BRIDGE NO. A-02-021 (RIVER STREET OVER FORT POND BROOK AT VANDERBILT ROAD)

Bridge Description and Orientation:

The River Street Bridge over Fort Pond Brook is a twin corrugated steel pipe arch culvert that was built in 1981 (see Sketches & Photos #1 & #2). River Street, at the bridge, is oriented West and East over the Fort Pond Brook which flows South to North. The pipe arches are labeled West and East.

Summary of Existing Conditions:

Bridge Rail & Approach Guardrail Deficiencies (NBIS Item #36 in Inspection Report)

Element	Deficiency	Reference Photo(s)
Bridge Rail / Approach Guardrail	• Minor dents and scrapes throughout • Minor collision damage at the Southeast terminal end	3

Top of Bridge Deficiencies (NBIS Item #58 in Inspection Report)

Element	Deficiency	Reference Photo(s)
Wearing Surface	• Random medium cracks over the East pipe arch	
Vegetated Shoulder	• Large sink hole between the South headwall and South bridge rail/guardrail that measures 18" long x 12" wide x up to 16" deep, located between the 3rd and 4th guardrail posts from the East	

Superstructure Deficiencies (NBIS Item #59 in Inspection Report)

Element	Deficiency	Reference Photo(s)
Corrugated Steel Pipe Arch Culvert	• Moderate to heavy rusting along the lower portion of both haunches and areas of peeling and chipping of the protective coating • Minor accumulation of debris along the bottom of both pipe arches with heavier accumulation at the South end of the West pipe arch and the middle of the East pipe arch • 2" outward deformation in roof of West pipe arch at the approximate midspan • Random missing connection bolts throughout	4, 5 5 6

	• 2 puncture holes in the top of the East pipe arch that measure 3"L x 1"W, located approximately 5'-0" from the South end • Minor undermining at both ends of both pipe arches due to no riprap protection	7
North Headwall	• Random hairline to narrow cracks in mortar and separation of mortar between stones as well as loose stones throughout • Minor separation of mortar near arch crown at both pipe arches (up to ½") • Void in East side of West pipe arch that measures 22"W x 7"H x 10" of penetration	8
South Headwall	• Numerous voids around the East and West pipe arches • Void at the East side of the East pipe arch that measures 18"H x 4'-0"W x up to 33" of penetration • Void at the West side of the West pipe arch that measures 17"H x 6"W x up to 30" of penetration • Void at the West side of the East pipe arch that measures 16"H x up to 20"W x 30" of penetration • Void at the East side of the West pipe arch that measures 14"H x 5"W x 8" of penetration	9

Abutment/Foundation Deficiencies (NBIS Item #60 in Inspection Report)

Element	Deficiency	Reference Photo(s)
Wingwalls	• Numerous narrow to medium random cracks in mortar and minor separation between stones • Light to moderate vegetation growth at all 4 corners • Minor settlement of stones at the Southeast wingwall corner with voids at the base that measure up to 18" of penetration • Large washout, located approximately 10'-0" upstream from bridge, that measures 4'-0" wide x 5'-6" high x up to 55" of penetration • Void under drain outlet at the Northwest wingwall/retaining wall that measures 3'-0"W x 10"H x up to 21" of penetration • Bank along the Northwest edge of brook is sloughing into the brook	10 11

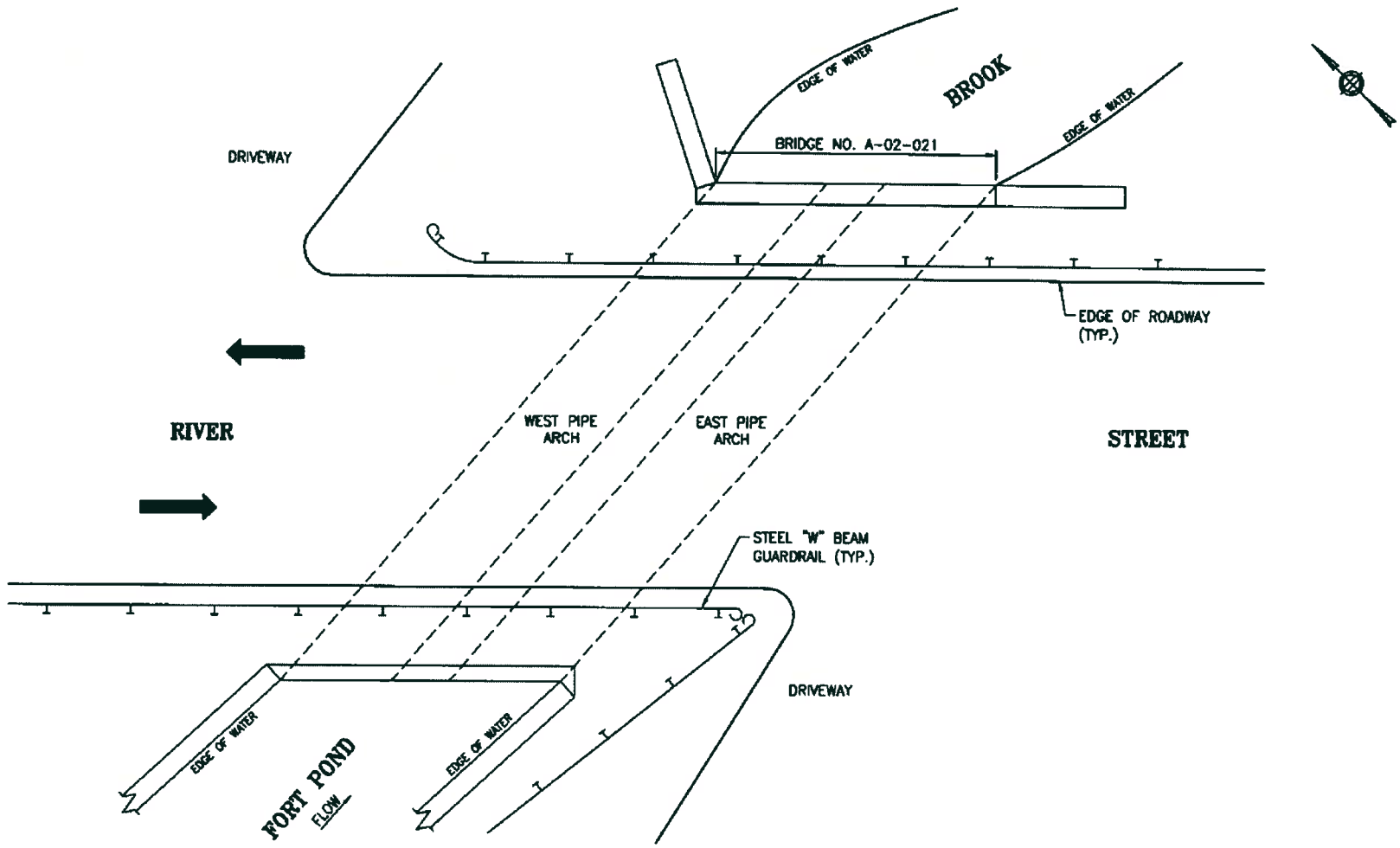
Channel Deficiencies (NBIS Item #61 in Inspection Report)

Element	Deficiency	Reference Photo(s)
Debris	• Moderate to heavy accumulation of debris (tree limbs) at the upstream face of both pipe culverts	1

Recommended Maintenance:

The following table outlines the deficiencies and repairs needed, along with the priority of the repair, to the River Street Bridge over Fort Pond Brook (at Vanderbilt Road):

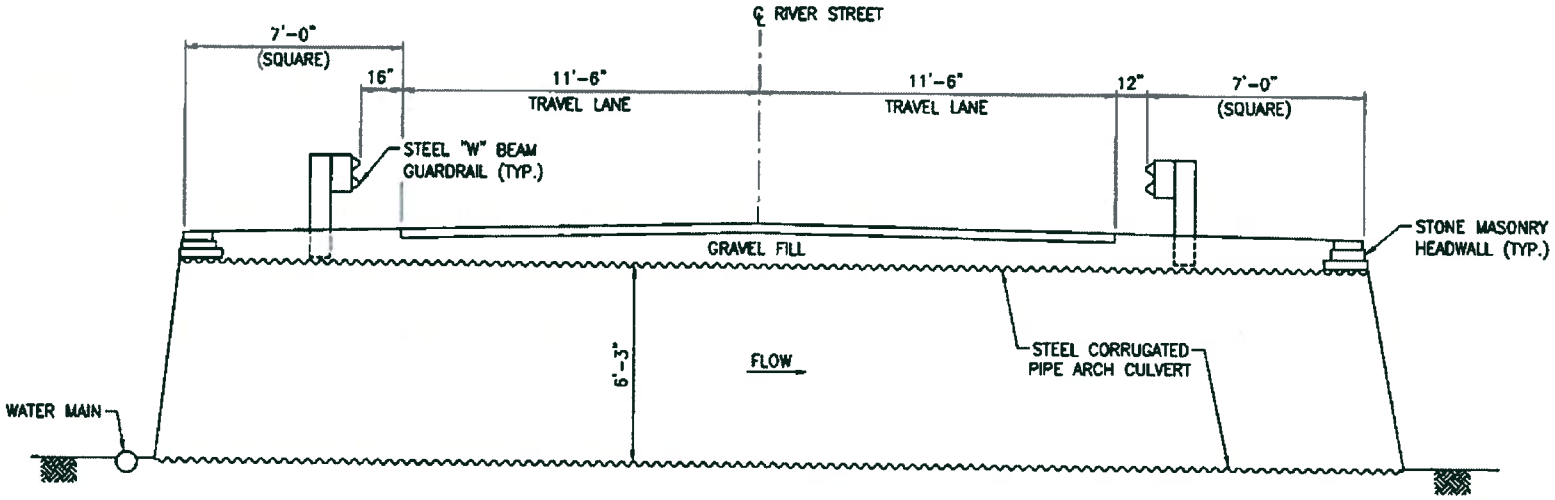
Element & Location		Deficiency	Repair Needed	Priority
#1	Top of bridge	Light to heavy vegetation growth	Remove vegetation growth	Low
#2	Between South headwall and South guardrail	Sink hole	Fill sink hole and compact	Moderate
#3	SE approach guardrail terminal end	Collision Damage	Remove and replace terminal end	Low
#4	Pipe arches (both)	Moderate to heavy rusting as well as cracking and peeling of the protective coating	Blast clean and place new protective coating	High
#5	East pipe arch, approximately 5.0' from South end	Two punctures in top of pipe arch	Weld repair plate	Moderate
#6	Pipe arch ends	Scour	Place riprap at both ends	Moderate
#7	North and South stone masonry headwalls	Hairline to narrow cracks in mortar and separation of mortar	Repoint stone masonry as needed	Moderate
#8	North headwalls around pipe arches	Voids around pipes/headwalls	Fill holes/voids with concrete	High
#9	South headwalls around pipe arches	Voids around pipes/headwalls	Fill holes/voids with concrete	High
#10	Wingwalls	Narrow to medium random cracks in mortar	Repoint stone masonry as needed	Low
#11	SW Retaining wall, approximately 10.0' upstream from bridge	Partial failure of wall	Rebuild failed portion of wall	Moderate
#12	Upstream face of both pipe arches	Debris	Remove debris from channel	Moderate



CHAS. H. SELLS, INC.

Consulting Engineers, Surveyors & Photogrammetrists

ACTON: RIVER STREET OVER
FORT POND BROOK, BRIDGE NO. A-02-021
PLAN – SCALE: N.T.S.

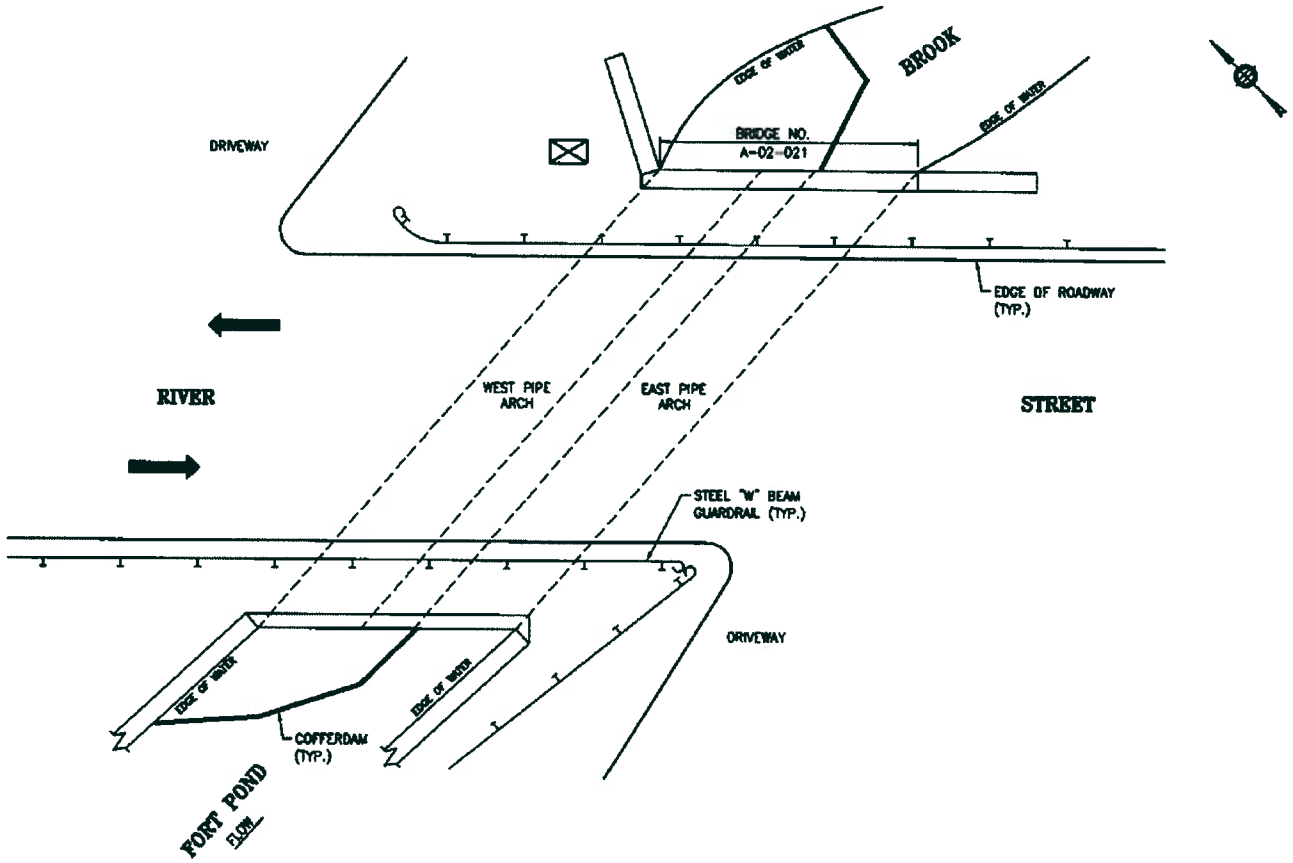


CHAS. H. SELLS, INC.

Transportation Engineers, Surveyors & Photogrammetrists

ACTON: RIVER STREET OVER
FORT POND BROOK, BRIDGE NO. A-02-021
BRIDGE TRANSVERSE SECTION – SCALE: N.T.S.

INCORPORATED 1915 ACTON



LEGEND

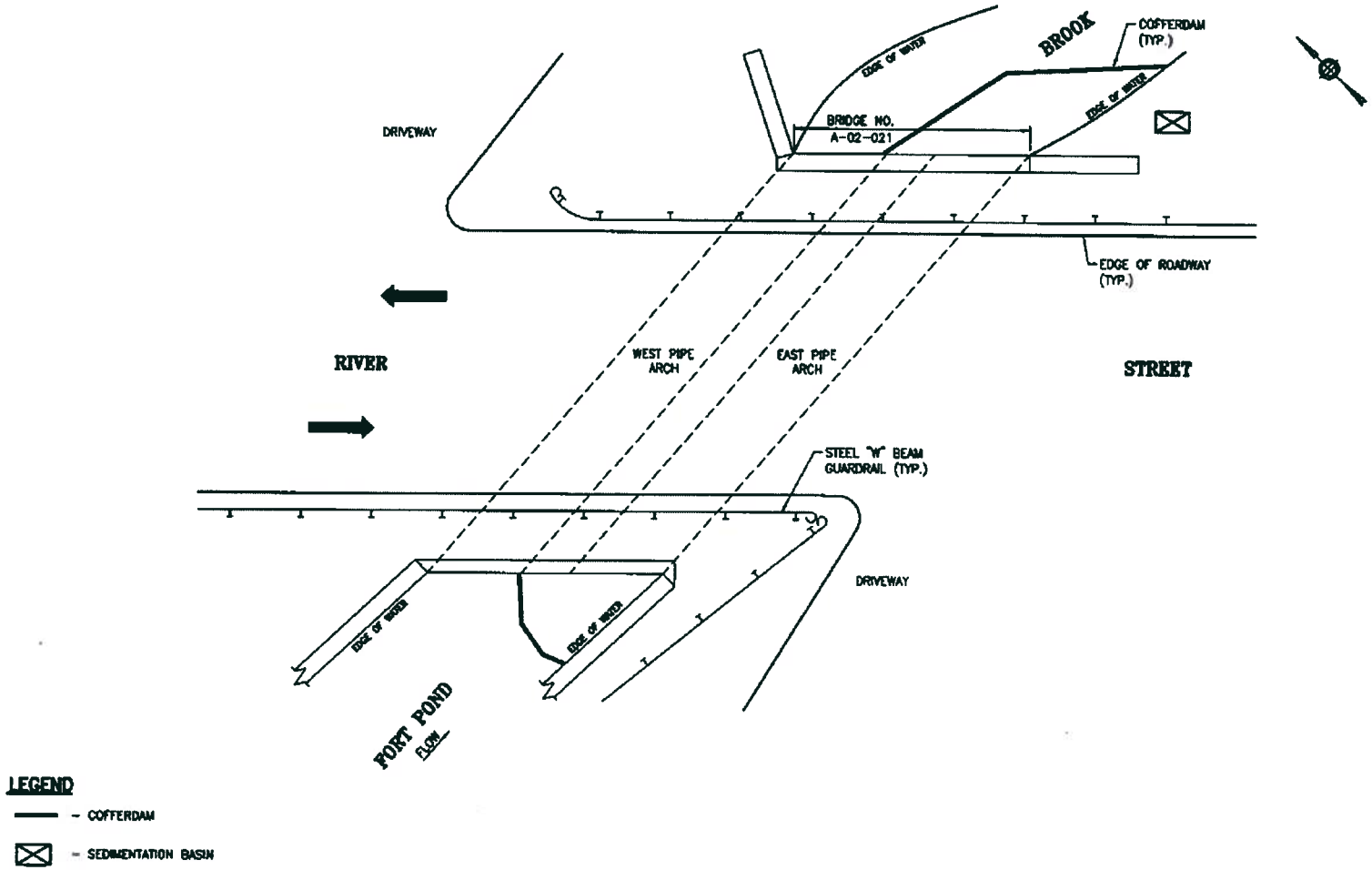
- COFFERDAM
- SEDIMENTATION BASIN

STAGE I

CHAS. H. SELLS, INC.
Consulting Engineers, Surveyors & Photogrammetrists

ACTON: RIVER STREET OVER
FORT POND BROOK, BRIDGE NO. A-02-021
WATER CONTROL PLAN – SCALE: N.T.S.

INCORPORATED 1735 ACTON

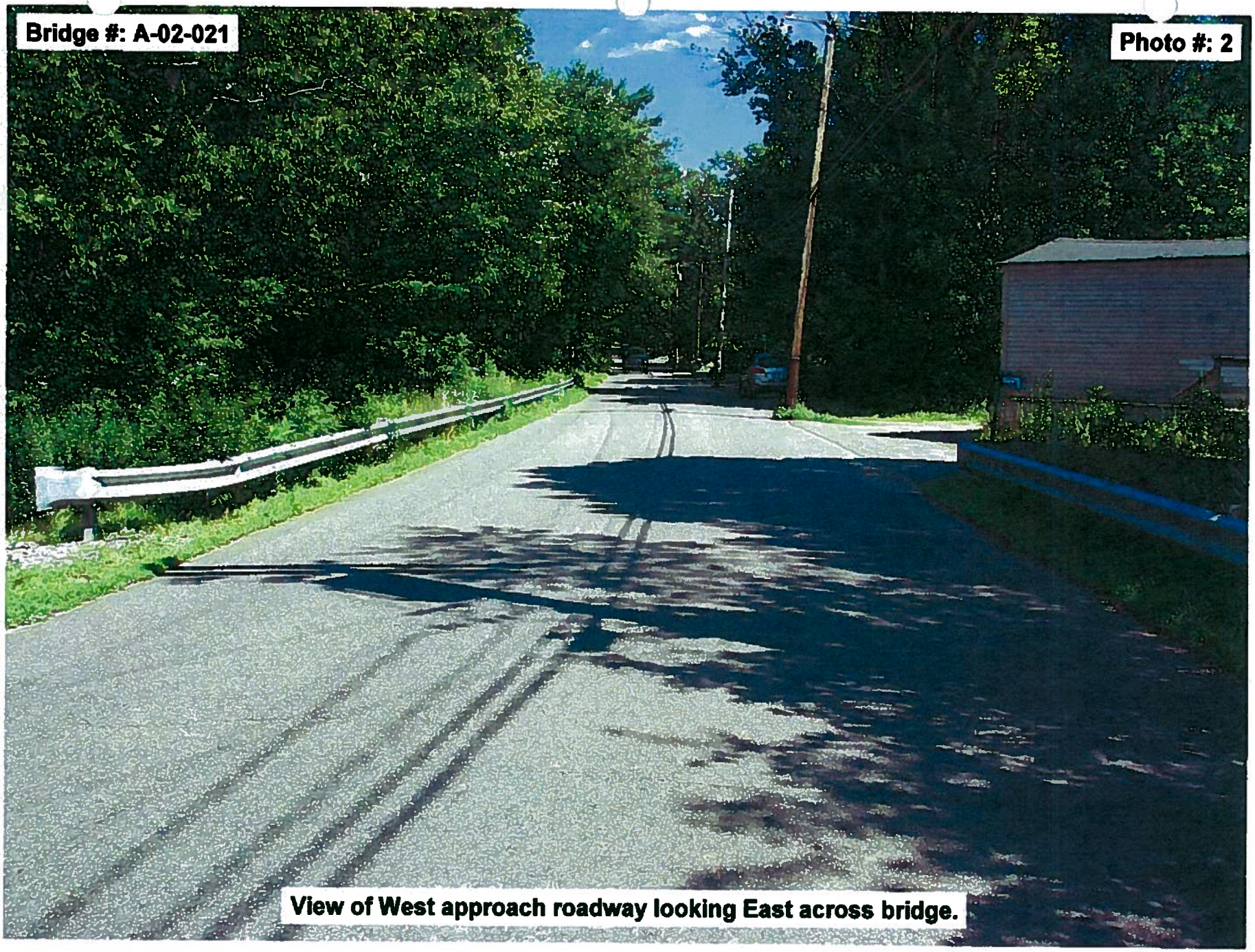


STAGE II

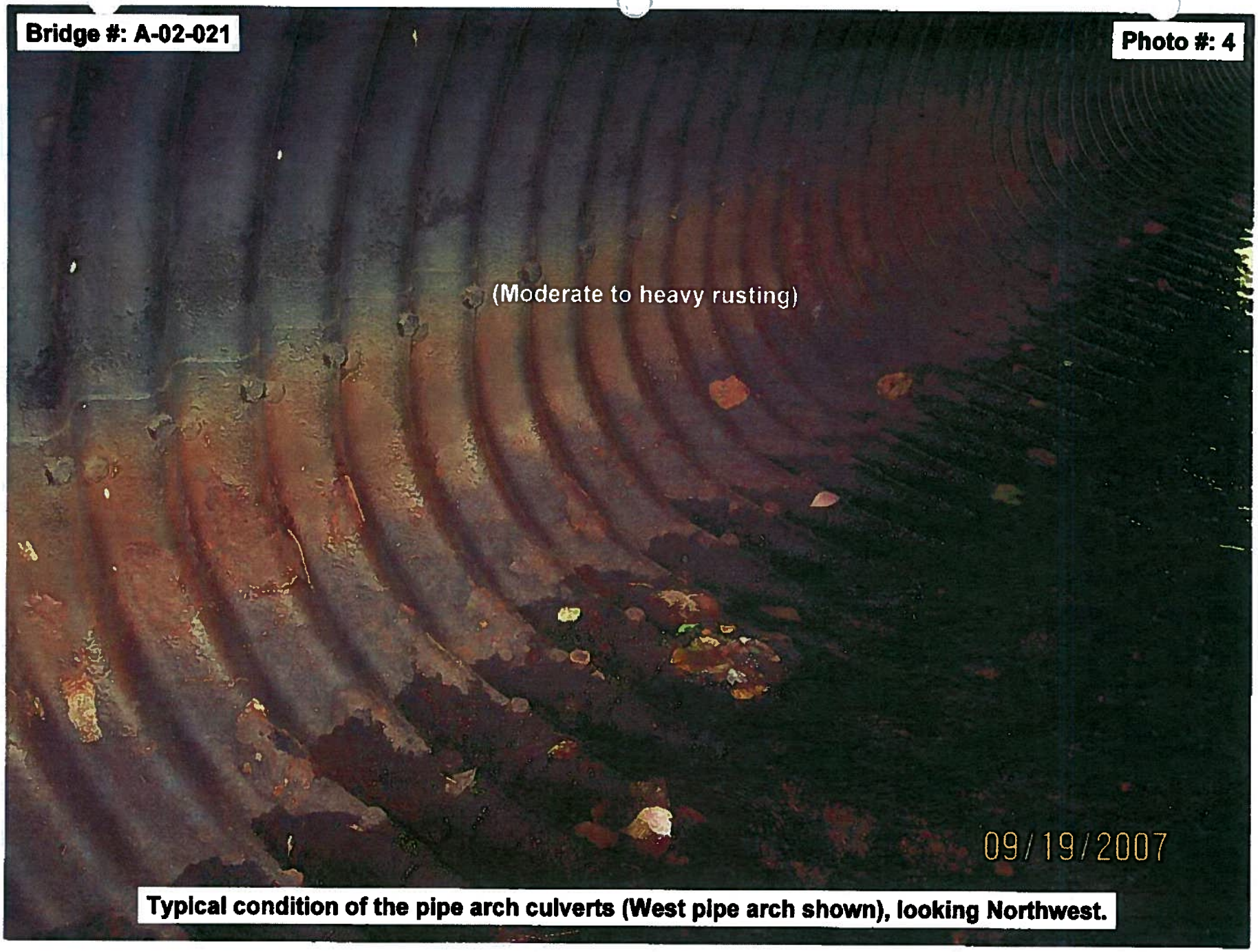
CHAS. H. SELLS, INC.
Consulting Engineers, Surveyors & Photogrammetrists

ACTON: RIVER STREET OVER
FORT POND BROOK, BRIDGE NO. A-02-021
WATER CONTROL PLAN – SCALE: N.T.S.

Bridge #: A-02-021
Photo #: 1
09/19/2007
South Elevation View, looking North.


Bridge #: A-02-021
Photo #: 2
View of West approach roadway looking East across bridge.

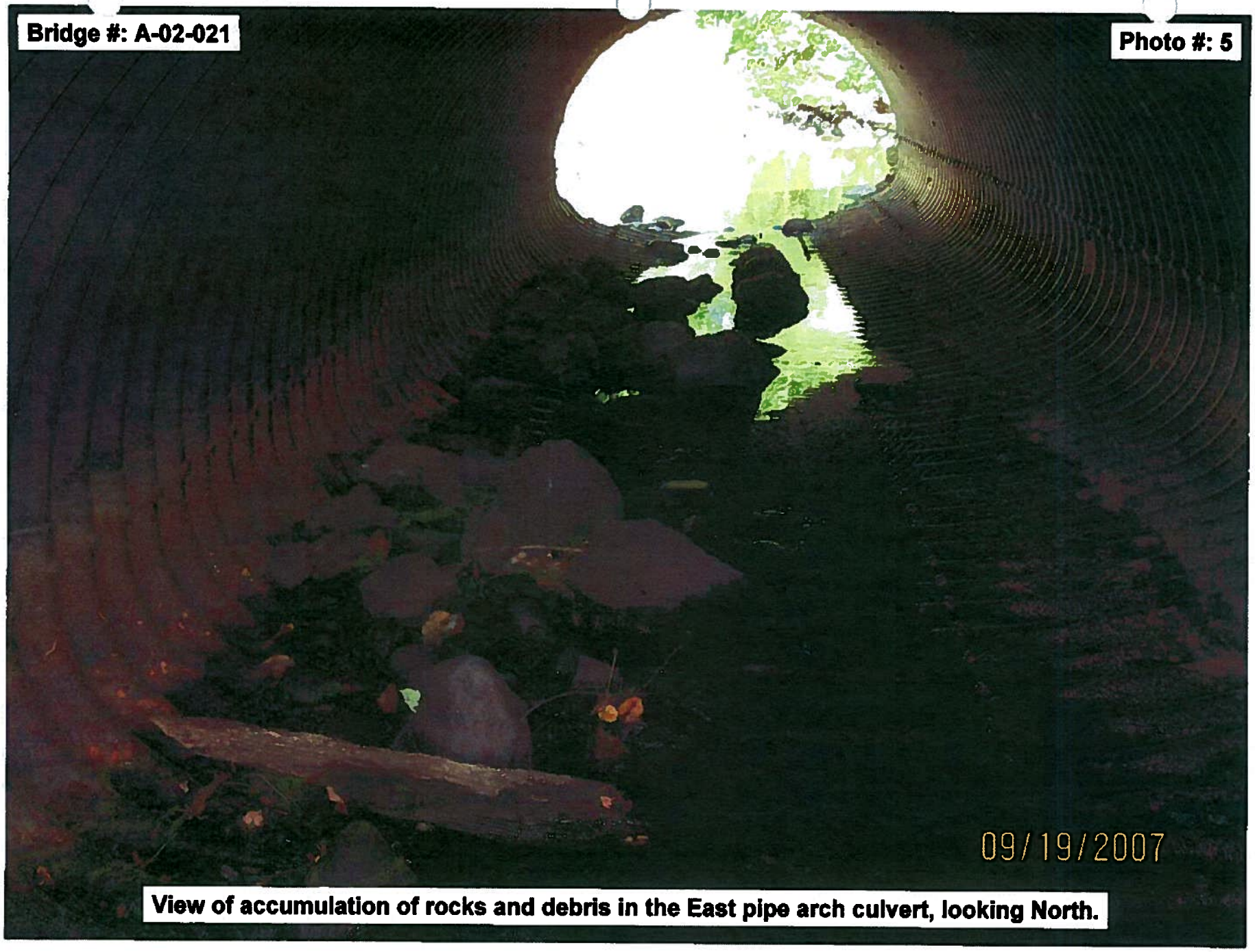
View of minor collision damage to the Southeast approach guardrail.



Typical condition of the pipe arch culverts (West pipe arch shown), looking Northwest.

Bridge #: A-02-021

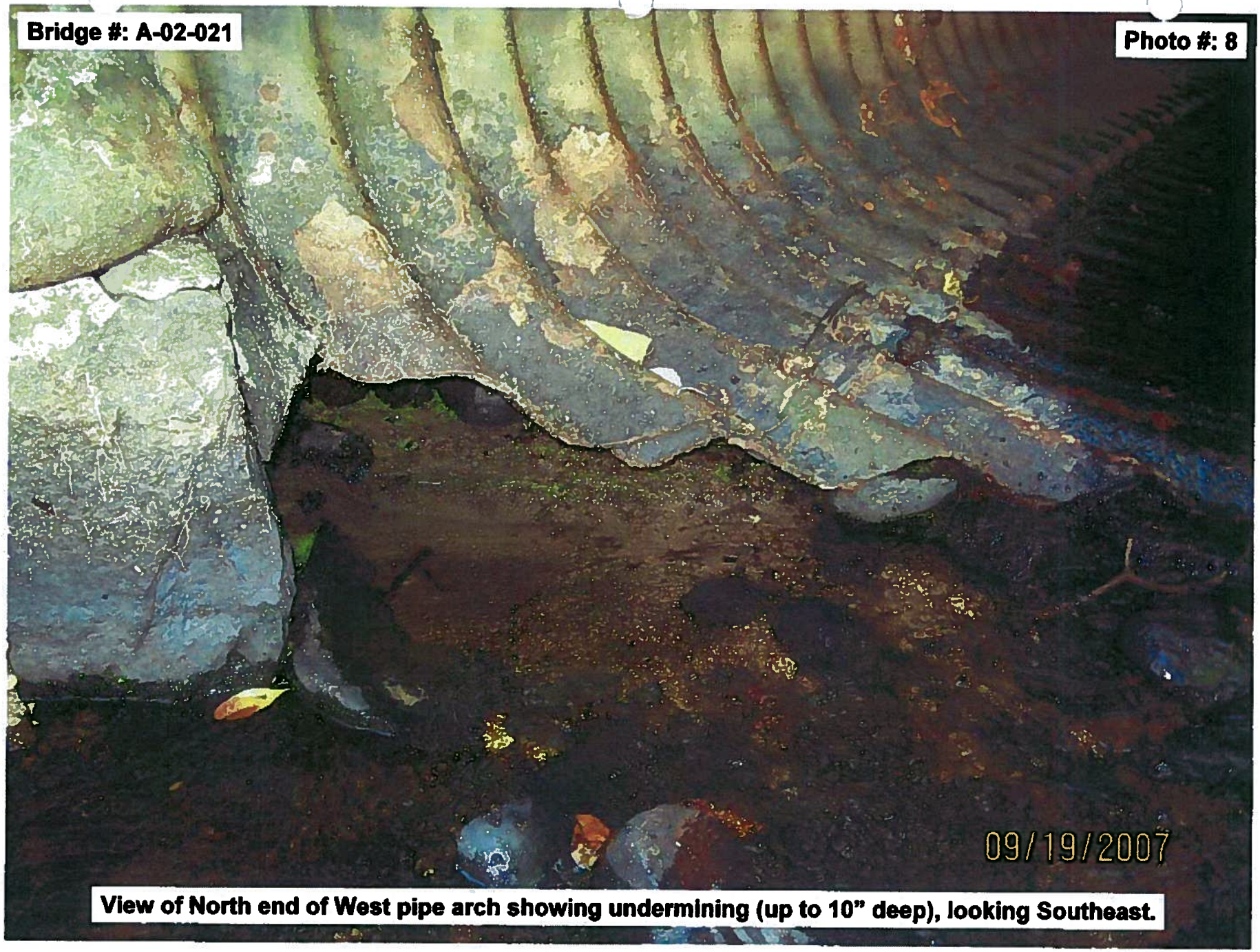
Photo #: 5



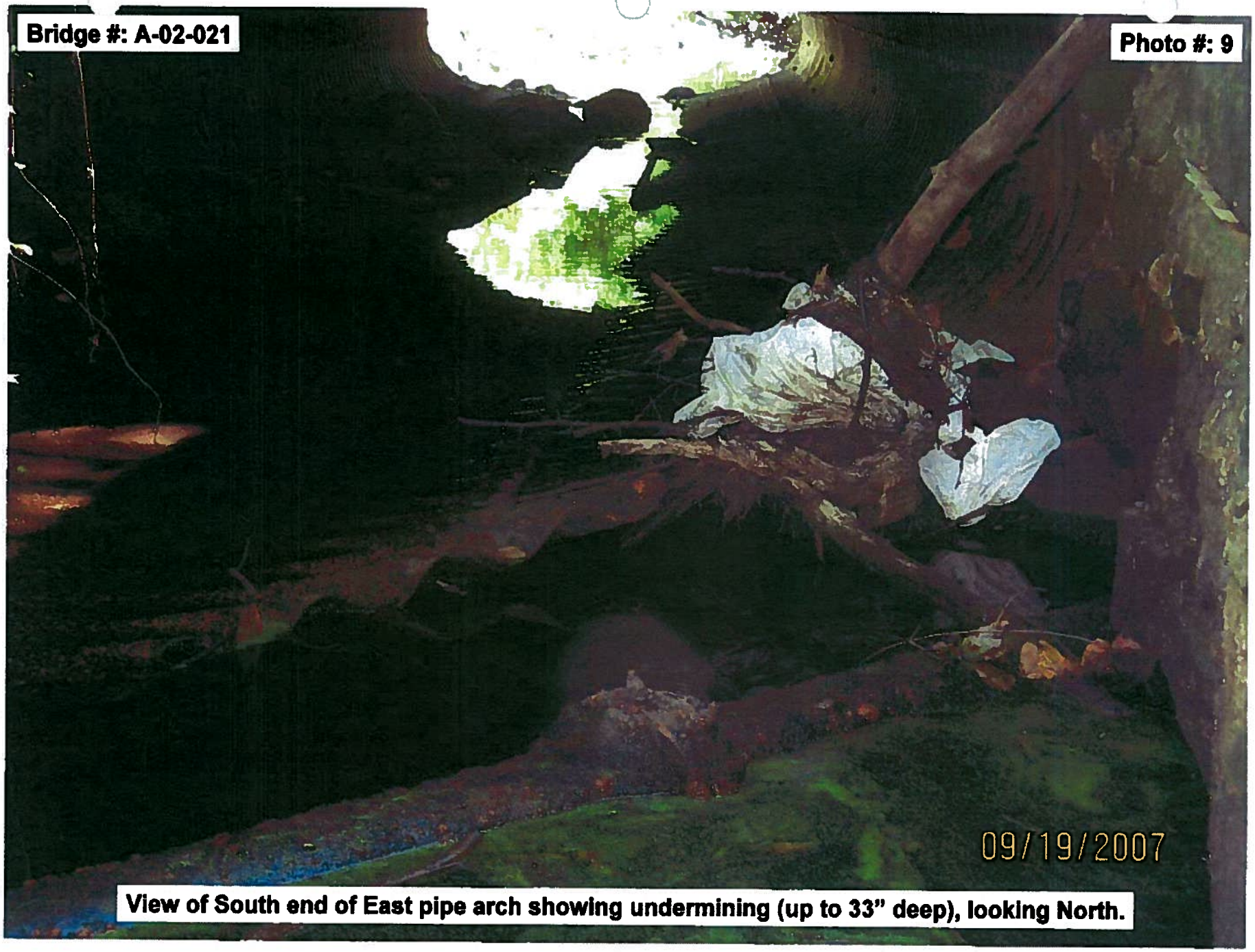
View of accumulation of rocks and debris in the East pipe arch culvert, looking North.

View of 2" outward deformation near the midspan of the West pipe arch, looking North.

View of two (2) punctures in the East pipe arch culvert near the top, looking Northeast.



View of North end of West pipe arch showing undermining (up to 10" deep), looking Southeast.



View of South end of East pipe arch showing undermining (up to 33" deep), looking North.

Bridge #: A-02-021

Photo #: 10

View of Southeast wingwall showing minor settlement of stones and voids (up to 18" deep), looking Northeast.

View of Southwest retaining wall showing large washout area, located approximately 10'-0" from the bridge, looking West.