RAMP B

INTERSTATE 91
SOUTH

IN

398+00 399+00 400+00 401+00 402+00 403+00

INTERSTATE 91
NORTH

NORTHBOUND TEMPORARY BRIDGE

SCALE 1" = 20'-0"
20 0 20

VT STATE PLANE GRID

N

PROJECT NAME: BRATTLEBORO	
PROJECT NUMBER: IM 091-1(82)	
FILE NAME: 19a220/s19a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
NORTHBOUND TEMPORARY BRIDGE LAYOUT	SHEET 25 OF 38

INTERSTATE 91
SOUTH

PT
STA 391+04.40

386+00
387+00
388+00
389+00
390+00
391+00

91

INTERSTATE 91
NORTH

EXIT 1
RAMP E

VT STATE PLANE GRID

N

PHASE I LAYOUT

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)

FILE NAME: I9a220/sI9a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
PHASE I LAYOUT SHEET	SHEET 26 OF 38

US ROUTE 5
TO GUILFORD

PT
STA 46+26.83

46+00

47+00

48+00

49+00

50+00

INTERSTATE 91
SOUTH

INTERSTATE 91
NORTH

392+00

393+00

394+00

395+00

396+00

397+00

EXIT 1
RAMP E

US ROUTE 5
TO BRATTLEBORO

VT STATE PLANE GRID

N

PHASE I LAYOUT

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: BRATTLEBORO
PROJECT NUMBER: IM 091-1(82)

FILE NAME: I9a220/sI9a220TCborder.dgn
PROJECT LEADER: J.B.MCCARTHY
DESIGNED BY: ------
PHASE I LAYOUT SHEET

PLOT DATE: 18-MAR-2020
DRAWN BY: D.D.BEARD
CHECKED BY: ------
SHEET 27 OF 38

EXIT 1
RAMP D

EXIT 1
RAMP B

INTERSTATE 91
SOUTH

IN

398+00 399+00 400+00 401+00 402+00 403+00

INTERSTATE 91
NORTH

VT STATE PLANE GRID

N

PHASE I LAYOUT

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: BRATTLEBORO	
PROJECT NUMBER: IM 091-1(82)	
FILE NAME: 19a220/s19a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
PHASE I LAYOUT SHEET	SHEET 28 OF 38

INTERSTATE 91
SOUTH

PT
STA 391+04.40

386+00
387+00
388+00
389+00
390+00
391+00

91

INTERSTATE 91
NORTH

EXIT 1
RAMP E

VT STATE PLANE GRID

N

PHASE 2 LAYOUT

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)
FILE NAME: I9a220/sI9a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
PHASE 2 LAYOUT SHEET	SHEET 29 OF 38

US ROUTE 5
TO GUILFORD

PI
STA 46+26.83

46+00

47+00

48+00

49+00

50+00

INTERSTATE 91
SOUTH

INTERSTATE 91
NORTH

392+00

393+00

394+00

395+00

396+00

397+00

EXIT 1
RAMP E

US ROUTE 5
TO BRATTLEBORO

VT STATE PLANE GRID

N

PHASE 2 LAYOUT

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: BRATTLEBORO
PROJECT NUMBER: IM 091-1(82)

FILE NAME: I9a220/sI9a220TCborder.dgn
PROJECT LEADER: J.B.MCCARTHY
DESIGNED BY: ------
PHASE 2 LAYOUT SHEET

PLOT DATE: 18-MAR-2020
DRAWN BY: D.D.BEARD
CHECKED BY: ------
SHEET 30 OF 38

EXIT 1
RAMP D

EXIT 1
RAMP B

INTERSTATE 91
SOUTH

IN

398+00 399+00 400+00 401+00 402+00 403+00

INTERSTATE 91
NORTH

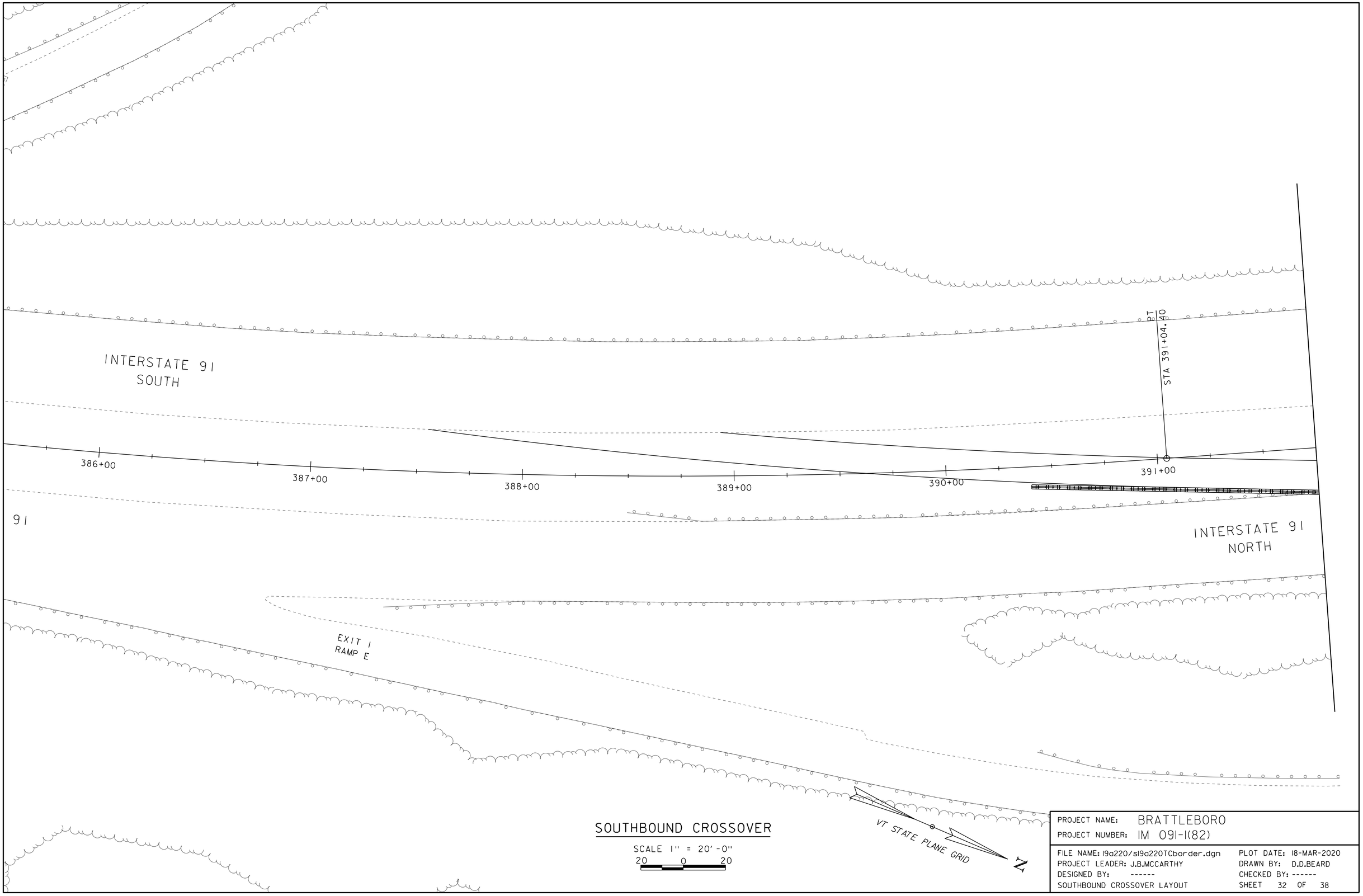
VT STATE PLANE GRID

N

PHASE 2 LAYOUT

SCALE 1" = 20'-0"
20 0 20

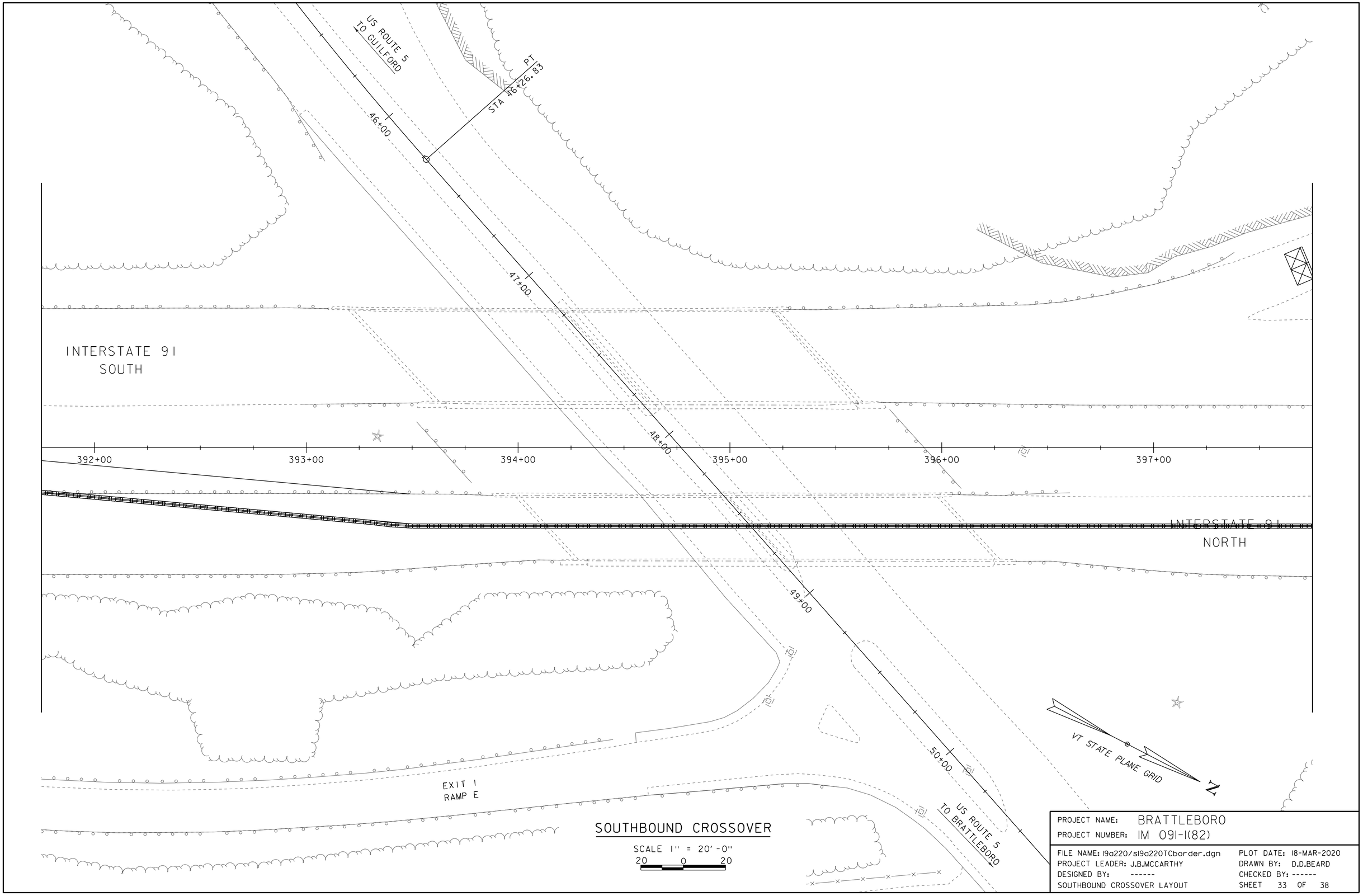
PROJECT NAME: BRATTLEBORO	
PROJECT NUMBER: IM 091-1(82)	
FILE NAME: 19a220/s19a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
PHASE 2 LAYOUT SHEET	SHEET 31 OF 38



SOUTHBOUND CROSSOVER

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)
FILE NAME: I9a220/sI9a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
SOUTHBOUND CROSSOVER LAYOUT	SHEET 32 OF 38



SOUTHBOUND CROSSOVER

SCALE 1" = 20'-0"

20 0 20

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)
FILE NAME: I9a220/sI9a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
SOUTHBOUND CROSSOVER LAYOUT	SHEET 33 OF 38

EXIT 1
RAMP D

EXIT 1
RAMP B

INTERSTATE 91
SOUTH

IN

398+00 399+00 400+00 401+00 402+00 403+00

INTERSTATE 91
NORTH

VT STATE PLANE GRID

N

SOUTHBOUND CROSSOVER

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)
FILE NAME: I9a220/sI9a220TCborder.dgn	PLOT DATE: I8-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
SOUTHBOUND CROSSOVER LAYOUT	SHEET 34 OF 38

INTERSTATE 91
SOUTH

PT
STA 391+04.40

386+00
387+00
388+00
389+00
390+00
391+00

91

INTERSTATE 91
NORTH

EXIT 1
RAMP E

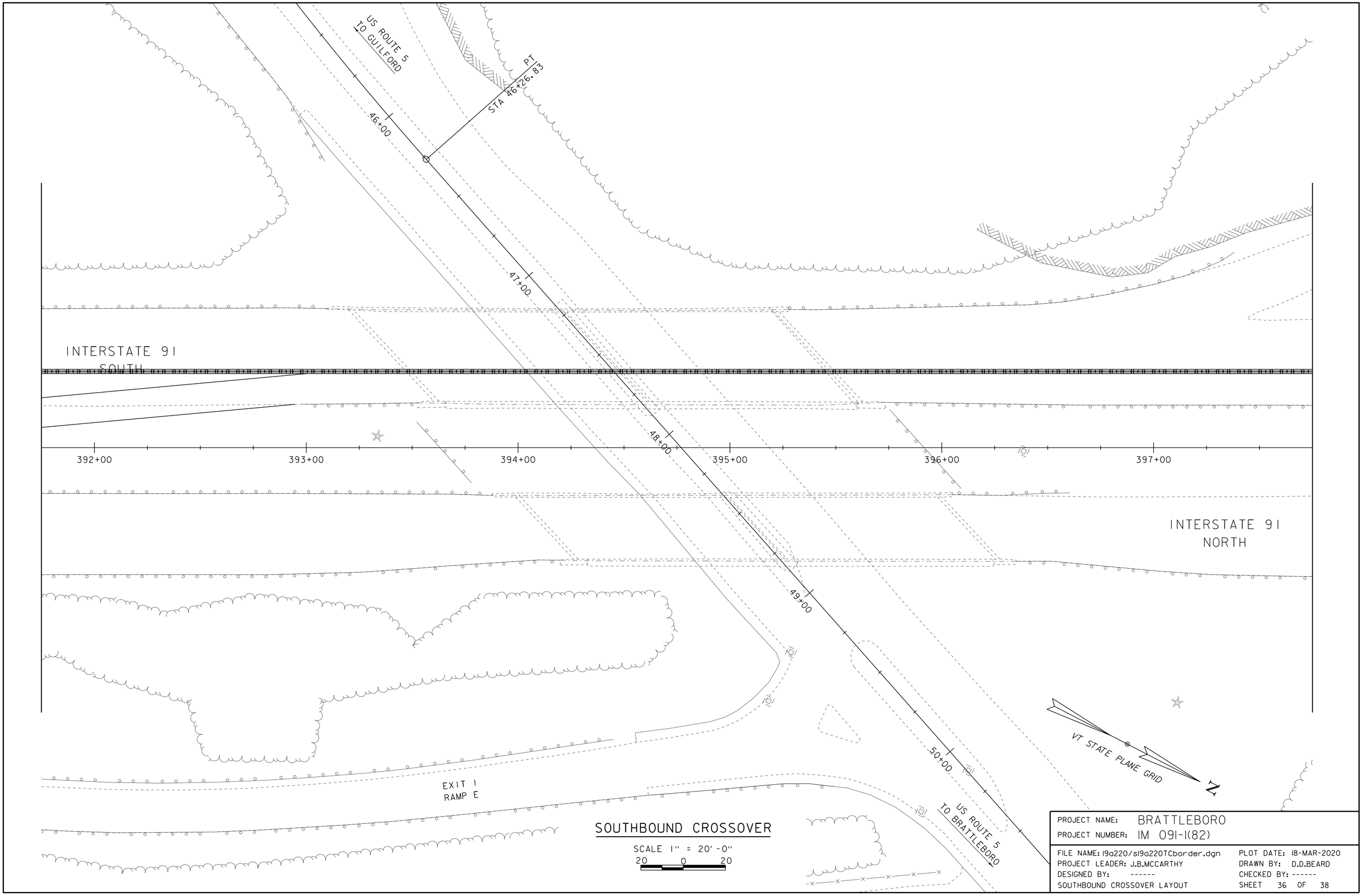
VT STATE PLANE GRID

N

NORTHBOUND CROSSOVER

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)
FILE NAME: 19a220/sl9a220TCborder.dgn	PLOT DATE: 18-MAR-2020
PROJECT LEADER: J.B.MCCARTHY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
NORTHBOUND CROSSOVER LAYOUT	SHEET 35 OF 38



SOUTHBOUND CROSSOVER

SCALE 1" = 20'-0"

20 0 20

PROJECT NAME: BRATTLEBORO

PROJECT NUMBER: IM 091-1(82)

FILE NAME: I9a220/sI9a220TCborder.dgn
PROJECT LEADER: J.B.MCCARTHY
DESIGNED BY: ------
SOUTHBOUND CROSSOVER LAYOUT

PLOT DATE: 18-MAR-2020
DRAWN BY: D.D.BEARD
CHECKED BY: ------
SHEET 36 OF 38

EXIT 1
RAMP D

EXIT 1
RAMP B

INTERSTATE 91
SOUTH

IN

398+00 399+00 400+00 401+00 402+00 403+00

INTERSTATE 91
NORTH

VT STATE PLANE GRID

N

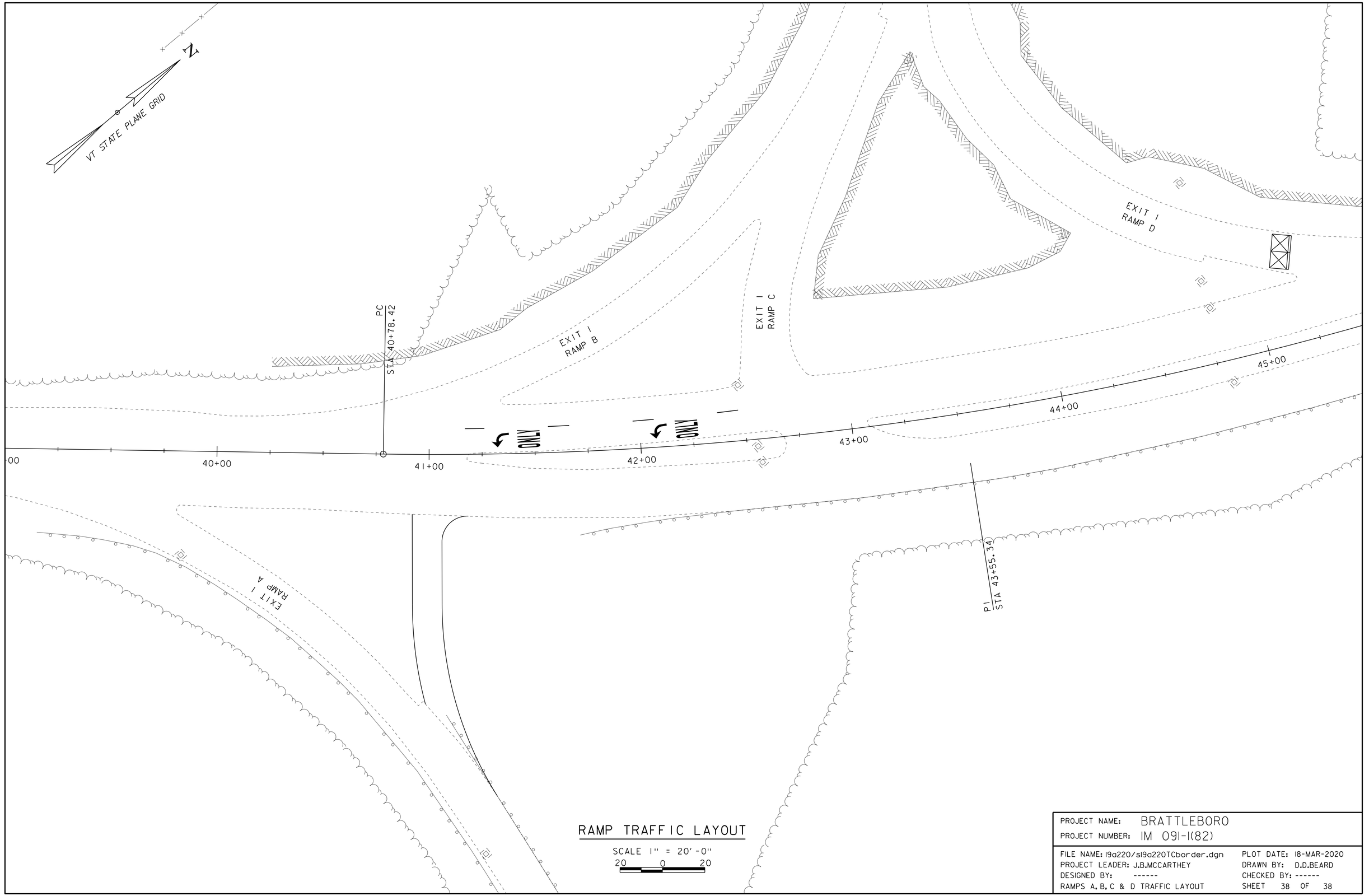
SOUTHBOUND CROSSOVER

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: BRATTLEBORO
PROJECT NUMBER: IM 091-1(82)

FILE NAME: 19a220/sl9a220TCborder.dgn
PROJECT LEADER: J.B.MCCARTHY
DESIGNED BY: ------
SOUTHBOUND CROSSOVER LAYOUT

PLOT DATE: 18-MAR-2020
DRAWN BY: D.D.BEARD
CHECKED BY: ------
SHEET 37 OF 38



RAMP TRAFFIC LAYOUT

SCALE 1" = 20'-0"

20 0 20

PROJECT NAME:	BRATTLEBORO
PROJECT NUMBER:	IM 091-1(82)
FILE NAME: I9a220/sI9a220TCborder.dgn	PLOT DATE: I8-MAR-2020
PROJECT LEADER: J.B.MCCARTHEY	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
RAMPS A, B, C & D TRAFFIC LAYOUT	SHEET 38 OF 38