APPLICATION FORM
CULVERT REPLACEMENT MUNICIPAL ASSISTANCE GRANT APPLICATION FORM

FY19 RFR ID: DER 2018-03

(See Section 3 in the RFR for instructions on how to fill out the Application Form)

1) APPLICANT INFORMATION

i. **Funding Request: $ 91,000**	ii. **Town: Buckland**
iii. Applicant's Name: Andrea Llamas	iv. Position: Town Administrator
v. Town Address: 17 State Street Shelbourne Falls, MA	vi. Zip Code: 01370
vii. Phone Number: 413-625-6330	viii. Email: twnadmin@town.buckland.ma.us
ix. DPW Lead: Steve Daby	x. DPW Phone/Email: 413-625-2367

2) CULVERT INFORMATION

i. Road: Nilman Road	ii. Location: Buckland, MA	
iii. Stream: Clark Brook	iv. Latitude: 42°35'26.5" N	v. Longitude: 72°45'55.0" W
vi. Watershed: Deerfield	vii. Your Regional Planning Agency: Franklin Regional Council of Governments (FRCOG)	
viii. Does this crossing have multiple culverts?	☐ Yes (*Please provide more details under (6)(i) Project Background*)	☑ No
ix. Culvert Type: Concrete	x. Length: 9'-9"	xi. Width: 12'-0"

xii. Utilities within Right of Way and/or close proximity to the Culvert (check all that apply):

☐ Gas ☐ Electric ☐ Water ☐ Sewer ☐ Telecommunications ☐ Stormwater Infastructure ☐ Othe

3) APPLICABILITY QUESTIONS

i. Is the culvert on a public way and owned by the municipality?	☑ Yes	☐ No
ii. Is the culvert on a natural freshwater waterway with no tidal influence?	☑ Yes	☐ No
iii. Can the proposed work be completed by June 30, 2019?	☑ Yes	☐ No

4) COMMUNITY INFORMATION

i. Does your town have an approved *Hazard Mitigation Plan*?	☑ Yes	☐ No
ii. Has your town enrolled in the *Municipal Vulnerability Preparedness* (MVP) program?	☑ Yes	☐ No
iii. Does your town have a signed *Community Compact* with an applicable Best Practice?	☑ Yes	☐ No

5) SITE PHOTOS

INSERT PHOTOS INTO DOCUMENT. THE BOXES WILL EXPAND AS YOU FILL THEM.

i. Road Over Culvert:

ii. Culvert Inlet:

iii. Upstream of Culvert:

iv. Culvert Outlet:

v. Downstream of Culvert:

6) PROJECT SUMMARY

i. **Brief Summary:** Provide a brief descriptive summary for the project (e.g. 4 sentences), including existing conditions, project benefits, and goals of the project.

It is anticipated that the structure will be replaced with a 3-sided precast concrete structure with an asphalt overlay. Based on preliminary hydraulic analysis, the new structure would need to have a span length of approximately 20'. The structure would be widened to accommodate 2 lanes of traffic with shoulders and a crash tested barrier would be installed on both sides. Approach guardrail with proper transitions would be installed at each bridge corner.

7) DEMONSTRATED NEED

PLEASE USE AS MUCH SPACE AS NEEDED. THE BOXES WILL EXPAND AS YOU FILL THEM.

i. **Project Background:** Describe the condition of the culvert and stream and any background information about the culvert. Consider the physical condition of the culvert, current risk of failure, maintenance and flooding history, erosion, environmental concerns such as impacts to fish and wildlife, and hazards to the community. If you have multiple culverts, please include the length and width of each structure. *Please use as much space as needed.*

The condition of the structure is poor. Please see attached Culvert Inspection Report prepared by MassDOT for more details. The substructure is severely deteriorated and the concrete crumbles to the touch. The bridge serves as the only access for 5 residences.

ii. **Project Status:** If work has already begun on the proposed culvert replacement, please explain the scope of what has already been initiated and/or completed. List and briefly explain any plans, reports, or documents that have been created as part of the culvert replacement. Consider any field data collection, analyses, design, permitting, utility coordination, and/or construction. If work has not commenced please state that below. *For projects underway, all supporting documentation should be submitted with this application (e.g., reports, design plans, permits, opinion of probable costs, etc.).*

The project is in the planning phase and no work has yet been started.

iii. **Financial Need:** Explain why your municipality needs funding from this grant opportunity to advance the proposed project. Describe other anticipated or secured funding sources such as Town funds or Chapter 90 funds that will support any portion of this project.

The Town of Buckland (population 1900) has currently obligated $525,000 to engineering the Conway Street project (estimated at $6 million) that is on the TIP for 2012. This is taking multiple years of our $184,000 per year Chapter 90 allotment. The Town routinely appropriates between $30,000 and $50,000 for Road Paving. This barely keeps up with the patching and minor road repairs that occur year-to-year but does not allow for any extraordinary construction projects like this one. If this project is engineered it is hoped that we will be able to continue to pursue funding based on actual funding estimates through any and all available programs, as well as allow us to use Chapter 90 funds in the future as they become available after the construction of the Conway Street project.

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8) PROJECT DESCRIPTION

PLEASE USE AS MUCH SPACE AS NEEDED. THE BOXES WILL EXPAND AS YOU FILL THEM.

i. **Project Scope:** Please describe the proposed culvert replacement and the specific work to be covered by this funding (end date 6/30/19). Consider project tasks, personnel, deliverables, etc. As guidance, you may use, but are not limited to the topics listed on the *Proposed Work Checklist* with the purple header.

The anticipated scope of work is a full culvert replacement. Engineering services would include field reconnaissance, culvert design, roadway design, geotechnical recommendations, hydraulic analysis, and environmental permitting. This funding would also be used for the construction of the replacement project.

ii. **Project Budget:** To the best of your ability, complete the table below, which incorporates project cost and funding needs by project activity. In the box at the bottom, provide a short but descriptive budget narrative. Refer to *RFR Section 3. Instructions for Application Submission, Evaluation Criteria, Project Budget* for additional guidance.

Budget Overview:

Project Phase	Funding Requested from DER	Secured Funding *(list source in Budget Narrative)*	Pending/ Remaining Funds Needed	Total Cost Estimate
Field Data Collection and Analyses	$31,000	$0	$31,000	$31,000
Engineering	$60,000	$0	$60,000	$60,000
Permitting	$0	$0	$14,000	$14,000
Construction	$0	$0	$633,000	$633,000
Other	$0	$0	$0	$0
Totals	$91,000	$0	$738,000	$738,000

Budget Narrative: Briefly explain the project budget and how cost estimates were determined. Be sure to describe how DER funds will be used. Where possible, provide supporting documentation. List any additional sources of known funding for the culvert replacement and the amount. This includes anticipated sources/amount and funding in-hand.

☑ *Please check if Supporting Documentation is attached (e.g., budget details, Opinion of Probable Costs, design or construction bids, etc.)*

The cost estimate was prepared by an engineering firm familiar with the project. Historical MassDOT bid data along with experience on other projects was used to formulate the estimate. The estimate for engineering services and field reconnaissance was based on experience with projects of a similar scope. Please see attached cost estimate for additional details.

iii. **Project Timeline:** Describe the estimated timeline for the overall culvert replacement project *and* the timeline for proposed work to be covered by this funding (end date 6/30/19). Topics listed on the *Proposed Work Checklist* with the purple header may provide direction for the type of milestones or goals to be included in a timeline.

Field reconnaissance – 5/2018 to 6/2018 (1 month)
Environmental permitting – 5/2018 to 8/2018 (3 months)
Engineering – 6/2018 to 11/2018 (5 months)
Bidding – 12/2018 (1 month)
Construction – 1/2018 to 6/2019 (5 months)

9) PROJECT BENEFITS

PLEASE USE AS MUCH SPACE AS NEEDED. THE BOXES WILL EXPAND AS YOU FILL THEM.

i. **Benefits to the Environment, Massachusetts Wildlife Climate Action Tool:** Please indicate in the table below if your culvert falls within the Top 5%, 10%, or 15% of culverts in need of replacement as identified by the Massachusetts Wildlife Climate Action Tool. A link to The Massachusetts Wildlife Climate Action Tool website and instructions for this table can be found in Section 3(B) of the RFR. To see instructions about how to use the mapping tool, click "Read More" below the map on the website. In addition to climate action tool, DER will use existing ecological data resources to evaluate environmental benefits for the proposed culvert replacement. ***Culverts that do not appear in the Massachusetts Climate Action Tool are still eligible for funding.***

Massachusetts Wildlife Climate Action Tool Priority Crossings: (select applicable percentages or "My culvert isn't showing up")	**Stream Crossings:**	☐ 5%	☑ 10%	☐ 15%
	Coldwater Stream Crossings:	☑ 5%	☐ 10%	
	☐ My culvert isn't showing up			

Benefits to the Environment, Additional Information: Briefly explain any known environmental information about the culvert site or possible environmental benefits for its replacement. Consider critical habitat, bank erosion, water quality, fish and wildlife species that inhabit the site/area, and problems for these organisms to pass through the culvert.

The bridge does not currently meet the Massachusetts Stream Crossing Standards (SCS), which were specifically developed to facilitate fish and wildlife passage under roadways and to reestablish habitat connectivity along stream corridors. In particular, the bridge confines the stream and does not allow for wildlife movement along the banks. Replacing the bridge with a crossing that more adequately conforms to the SCS would provide an important habitat connection for many mammal, reptile, and amphibian species. In addition, Clark Brook is listed as a Coldwater Fisheries Resource by the MA Division of Fish and Wildlife. Replacing the bridge would allow the stream channel to be restored to a condition of natural flow, depth, and substrate material, which will benefit fish species that utilize the stream.

ii. **Public Safety Benefits:** Describe how the culvert replacement will improve public safety and reduce vulnerability to changing climatic conditions, such as flooding and damage caused by more frequent, high intensity storms. Consider road closures, culvert failure, road washout, and access to municipal and emergency services. If available, include supporting documentation (e.g., photos, recent inspection reports, news stories, etc.) of the hazard and/or anticipated public safety benefits.

This culvert is already crumbling – there is debris from the culvert in the streambed. (See MassDOT report photos) The road surface has no protection for the stream and material from the crossing surface continually washes into the stream during any rain event. High intensity storms wash material from the road as well as debris from the crumbling culvert into the stream regularly

The bridge is used by police, fire department, and emergency medical services as the only means of access to 5 residences. If the bridge were to fail or be taken out of service for an extended period, the residences would be completely cut off from emergency services.

Please see attached correspondence from Buckland Police Chief and Fire Chief.

iii. **Economic and Community Benefits:** Describe expected economic benefits to the community for the culvert replacement. Consider increased economic activity, enhanced recreation, cost savings through improved infrastructure resilience, and/or reduced maintenance cost.

Commercial vehicles use this bridge to provide heating oil, trash and recycling, septic tank service, mail service and other essential home deliveries. As this is a dead-end road, no viable detour exists.

SIGNATURES

I HEREBY DECLARE THAT THE ABOVE INFORMATION IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF. BY SIGNING THIS APPLICATION, I CONFIRM MY INTENT FOR THE PROPOSED CULVERT REPLACEMENT TO MEET THE GOALS OF THE MA RIVER AND STREAM CROSSING STANDARDS.

Applicant Signature:	Position:	Date:

☐ By checking this box, you confirm that all supporting materials such as project plans, reports and/or documents are included with this application.

PROPOSED WORK CHECKLIST
CULVERT REPLACEMENT MUNICIPAL ASSISTANCE GRANT APPLICATION

FY19 RFR ID: DER 2018-03

(See Section 3 in the RFR for instructions on how to fill out the Application Checklist)

PROJECT INFORMATION	
Road Name: Nilman Road	Town: Buckland

FIELD DATA COLLECTION	
☐ Wetland Resource Delineation	*A wetland resource area delineated and flagged by a qualified person, including data plots.*
☐ Riverbed Substrate Analysis	*An analysis of stream characteristics and substrate to be used as a reference for the replacement crossing design.*
☐ Geotechnical Evaluation	*Geotechnical borings and substrate analysis for structural properties.*
☑ Radial Site Survey	*A detailed survey of the crossing area, including elevations of the crossing inverts, road surface, road edge, site utilities, approximately 50-100ft radius around crossing location.*
☑ Survey of Longitudinal Profile	*A detailed survey of the stream profile several hundred feet upstream and downstream of the crossing locating stream features and elevations.*
☑ Hydrologic Study	*A calculation of existing storm events using standard methods and watershed characteristics to determine runoff volumes, time of concentration, and peak discharge.*
☑ Hydraulics Analysis	*Modeling of the existing crossing for water surface elevation, scour, and velocity to understand the hydraulic forces.*
☑ Recommended Structure Type	*A detailed summary of structure types evaluated and recommended structure type for the project location. Considerations include site constraints, ease of construction, structure lifespan, potential for erosion and head-cutting, stream stability and risk of stream channel adjustment, benefits to stream habitat, storm flow conveyance, potential to affect property or infrastructure, and cost of replacement.*
Enter additional tasks or notes here. Box will expand:	

DESIGN	
☑ Preliminary Design Plans	*Design regarding footprint, dimensions, site constraint considerations, and resource area impacts.*
☑ Hydraulic Design	*Model the proposed structure for water surface elevation, scour, sediment transport, and velocity to understand the hydraulic forces and design the stream bed so that flow conditions and hydraulic dynamics in the culvert are comparable to the upstream and downstream stream channel and meet MassDOT standards when applicable.*
☑ Geotechnical Design	*Design the crossing within the limitations of the substrate characteristics and meet MassDOT standards when applicable.*
☑ Structural Design	*Design the crossing to meet the structural needs of the road type and meet MassDOT standards when applicable.*
☑ Construction Details	*Design the crossing with sufficient details for a contractor to construct the crossing and meet MassDOT standards when applicable.*
☑ Final Design Plans	*Complete all other design requirements for a P.E. to stamp the plans.*

PROPOSED WORK CHECKLIST
CULVERT REPLACEMENT MUNICIPAL ASSISTANCE GRANT APPLICATION

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(See Section 3 in the RFR for instructions on how to fill out the Application Checklist)

Enter additional tasks or notes here. Box will expand:

Bidding Assistance and construction administration services such as shop drawing review.

PERMITTING	
☑ Permitting	To the best of your ability list all of the permits needed as part of your proposed work.

1) Notice of Intent under MA Wetlands Protection Act	5)
2) Section 404 Permit under U.S. Army Corps of Engineers	6)
3)	7)
4)	8)

☐ Chapter 85	Structure spans over 10ft are subject to MassDOT design requirements and review in accordance with MGL Chapter 85, Section 35. For more information about the MassDOT requirements see: https://www.massdot.state.ma.us/Portals/8/docs/smallBridge/DesignRequirements.pdf

CONSTRUCTION	
☐ Project is ready for construction	*Explain the scope of construction in Section 5) i. on the Application Form.*

☐ Projects requesting construction funds must meet the MA Stream Crossing Standards. If the project design is final but does not meet these criteria, or if the applicant is unsure, check this box to update and/or redesign the crossing to meet the MA Stream Crossing Standards before construction.

COMPLETED WORK CHECKLIST
CULVERT REPLACEMENT MUNICIPAL ASSISTANCE GRANT APPLICATION

FY19 RFR ID: DER 2018-03

(See Section 3 in the RFR for instructions on how to fill out the Application Checklist)

PROJECT INFORMATION	
Road Name: Nilman Road	Town: Buckland

FIELD DATA COLLECTION	
☑ New Project	*No work has been started or completed on the project to date.*
☐ Wetland Resource Delineation	*A wetland resource area delineated and flagged by a qualified person, including data plots.*
☐ Riverbed Substrate Analysis	*An analysis of stream characteristics and substrate to be used as a reference for the replacement crossing design.*
☐ Geotechnical Evaluation	*Geotechnical borings and substrate analysis for structural properties.*
☐ Radial Site Survey	*A detailed survey of the crossing area, including elevations of the crossing inverts, road surface, road edge, site utilities, approximately 50-100ft radius around crossing location.*
☐ Survey of Longitudinal Profile	*A detailed survey of the stream profile several hundred feet upstream and downstream of the crossing locating stream features and elevations.*
☐ Hydrologic Study	*A calculation of existing storm events using standard methods and watershed characteristics to determine runoff volumes, time of concentration, and peak discharge.*
☐ Hydraulics Analysis	*Modeling of the existing crossing for water surface elevation, scour, and velocity to understand the hydraulic forces.*
☐ Recommended Structure Type/ Alternatives Analysis	*A summary of structure types evaluated and recommended structure type for the project location. Considerations include site constraints, ease of construction, structure lifespan, potential for erosion and head-cutting, stream stability and risk of stream channel adjustment, benefits to stream habitat, storm flow conveyance, potential to affect property or infrastructure, and cost of replacement.*
Enter additional tasks or notes here. Box will expand:	

DESIGN	
☐ Preliminary Design Plans	*Design regarding footprint, dimensions, site constraint considerations, and resource area impacts has been completed.*
☐ Hydraulic Design	*The crossing and stream bed have been designed so that flow conditions and hydraulic dynamics in the culvert are comparable to the upstream and downstream stream channel and meets MassDOT standards when applicable.*
☐ Geotechnical Design	*The crossing has been designed within the limitations of the substrate characteristics and meets MassDOT standards when applicable.*
☐ Structural Design	*The crossing has been designed to meet the structural needs of the road type and meets MassDOT standards when applicable.*
☐ Construction Details	*There are sufficient details for a contractor to construct the crossing and meets MassDOT standards when applicable.*
☐ Final Design Plans	*All other design boxes have been checked; plans are complete and have been stamped by a P.E..*

COMPLETED WORK CHECKLIST CULVERT REPLACEMENT MUNICIPAL ASSISTANCE GRANT APPLICATION FY19 RFR ID: DER 2018-03 **(See Section 3 in the RFR for instructions on how to fill out the Application Checklist)**	
☐ Stream Crossing Standards	*The plans meet the MA River and Stream Crossing Standards.*
Enter additional tasks or notes here. Box will expand:	
PERMITTING	
☐ Permitting	List applicable permits that have been obtained for the project to date
1)	5)
2)	6)
3)	7)
4)	8)
☐ Chapter 85	*Plans developed in accordance with MGL Chapter 85, Section 35 design requirements for spans over 10ft and reviewed by MassDOT.*
CONSTRUCTION	
☐ Portions of construction have started.	*If checked, explain construction status in Section 4) ii. of the Application Form.*
☐ Construction is complete, but the structure is still a barrier to aquatic organism passage.	*If checked, explain condition and desired resolution in Section 5) i. of the Application Form*

STRUCTURES INSPECTION FIELD REPORT

INITIAL CULVERT INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
01	5D3	B-28-017

CITY/TOWN	8.-STRUCTURE NO.	11-Kilo. POINT	41-STATUS	90-ROUTINE INSP. DATE
BUCKLAND	B28017-5D3-MUN-CUL	000.000	A:OPEN	JUN 30, 2017

07-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	YR REHAB'D (NON 106)
HWY NEILMAN RD		1850	1900	0000

06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS	DIST. BRIDGE INSPECTION ENGINEER
WATER CLARK BROOK	Rural Local	L. A. Briggs

43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER
119 : Concrete Culvert	Town Agency	Town Agency	M. A. Adorno

107-DECK TYPE	WEATHER	TEMP. (air)	TEAM MEMBERS
N : Not applicable	Cloudy	21°C	R. MANCARI

TYPE OF CULVERT:

SHAPE:	BOX
MATERIAL:	CONCRETE
COATING:	NONE

BARRELS: (In Meters)

SIZE:	NUMBER:
2.89mx2.59m	1

	E	W
DEPTH OF COVER (To the nearest tenth of a meter)	0.5	0.5
CURB REVEAL (In millimeters)	50	5

ITEM 62 CULVERT & RETAINING WALLS

3

I62 (Dive Report): N

I62 (This Report): 3

	Dive Rpt.	This Rpt.	DEF		Dive Rpt.	This Rpt.	DEF		Dive Rpt.	This Rpt.	DEF
1. Roof	N	6	-	7.Protective Coating	N	N	-	13.Member Alignment	N	7	-
2. Floor	N	N	-	8.Embankment	N	N	-	14.Deformation	N	7	-
3. Walls	N	3	S-A	9.Wearing Surface	N	6	-	15.Scour	N	6	-
4. Headwall	N	6	-	10.Railing	N	6	M-P	16.Settlement	N	7	-
5. Wingwall	N	2	S-A	11.Sidewalks	N	N	-	17.Footing	N	4	M-P
6. Pipe	N	N	-	12.Utilities	N	N	-	18.	N	N	-

UNDERMINING (Y/N) If YES please explain: N

COLLISION DAMAGE: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD VIBRATION: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

ITEM 61 CHANNEL & CHANNEL PROTECTION

6

	Dive Rpt.	This Rpt.	DEF		Dive Rpt.	This Rpt.	DEF
1.Channel Scour	N	6	-	5. Utilities	N	N	-
2.Embankment Erosion	N	5	M-P	6. Rip-Rap/Slope Protection	N	5	M-P
3.Debris	N	6	-	7. Aggradation	N	8	-
4.Vegetation	N	7	-	9. Channel Paving	N	6	-

STREAM FLOW VELOCITY:
Tidal ( ) High ( ) Moderate (X) Low ( )

ITEM 61 (Dive Report): N

ITEM 61 (This Report): 6

93b- U/W INSP DATE: 00/00/0000

APPROACH CONDITION

		DEF
a. Appr. Pavement Condition	6	-
b. Appr. Roadway Settlement	5	S-A
c. Appr. Sidewalk Settlement	N	-
d.	N	-

WEIGHT POSTING

Not Applicable X

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	N	N	N	N

Waived Date: 00/00/0000 EJDMT Date: 00/00/0000

Signs In Place (Y=Yes, N=No, NR=NotRequired)
Legibility/ Visibility

At bridge		Advance	
N	S	N	S

ITEM 36 TRAFFIC SAFETY

	36	COND	DEF
A. Bridge Railing	0	6	-
B. Transitions	0	0	S-A
C. Approach Guardrail	0	0	S-A
D. Approach Guardrail Ends	0	0	S-A

ACCESSIBILITY (Y/N/P):

	Needed	Used		Needed	Used
Ladder	P	N	Other:		
Boat	N	N		N	N
Waders	Y	Y			

TOTAL HOURS: 8

PLANS (Y/N): N

(V.C.R.) (Y/N): N

TAPE#:

RATING

Rating Report (Y/N): N

Date: 00/00/0000

Inspection data at time of existing rating
I 62: - Date : 00/00/0000

(To be filled out by DBIE)
Request for Rating or Rerating (Y/N): N

If YES please give priority:
HIGH ( ) MEDIUM ( ) LOW ( )

REASON:

X=UNKNOWN N=NOT APPLICABLE H=HIDDEN/INACCESSIBLE R=REMOVED

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
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REMARKS, PHOTOS & SKETCHES

BRIDGE ORIENTATION

Nilman Road travels north and south. Clark Brook flows from west to east. This culvert consists of a single reinforced concrete box supporting fill with an asphalt riding surface. Report notes are taken from upstream to downstream, west to east, for ease of inspection. See photos 1 & 2.

ITEM 62 - CULVERT

Item 62.1 - Roof

Along the east edge, the roof has an area of scaling, 4' long x 6" high x 6" deep. The remainder of this edge is cracked with light efflorescence and is dull sounding. See photo 5.

Below the roadway centerline, the roof has a longitudinal cold joint that is cracked with moderate efflorescence. See photo 5.

The southeast corner has one shallow rebar.

CONDITION RATING GUIDE

	CODE	CONDITION	DEFECTS
	N	NOT APPLICABLE	Use if structure is not a culvert.
G	9	EXCELLENT	No deficiencies.
G	8	VERY GOOD	No noticeable or noteworthy differences which affect the condition of the culvert. Insignificant scrape marks caused by drift.
G	7	GOOD	Shrinkage cracks, light scaling, and insignificant spalling, which does not expose reinforcing steel. Insignificant damage caused by drift with not misalignment and not requiring corrective action. Some minor scouring has occurred near curtain walls, wingwalls, or pipes. Metal culverts have a smooth symmetrical curvature with superficial corrosion and no pitting.
F	6	SATISFACTORY	Deterioration or initial disintegration, minor chloride contamination, cracking with some leaching, or spalls on concrete or masonry walls and slabs. Local minor scouring at curtain walls, wingwalls, or pipes. Metal culverts have a smooth curvature, non-symmetrical shape, significant corrosion or moderate pitting.
F	5	FAIR	Moderate to major deterioration, or disintegration, extensive cracking and leaching, or spalls on concrete or masonry walls and slabs. Minor settlement or misalignment. Noticeable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection in one section, significant corrosion or deep pitting.
P	4	POOR	Large spalls, heavy scaling, wide cracks, considerable efforescence, or opened construction joints permitting loss of backfill. Considerable settlement or misalignment. Considerable scouring or erosion at curtain walls, wingwalls, or pipes. Metal culverts have significant distortion and deflection throughout, extensive corrosion or deep pitting.
P	3	SERIOUS	Any condition described in Code 4 but which is excessive in scope. Severe movement or differential settlement of the segments, or loss of fill. Holes may exist in walls or slabs. Integral wingwalls, nearly severed from culvert. Severe scour or erosion at curtain walls, wingwalls, or pipes. Metal culverts have extreme distortion and deflection in one section, extensive corrosion, or deep pitting with scattered perforations.
C	2	CRITICAL	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C	1	"IMMINENT" FAILURE	Bridge closed. Corrective action may put back in light service.
	0	FAILED	Bridge closed. Replacement necessary.

DEFICIENCY REPORTING GUIDE

DEFICIENCY: A defect in a structure that requires corrective action.

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency - (Examples include but are not limited to: Spalled concrete, minor to moderate corrosion to steel culverts, minor settlement or misalignment, minor scouring, minor damage to guardrail, etc.)

S= Severe/Major Deficiency - (Examples include but are not limited to: Large spalls, wide cracks, moderate to major deterioration in concrete, considerable settlement, considerable scouring or undermining, extensive corrosion and deflection in steel culverts, etc.)

C-S= Critical Deficiency - A deficiency in a structural component or element of a bridge that poses an extreme hazard or unsafe condition to the public. (Follow-up Critical Deficiency Report must be submitted separately)

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) stay at the bridge until the District Maintenance crew or the responsible Agency crew(if not a State bridge) show up and corrective action is taken.]

A = ASAP- [Action will be taken by the District Maintenance Engineer or the Responsible Agency (if not a State owned bridge) upon receipt of the Inspection Report].

P = Prioritize- [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

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REMARKS

Item 62.3 - Walls

North Wall:

At +/- 6' high, the wall has a horizontal cold joint. Above the joint, the concrete is in satisfactory condition with one vertical hairline crack below the northwest corner. Below the joint, there is severe scaling, full width x 6' high x up to 1' deep. The remaining concrete is severely deteriorated and can be removed by hand. See photo 8.

South Wall:

At approximately 5' & 7' high, the wall has two full width horizontal cold joints which have cracked, up to 1/4" wide.

There is a void above the footing, 18" wide x 9" high x up to 30" deep, with active leakage from behind the wall. See photo 9.

There are areas of minor mapcracking with efflorescence and areas of moderate scaling throughout.

Item 62.4 - Headwall

At roadway grade, the east headwall has severe scaling, 5' long x 4" high x 4" deep.

Item 62.5 - Wingwall

The southeast wingwall has failed. See photos 4 & 10.

The northeast wingwall has partially failed. The remaining portions have severely scaled concrete and exposed boulders. See photos 4 & 11.

The northwest wingwall has severe scaling, full width x 6' high x up to 1' deep. See photos 3 & 12.

The southwest wingwall has severe scaling, throughout x up to 3" deep. See photo 3.

Item 62.9 - Wearing Surface

The pavement over the structure is partially covered sand and has random minor to moderate cracks.

Item 62.10 - Railing

The culvert parapets are extensions of the headwalls. Refer to item 62.4 - Headwalls, for condition.

Item 62.17 - Footing

Both footings are exposed and have moderate to severe scaling, full length.

Below the void in the south breastwall, the footing has a void, 1' wide x up to 24" of penetration. This void is filled with silt and has active leakage from behind the wall. See photo 9.

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.1 - Channel Scour

The upstream channel has poor alignment, causing erosion of the northeast embankment during high flow events. See photo 7.

Refer to item 61.2 - Embankment Erosion, for related condition.

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Item 61.2 - Embankment Erosion
Extending upstream from the structure, the northeast embankment has moderate erosion, cut back up to 6' x up to 3' high, with undercutting of the tree root systems and behind the dry stacked stones at the toe of the wingwall. See photos 7 & 12.

Item 61.3 - Debris
The failed portions of both east wingwalls have fallen into the downstream channel. See photos 4, 5, & 10.

Item 61.6 - Rip-Rap/Slope Protection
At the toe of northwest wingwall, the dry stacked stones have settled and are displaced. Refer to item 61.2 - Embankment Erosion, for additional comment.

Item 61.9 - Channel Paving
The channel below the structure is paved with concrete which has moderate scaling.

APPROACHES

Approaches a - Appr. Pavement Condition
Both approaches are partially covered sand and have random minor to moderate cracking. See photos 1 & 2

Approaches b - Appr. Roadway Settlement
At both approaches, the east slopes and portions of the shoulders have failed due to the failure of the wingwalls. Sand bags have been placed along the east side of the road. See photos 1 & 2.

TRAFFIC SAFETY

Item 36a - Bridge Railing
The culvert railings consist of vertical faced reinforced concrete parapets with blunt ends. They measure 21" tall and are extensions of the culvert headwalls. Refer to item 62.4 - Headwalls, for condition.

Item 36b - Transitions
There are no traditions in place at this structure. See photos 1 & 2.

Item 36c - Approach Guardrail
There are no approach guardrails in place at this structure. See photos 1 & 2.

Item 36d - Approach Guardrail Ends
There are no approach guardrail ends in place at this structure. See photos 1 & 2.

Photo Log

Photo 1 : North approach. Note, sandbags at failed slopes.
Photo 2 : South approach. Note, sandbags at failed slopes.
Photo 3 : West elevation. Note, displaced stones and severe scaling of wingwalls.
Photo 4 : East elevation. Note, failed wingwalls in the channel.
Photo 5 : General underside view, looking west. Note, spalled area along the east edge.
Photo 6 : Downstream view. Note, failed wingwalls in the channel.
Photo 7 : Upstream view. Note, poor channel alignment and displaced stones at the northwest.
Photo 8 : North breastwall with severe scaling, cracking and efflorescence.
Photo 9 : South breastwall with exposed footing and voids.

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REMARKS

Photo Log (Cont'd)

Photo 10 : Close-up of southeast wingwall, failed.
Photo 11 : Close-up of northeast wingwall, partially failed. Also note, footing exposed and scaled.
Photo 12 : Northwest embankments with displaced stones & embankment erosion. Also note, wingwall/breastwall with severe scaling.

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PHOTOS

Photo 1: North approach. Note, sandbags at failed slopes.

Photo 2: South approach. Note, sandbags at failed slopes.

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Photo 3: West elevation. Note, displaced stones and severe scaling of wingwalls.

Photo 4: East elevation. Note, failed wingwalls in the channel.

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PHOTOS

Photo 5: General underside view, looking west. Note, spalled area along the east edge.

Photo 6: Downstream view. Note, failed wingwalls in the channel.

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PHOTOS

Photo 7: Upstream view. Note, poor channel alignment and displaced stones at the northwest.

Photo 8: North breastwall with severe scaling, cracking and efflorescence.

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PHOTOS

Photo 9: South breastwall with exposed footing and voids.

Photo 10: Close-up of southeast wingwall, failed.

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PHOTOS

Photo 11: Close-up of northeast wingwall, partially failed. Also note, footing exposed and scaled.

Photo 12: Northwest embankments with displaced stones & embankment erosion. Also note, wingwall/breastwall with severe scaling.