

APPENDIX B – FIELD DOCUMENTS AND FORMS

This appendix contains supporting documents for field inspection activities:

- Retaining Wall Reconnaissance Form
- Field Inspection Form (blank)
- WIP Field Guide
- WIP Cost Guide
- Visidata Quick Start Guide

Field Inspection Form (Front Page)

-NPS RETAINING WALL INVENTORY PROGRAM (WIP) FIELD FORM-					
NPS Park Name		Route/Parking No.		Wall Start Milepoint	
Inspected By		Route/Parking Name		Wall End Milepoint	
Inspection Date		Side of Centerline	(R/L/P# #)	Visidata Event Milepoint	
WALL FUNCTION, DIMENSIONS, and DESCRIPTION					
Wall Function		Primary Wall Type		Architectural Facings	
Approx. Year Built		Secondary Wall Types		Surface Treatments	
Wall General Description Notes: <i>(e.g., wall purpose, setting, construction, consequence of failure, special design, etc.)</i>					
Wall Length (ft)		Wall Face Area (ft ²)		Wall Start Offset (ft)	
Max. Wall Height (ft)		Vertical Offset (+/- ft)		Wall End Offset (ft)	
Photo Description/No. <i>(e.g., approach, elevation, wall top, alignment, face detail, deficiencies, etc.)</i>				Face Angle (deg)	
Park Designated Wall ID					
REPAIR /REPLACE RECOMMENDATIONS AND WORK ORDER					
Wall Condition Rating		Design Criteria		Failure Consequence	
Investigation Req'd?	(Y/N)	Cultural Concern?	(Y/N)	Action	
Brief Work Order Description <i>(5-10 word maximum, key work elements)</i>					
Repair/Replace Recommendations <i>(itemized description of wall repairs, methods, estimated quantities, and costs per repair item, including consideration of constructability issues such as access, traffic control, staging, safety hazards, etc.)</i>					
Rev. 07-10-2007				Repair/Replace COST:	

Field Inspection Form (Back Page)

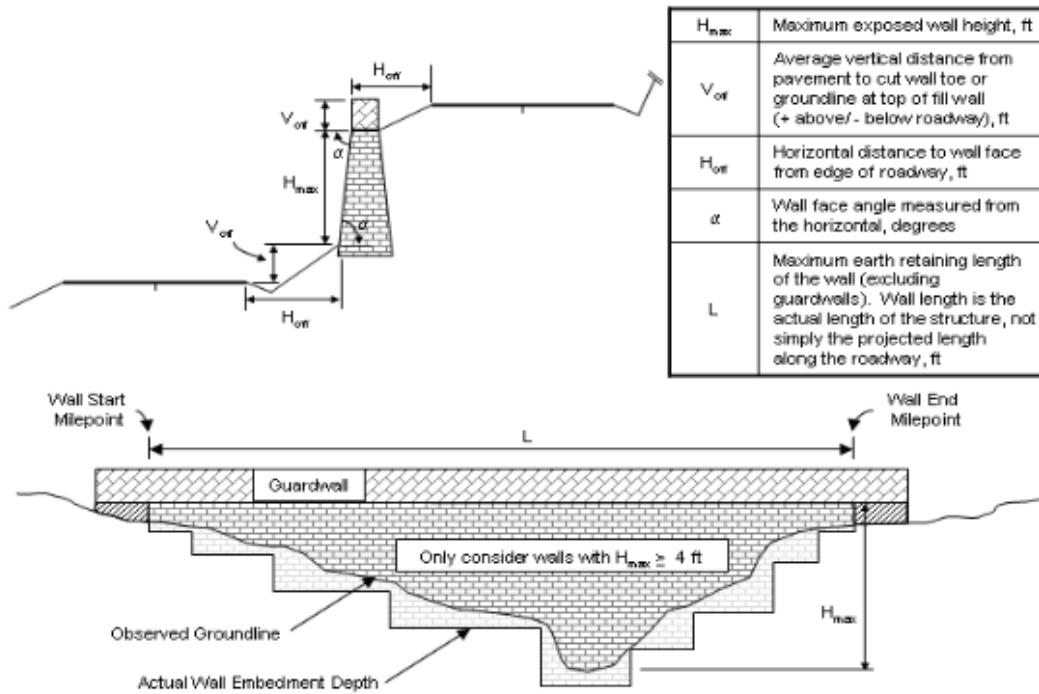
Element	Condition Narrative	Condition Rating	Weighting Factor	Condition Score	Data Reliability
Primary Wall Elements					
Piles and Shafts		1-10	8		1-3
Lagging		1-10	8		1-3
Anchor Heads		1-10	8		1-3
Wire/Geosynthetic Facing Elements		1-10	8		1-3
Bin or Crib		1-10	8		1-3
Concrete		1-10	8		1-3
Shotcrete		1-10	8		1-3
Mortar		1-10	8		1-3
Manufactured Block/Brick		1-10	8		1-3
Placed Stone		1-10	8		1-3
Stone Masonry		1-10	8		1-3
Wall Foundation Material		1-10	8		1-3
Other Primary Wall Element		1-10	8		1-3
Secondary Wall Elements (WF=0.5 for CR=8-10/ WF=1.0 for CR=4-7/WF=5 for CR=1-3)					
Wall Drains		1-10	0.5-5		1-3
Architectural Facing		1-10	0.5-5		1-3
Traffic Barrier/Fence		1-10	0.5-5		1-3
Road/Sidewalk/Shoulder		1-10	0.5-5		1-3
Upslope		1-10	0.5-5		1-3
Downslope		1-10	0.5-5		1-3
Lateral Slope		1-10	0.5-5		1-3
Vegetation		1-10	0.5-5		1-3
Culvert		1-10	0.5-5		1-3
Curb/Berm/Ditch		1-10	0.5-5		1-3
Other Secondary Wall Elements		1-10	0.5-5		1-3
Wall Performance					
Performance		1-10	8		
WALL RATING	Weighting Factor (x10) and Condition Score Totals				
	Wall Condition Rating (= [Condition Score Total/Weighting Factor Total (x10)] X 100)				

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- NPS Retaining Wall Inventory Program Field Guide (WIFG)-		
Retaining Wall Acceptance Criteria		
<p>*All classes of paved roadways and parking areas included in the RIP Route Investigation Report and/or identified by Park staff</p> <p>*Walls must reside within the constructed roadway/parking area prism.</p> <p>*Maximum wall height, including only that portion actively retaining soil and/or rock, must be ≥ 4 ft (≥ 6 ft for culvert headwalls).</p> <p>*Consider known/verifiable wall embedment in determining maximum retaining wall height. Include fully buried retaining structures.</p> <p>*Walls have an internal wall face angle $\geq 45^\circ$ ($\geq 1H:1V$ face slope ratio).</p> <p>*Include all walls where the intent is to support/protect the travelway, and where failure would require replacement with a retaining wall.</p>		
Definitions		
Design Criteria	Measure of how well current design criteria are satisfied: None - Does not meet any known standards. Non-AASHTO - Does not meet AASHTO, but is consistent with other structures of its type/period with good performance. AASHTO - Apparently meets current AASHTO Geometric, Design, Materials, and Construction Standards.	
Consequence of Failure	Low - No loss of roadway, no to low public risk, no impact to traffic during wall repair/replacement Moderate- Hourly to short-term closure of roadway, low-to-moderate public risk, multiple alternate routes available High- Seasonal to long-term loss of roadway, substantial loss-of-life risk, no alternate routes available	
Action	Select from: No Action, Monitor, Maintenance, Repair Elements, Replace Elements, and Replace Wall	
Weighting Factor	Weighting Factor to be applied to the Condition Rating (CR). When indicated on the Condition Assessment Input Form: WF=0.5 for CR=8-10; WF=1.0 for CR=4-7; and WF=5 for CR=1-3.	
Data Reliability	Estimate of how well observed conditions represent wall performance, and if additional investigations may be warranted. 1-Poor Conditions cannot be sufficiently observed to rate element(s), warranting additional investigations to better define element performance and/or to determine the cause(s) or poor performance. 2-Good Observed conditions are sufficient to rate the conditions of wall element(s); however, additional investigations would be useful to better understand element performance. 3-Very Good Observed conditions clearly describe wall performance. Additional investigations are not needed.	
Wall Function Codes		
[FW] Fill Wall [CW] Cut Wall [BW] Bridge Wall [SW] Switchback Wall [HW] Head Wall [SP] Slope Protection [FL] Flood Wall		
Wall Type Codes		
[AH] Anchor, Tieback H-Pile	[CC] Crib, Concrete	[MG] MSE, Geosynthetic Wrapped Face
[AM] Anchor, Micropile	[CM] Crib, Metal	[MP] MSE, Precast Panel
[AS] Anchor, Tieback Sheet Pile	[CT] Crib, Timber	[MS] MSE, Segmental Block
[BC] Bin, Concrete	[GB] Gravity, Concrete Block/ Brick	[MW] MSE, Welded Wire Face
[BM] Bin, Metal	[GC] Gravity, Mass Concrete	[SN] Soil Nail
[CL] Cantilever, Concrete	[GD] Gravity, Dry Stone	[TP] Tangent/ Secant Pile
[CP] Cantilever, Soldier Pile	[GG] Gravity, Gabion	[OT] Other, User Defined
[CS] Cantilever, Sheet Pile	[GM] Gravity, Mortared Stone	[NO] None
Architectural Facing Type Codes		
[BV] Brick Veneer	[PF] Planted Face	[SS] Simulated Stone
[CO] Cementitious Overlay	[SC] Sculpted Shotcrete	[SV] Stone Veneer
[FF] Fractured Fin Concrete	[SH] Shotcrete (nozzle finish)	[TI] Timber
[FL] Formlined Concrete	[SM] Steel/Metal	[OT] Other, User Defined
[PC] Plain Concrete (float finish or light texture)	[SO] Stone	[NO] None
Surface Treatment Codes		
[BG] Bush Gun (tool-textured concrete)	[PS] Preservative	[WS] Weathering Steel
[CA] Color Additive	[SE] Silane Sealer	[OT] Other, User Defined
[GL] Galvanized	[ST] Stain	[NO] None
[PA] Painted	[TR] Tar Coated	

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Condition Ratings	
Condition Ratings apply to all Primary and Secondary Wall Elements, and are intended to assist in consistently defining element severity, extent, and repair/replace urgency of wall element distresses.	
9-10 (Excellent)	-Any defects are minor and are within normal range for <i>newly constructed or fabricated</i> elements. -Defects may include those typically caused from fabrication or construction.
7-8 (Good)	-Low-to-moderate extent of low severity distress. -Distress present does not significantly compromise the element function, nor is there significantly severe distress to major structural components of an element.
5-6 (Fair)	-High extent of low severity distress and/or low-to-medium extent of medium to high severity distress. -Distress present does not compromise element function, but lack of treatment may lead to impaired function/elevated risk of element failure in the near term.
3-4 (Poor)	-Medium-to-high extent of medium-to-high severity distress. -Distress present threatens element function, and strength is obviously compromised and/or structural analysis is warranted. -The element condition does not pose an immediate threat to wall stability and road closure is not necessary.
1-2 (Critical)	-Medium-to-high extent of high severity distress. -Element is no longer serving intended function. Element performance threatening overall stability of the wall at the time of inspection.
Wall Performance Condition Ratings	
Performance	<p>Evaluation of overall wall performance as indicated by observations not necessarily captured by observed distresses for specific elements, including global wall distresses (rotation, settlement, translation, displacement, etc.) and/or evidence of prior repairs that may further indicate component problems.</p> <p>Good to Excellent - No observation of distresses not already captured by individual element condition assessment. No combination of element distresses indicating unseen problems or creating significant performance problems. No history of remediation or repair to wall or adjacent elements.</p> <p>Fair - Some observed global distress is not associated with specific elements. Some observation of element distress combinations that indicate wall component problems. Minor work on primary elements or major work on secondary elements has occurred improving overall wall function.</p> <p>Poor to Critical - Global wall rotation, settlement, and/or overturning is readily apparent. Combined element distresses clearly indicate serious stability problems with components or global wall stability. Major repairs have occurred to wall structural elements, though functionality has not improved significantly.</p>



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Element	Element Definition	Element Condition Rating Guidance
Primary Element Condition Ratings		
Piles and Shafts	Soldier piles, sheet piles, micropiles or drilled shafts; supplemental structures such as walers, comprising all part of the visible wall.	<p>Good to Excellent Rating (minor to no distress, minimal to no impact, few to no occurrences)</p> <p>Corrosion/Weathering</p> <ul style="list-style-type: none"> No evidence of corrosion/staining, contamination or cracking/spalling due to weathering or chemical attack. Compacted, placed or masoned rock, and associated chinking, is dense, angular, fresh, and without post-placement fracturing or chemical degradation. <p>Cracking/Breaking</p> <ul style="list-style-type: none"> No significant weathering/weakening of bedrock, softening of soil, or saturated ground conditions evident. No impacts from vegetation noted within the wall or within adjacent elements. <p>Cracking/Breaking</p> <ul style="list-style-type: none"> No evidence of element cracking, breaking, or construction/post-construction damage, opening of discontinuities in rock, or cracks or gullies in soils. Concrete, shotcrete, and mortar is sound, durable, and shows little or no signs of shrinkage cracking or spalling. Drains are clearly open (flowing), and in full working order. <p>Distortion/Deflection</p> <ul style="list-style-type: none"> Wall elements are as constructed, and/or show no signs of significant settlement, bulging, bending, heaving, or distortion/deflection beyond normal prescribed post-construction limits. <p>Lost Bearing/Missing Elements</p> <ul style="list-style-type: none"> No wall elements are missing. Wall elements are fully bearing against retained soil/rock units. Foundation soils/rock are more than adequate to support the wall, consistently dense, drained and strong. No slope failures have occurred either removing or adding materials to the wall area. <p>Fair Rating (moderate distress, significant to substantial impact, multiple occurrences)</p> <p>Corrosion/Weathering</p> <ul style="list-style-type: none"> Moderate corrosion/staining, contamination or cracking/spalling due to weathering or chemical attack. Compacted, placed or masoned rock is not fresh or angular, showing significant weathering, post-placement fracturing, chemical degradation, and/or localized loosening. Significant weathering/weakening of bedrock, softening of the soil, or saturated ground conditions evident. Moderate impacts from vegetation are evident within the wall or within adjacent elements. <p>Cracking/Breaking</p> <ul style="list-style-type: none"> Localized element cracking, breaking, abrasion and/or construction/post-construction damage, opening or discontinuities in rock or cracks or gullies in soil. Concrete, shotcrete, and mortar is occasionally soft or drummy, has lost durability, and shows occasional cracking and/or spalling sufficient to intercept reinforcement. Drains cannot be clearly determined to be fully operational. <p>Distortion/Deflection</p> <ul style="list-style-type: none"> Wall elements show significant localized settlement, bulging, bending, heaving, misalignment, distortion, deflection, and/or displacement beyond normal prescribed post-construction limits (e.g., wall face rotation, basket bulging, anchor head displacement, bin displacement). <p>Lost Bearing/Missing Elements</p> <ul style="list-style-type: none"> Some wall elements are missing (e.g., chinking, lagging, brick-work) or non-functional. Wall elements are generally bearing against retained soil/rock units, but localized open voids may exist along the back and top of the wall. Foundation soils/rock are adequate to support the wall, but susceptible to shrink-swell, erosion, scour, or vegetation impacts. Isolated slope failures have occurred either removing or adding material from the wall area. <p>Poor to Critical Rating (severe distress, failure is imminent, pervasive occurrences)</p> <p>Corrosion/Weathering</p> <ul style="list-style-type: none"> Metallic wall elements are corroded and have lost significant section affecting strength. Concrete/shotcrete is extensively spalled, cracked, and/or weakened, and may show evidence of widespread aggregate reaction. Compacted, placed or masoned rock is highly weathered, showing extensive post-placement fracturing, chemical degradation, and/or loosening within the placed volume. Extensive weathering/weakening of bedrock, softening of soil, or saturated ground conditions evident. Severe impacts from vegetation are evident within the wall or within adjacent elements. <p>Cracking/Breaking</p> <ul style="list-style-type: none"> Extensive severe element cracking, breaking, abrasion or construction/post-construction damage, opening of discontinuities in rock, or cracks or gullies in soils. Concrete, shotcrete, and mortar is consistently soft, drummy, or missing, has lost durability and strength, and shows pervasive cracking and/or spalling intercepting corroding/weathering reinforcement. Drainage is missing, clearly damaged, and/or obviously clogged and non-functional. <p>Distortion/Deflection</p> <ul style="list-style-type: none"> Wall elements show extensive settlement, bulging, bending, distortion, misalignment, deflection, and/or displacement well beyond normal post-construction limits, including loss of ground reinforcement and retention. <p>Lost Bearing/Missing Elements</p> <ul style="list-style-type: none"> Many or key wall elements are missing (e.g., placed wall stone, chinking, lagging) or non-functional. Many or key wall elements are no longer bearing against retained soil/rock units, with visible open voids evident behind a large portion of the wall. Foundation soils/rock show signs of failure, excessive settlement, scour, erosion, substantial voids, bench failure, slope oversteepening, and/or may be adversely impacted by vegetation. Substantial slope failures have occurred either removing or adding materials to the wall area.
Lagging	Structural lagging between piles and walers.	
Anchor Heads	All visible parts of tieback anchor, including pad (observed without removing cap).	
Wire/Geosyn. Facing Elements	Visible facing/basket wire, soil reinforcing elements, hardware cloth, geotextile/geogrids, and facing stone.	
Bin or Crib	Visible portion of cellular gravity wall.	
Concrete	Visible precast or cast-in-place concrete wall and footing elements (does not include piles, lagging, crib blocks, manufactured block/brick, and architectural facing).	
Shotcrete	Visible shotcrete (does not include piles, lagging, architectural facing or other specific elements).	
Mortar	Visible mortar used between uncut or masoned rock, manufactured blocks or brick, or used for wall repairs.	
Manufactured Block/Brick	Manufactured blocks and bricks, including CMU's segmental blocks, large gravity blocks, etc. (does not include concrete lagging or crib wall components).	
Placed Stone	Dry-laid or mortar-set <i>uncut</i> rock.	
Stone Masonry	Dry-laid or mortar-set <i>cut</i> rock.	
Wall Foundation Material	Soil or rock immediately adjacent to and supporting the wall.	
Other Primary Wall Element	Any primary wall element not listed (provide detailed narrative definition).	
Secondary Element Condition Ratings		
Wall Drains	Function and capacity of visible drain holes, pipes, slot drains, etc., that provide wall subsurface drainage.	
Architectural Facing	Facing that is not relied on for structural capacity, including concrete, shotcrete, stone, timber, vegetation, etc.	
Traffic Barrier/ Fence	Traffic barrier or fence above or below wall, and within the influence of the wall.	
Road/ Sidewalk/ Shoulder	Road and/or sidewalk surface above or below a wall, and within the influence of the wall.	
Upslope	Groundslope area above a wall affecting wall condition and/or performance.	
Downslope	Groundslope area below the wall, distinct from the Wall Foundation Material element, affecting wall condition and/or performance.	
Lateral Slope	Groundslope laterally adjacent to a wall affecting wall condition and/or performance.	
Vegetation	Vegetation near wall or on wall face affecting wall condition and/or performance.	
Culvert	Culverts and inlets/outlets through, below, or adjacent to walls.	
Curb/ Berm/ Ditch	Lined or unlined surface drainage feature above or below wall.	
Other Secondary Wall Element	Any secondary wall element not listed (provide detailed narrative definition).	

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WALL TYPE	PRIMARY ELEMENTS										SECONDARY ELEMENTS										WALL PERFORMANCE									
	Piles and Shafts	Lagging	Wire Heads	Br or Crib	Concrete	Shotcrete	Mortar	Manufactured Block/Brick	Store Masonry	Other Primary Material	Wall Drains	Architectural Facing	Traffic Barrier/End	Road/Sidewalk/Shoulder	Downslope	Upslope	Vegetation	Culvert	Other Secondary Element	WALL PERFORMANCE										
[AH] Anchor, Tieback H-Pile	●	●								●										●										
[AM] Anchor Micropile	●	●								●										●										
[AS] Anchor, Tieback Sheet Pile	●	●								●										●										
[BC] Bin, Concrete			●							●										●										
[BM] Bin, Metal			●							●										●										
[CL] Cantilever, Concrete				●						●										●										
[CP] Cantilever, Soldier Pile		●								●										●										
[CS] Cantilever, Sheet Pile		●								●										●										
[CC] Crib, Concrete				●						●										●										
[CM] Crib, Metal				●						●										●										
[CT] Crib, Timber				●						●										●										
[GB] Gravity, Concrete Block/Brick					●					●										●										
[GC] Gravity, Mass Concrete					●					●										●										
[GD] Gravity, Dry Stone										○										●										
[GG] Gravity, Gabion				●						○										●										
[GM] Gravity, Mortared Stone										○										●										
[MG] MSE, Geosyn. Wrapped Face			●							●										●										
[MP] MSE, Precast Panel										●										●										
[MS] MSE, Segmental Block										●										●										
[MW] MSE, Welded Wire Face			●							●										●										
[SN] Soil Nail										●										●										
[TP] Tangent/Secant Pile			●							●										●										
[OT] Other, User Defined										●										●										

- Wall elements that should always be rated for the given wall type (others may also apply).
- 1 of 2 primary wall elements required depending on material observed.
- 2 of 3 secondary wall elements required depending on wall location relative to roadway.

Road/Sidewalk/Shoulder: Rate only when these elements lie within the influence of the wall. The shoulder is generally defined as extending no greater than 5 ft horizontally from the roadway/sidewalk, and less than -5 ft vertical offset.

Upslope: Rate the upslope condition for all walls above roadway grade, regardless of slope ratio. Rate the upslope condition for all walls below roadway grade, regardless of slope ratio, when the vertical offset to the wall from the roadway/shoulder is greater than 5 ft (otherwise evaluate the condition of the upslope under the "Road/Sidewalk/Shoulder" element).

Downslope: Rate the downslope condition for all walls below roadway grade, regardless of slope ratio. Rate the downslope condition for all walls above roadway grade, regardless of slope ratio, when the vertical offset to the wall from the roadway/shoulder is greater than 5 ft (otherwise evaluate the condition of the downslope under the "Road/Sidewalk/Shoulder" element).

WIP Cost Guide

NPS Retaining Wall Inventory Cost Guide			
Average Wall Replacement Costs			
Wall Code	Wall Description	Units	FY07 Item Cost
AH	Anchor, Tieback H-Pile**	SQFT	175.00
AS	Anchor, Tieback Sheet Pile*	SQFT	165.00
AM	Anchor Micropile*	SQFT	90.00
BC	Bin, Concrete*	SQFT	55.00
BM	Bin, Metal*	SQFT	55.00
GD	Gravity, Dry Stone**	SQFT	50.00
GM	Gravity, Mortared Stone**	SQFT	160.00
GB	Gravity, Concrete Block/Brick*	SQFT	80.00
GC	Gravity, Mass Concrete*	SQFT	60.00
GG	Gravity, Gabion**	SQFT	75.00
CC	Crib, Concrete*	SQFT	55.00
CT	Crib, Timber**	SQFT	185.00
CM	Crib, Metal*	SQFT	55.00
CL	Cantilever, Concrete**	SQFT	170.00
CP	Cantilever, Soldier Pile*	SQFT	110.00
CS	Cantilever, Sheet Pile*	SQFT	80.00
MP	MSE, Precast Panel*	SQFT	40.00
MS	MSE, Segmental Block*	SQFT	35.00
MG	MSE, Geosynthetic Wrapped Face**	SQFT	70.00
MW	MSE, Welded Wire Face**	SQFT	60.00
SN	Soil Nail*	SQFT	110.00
TP	Tangent Pile*	SQFT	110.00
OT	Other, User Defined	SQFT	TBD
* High average estimate based on Phase I report tabled cost ranges.			
** Estimate based on recent FLH construction project data.			
Average Architectural Facing Costs (FLH project data)			
Facing Code	Facing Description	Units	FY07 Item Cost
BV	Brick Veneer	SQFT	135.00
CO	Cementitious Overlay	SQFT	65.00
FF	Fractured Fin	SQFT	NA
FL	Formlined Concrete	SQFT	50.00
PC	Plain Concrete (float finish/light texture)	SQFT	NA
PF	Planted Face	SQFT	5.00
SC	Sculpted Shotcrete	SQFT	80.00
SH	Shotcrete (nozzle finish)	SQFT	NA
SM	Steel/Metal	SQFT	NA
SO	Stone	SQFT	45.00
SS	Simulated Stone	SQFT	50.00
SV	Stone Veneer	SQFT	135.00
TI	Timber	SQFT	NA
OT	Other, User Defined	SQFT	NA

Average Barrier Replacement Cost (FLH project data)			
Barrier Code	Barrier Description	Units	FY07 Item Cost
WBE	Standard W Beam	LNFT	15.00
CFL	Formlined Concrete	LNFT	360.00
SMR	Stone Masonry-Reinforced (conc. core)	LNFT	2025.00
CAB	Cable	LNFT	NA
SBW	Steel-Backed Wood	LNFT	95.00
SBWR	Steel-Backed Wood (Removable)	LNFT	1800.00
SMU	Stone Masonry Unreinforced	LNFT	2895.00
SVC	Concrete w/ Stone Veneer	LNFT	705.00
PRECAST	Precast Concrete w/ Stone Veneer	LNFT	NA
CT	CoreTen	LNFT	30.00
R&R	Remove and Reset Guardrail	LNFT	25.00
Average Wall Repair Unit Costs (FLH project data)			
Repair Code	Repair Description	Units	FY07 Item Cost
RPT	Stone Masonry Repointing	SQFT	75.00
TBS	Tie-Back Anchor Stab./Reinforcement	SQFT	355.00
RMS	Remove/Replace Masonry Stone	SQFT	620.00
MUS	Micropile Underpinning/Stabilization	SQFT	170.00
SUS	Soil Nail Underpinning/Stabilization	SQFT	NA
RUS	Rock Bolt Underpinning/Stabilization	SQFT	150.00
SHUS	Shotcrete Underpinning/Stabilization	SQFT	375.00
CUS	Concrete Underpinning/Stabilization	SQFT	NA
GUS	Gabion Underpinning/Stabilization	SQFT	110.00
SMUS	Stone/Mortar Underpinning/Stabilization	SQFT	NA
IGR	Injection Grouting	SQFT	105.00
HOD	Hor. Drains/Angle Drains thru Back	SQFT	25.00
Average FY07 Pay Item Costs (CFLHD EE Data)			
FP03 Pay Item	Pay Item Description	Units	FY07 Item Cost
151 Mobilization			
15101-0000	MOBILIZATION	LPSM	11% EE
152 Construction Survey and Staking			
15206-0000	SLOPE, REF., CLEARING STAKING	STA	530.00
15214-2000	SURVEY/STAKING RETAIN WALL	LPSM	15050.00
15217-1000	SURVEY/STAKING, MISC.	HOURL	235.00
154 Contractor Sampling and Testing			
15401-0000	CONTRACTOR TESTING	LPSM	4% EE
157 Soil Erosion Control			
15705-0100	EROSION CONTROL, SILT FENCE	LNFT	5.00
15705-0300	EROSION CONTROL, SLOPE DRAIN	LNFT	35.00
15705-1400	EROSION CONTROL, SED. LOG	LNFT	20.00
15705-1500	EROSION CONTROL, WATTLE	LNFT	10.00
15706-0100	EROSION CONTROL, BALE	EACH	40.00
158 Watering for Dust Control			
15801-0000	WATERING, DUST CONTROL	MGAL	40.00
201 Clearing and Grubbing			

Average FY07 Pay Item Costs (cont'd)			
FP03 Pay Item	Pay Item Description	Units	FY07 Item Cost
20103-0000	CLEARING AND GRUBBING	SQYD	5.00
202 Additional Clearing and Grubbing			
20220-1000	REMOVAL, INDIVIDUAL TREE	EACH	955.00
203 Removal of Structures and Obstructions			
20301-0100	REMOVAL OF BOLLARD	EACH	20.00
20301-0200	REMOVAL OF BOULDERS	EACH	210.00
20301-1200	REMOVAL OF HEADWALLS	EACH	1050.00
20301-1900	REMOVAL OF PIPE CULVERT	EACH	1675.00
20302-0300	REMOVAL OF CURB AND GUTTER	LNFT	10.00
20302-0400	REMOVAL OF CURB, ASPHALT	LNFT	5.00
20302-0500	REMOVAL OF CURB, CONCRETE	LNFT	10.00
20302-0600	REMOVAL OF CURB, STONE	LNFT	15.00
20302-0700	REMOVAL OF FENCE	LNFT	5.00
20302-1200	REMOVAL OF GUARDRAIL	LNFT	15.00
20303-0300	REMOVAL OF CONCRETE	SQYD	55.00
20303-1600	REMOVE PAVEMENT, ASPHALT	SQYD	10.00
20303-2000	REMOVE ASPHALT, 4-IN DEPTH	SQYD	20.00
20303-2300	REMOVE PAVEMENT, CONCRETE	SQYD	55.00
20303-3000	REMOVE SIDEWALK, ASPHALT	SQYD	20.00
20303-3200	REMOVE SIDEWALK, CONCRETE	SQYD	30.00
20304-1000	REMOVE STRUCTURES/OBSTRUC.	LPSM	3%EE
20315-0000	SAWCUTTING PAVEMENT	LNFT	5.00
204 Excavation and Embankment			
20401-0000	ROADWAY EXCAVATION	CUYD	25.00
20402-0000	SUBEXCAVATION	CUYD	35.00
20403-0000	UNCLASSIFIED BORROW	CUYD	35.00
20410-0000	SELECT BORROW	CUYD	60.00
20415-0000	SELECT TOPPING	CUYD	45.00
20420-0000	EMBANKMENT CONSTRUCTION	CUYD	40.00
20441-0000	WASTE	CUYD	20.00
205 Rock Blasting			
20501-0000	CONTROLLED BLAST HOLE	LNFT	10.00
207 Earthwork Geotextiles			
20701-ALL	EARTHWORK GEOTEXTILE	SQYD	5.00
20703-ALL	GEOGRID	SQYD	15.00
208 Structure Excavation and Backfill for Selected Major Structures			
20801-0000	STRUCTURE EXCAVATION	CUYD	40.00
20802-0000	FOUNDATION FILL	CUYD	45.00
20803-0000	STRUCTURAL BACKFILL	CUYD	60.00
20811-0000	SHORING AND BRACING	SQFT	35.00
251 Riprap			
25101-1000	PLACED RIPRAP, CLASS 1	CUYD	80.00
25101-2000	PLACED RIPRAP, CLASS 2	CUYD	220.00
25101-3000	PLACED RIPRAP, CLASS 3	CUYD	200.00
25101-4000	PLACED RIPRAP, CLASS 4	CUYD	130.00
25101-5000	PLACED RIPRAP, CLASS 5	CUYD	85.00
25101-6000	PLACED RIPRAP, CLASS 6	CUYD	120.00
25101-7000	PLACED RIPRAP, CLASS 7	CUYD	215.00

Average FY07 Pay Item Costs (cont'd)			
FP03 Pay Item	Pay Item Description	Units	FY07 Item Cost
25110-ALL	GROUTED RIPRAP	CUYD	330.00
25125-0000	BOULDER	EACH	425.00
25126-0000	REMOVE AND RESET BOULDER	EACH	260.00
252 Special Rock Embankment and Rock Buttress			
25201-ALL	SPECIAL ROCK EMBANKMENT	CUYD	185.00
25205-0000	ROCK BUTTRESS	CUYD	80.00
25210-0000	ROCKERY WALL	SQYD	290.00
253 Gabions and Revet Mattresses			
25302-1000	GABIONS, GALVANIZED	CUYD	345.00
255 Mechanically-stabilized Earth Walls			
25501-0000	MSE WALL	SQFT	80.00
256 Permanent Ground Anchors			
25601-0000	GROUND ANCHOR	EACH	8020.00
25605-0000	PERFORMANCE TEST	EACH	3255.00
258 Reinforced Concrete Retaining Walls			
25801-ALL	RC RETAINING WALL, 6FT	SQFT	285.00
259 Soil Nail Retaining Walls			
25901-0000	SOIL NAIL	LNFT	80.00
25903-0000	VERIFICATION TEST NAIL	EACH	2760.00
260 Rock Bolts			
26001-0000	ROCK BOLT	LNFT	90.00
301 Untreated Aggregate Courses			
30101-0000	AGGREGATE BASE	TON	30.00
30110-0000	AGGREGATE SURFACE COURSE	TON	45.00
303 Road Reconditioning			
30302-1000	DITCH RECONDITIONING	LNFT	5.00
30306-ALL	PULVERIZING, 4-8IN DEPTH	SQYD	5.00
403 Hot Asphalt Concrete Pavement			
40301-0800	HACP, GRADING C/E	TON	120.00
404 Minor Hot Asphalt Concrete			
40401-0000	MINOR HOT ASPHALT CONCRETE	TON	360.00
411 Asphalt Prime Coat			
41101-ALL	PRIME COAT	TON	630.00
412 Asphalt Tack Coat			
41201-1000	TACK COAT	TON	580.00
413 Asphalt Pavement Milling			
41301-ALL	ASPHALT PAVEMENT MILLING	SQYD	10.00
414 Asphalt Pavement Crack and Joint Sealing			
41410-1000	CRACK, CLEANING AND SEALING	LNFT	5.00
428 Flexible Pavement Restoration			
None	FLEXIBLE PAVEMENT RESTORATION	SQFT	10.00
551 Driven Piles			
55101-0200	CONCRETE, STEEL PIPE PILES	LNFT	175.00
55101-0300	PRESTRESSED CONCRETE PILES	LNFT	135.00
55101-ALL	STEEL H-PILES	LNFT	185.00
55103-2000	VINYL SHEET PILES	SQYD	205.00
55115-ALL	PREBORING	LNFT	105.00
552 Structural Concrete			

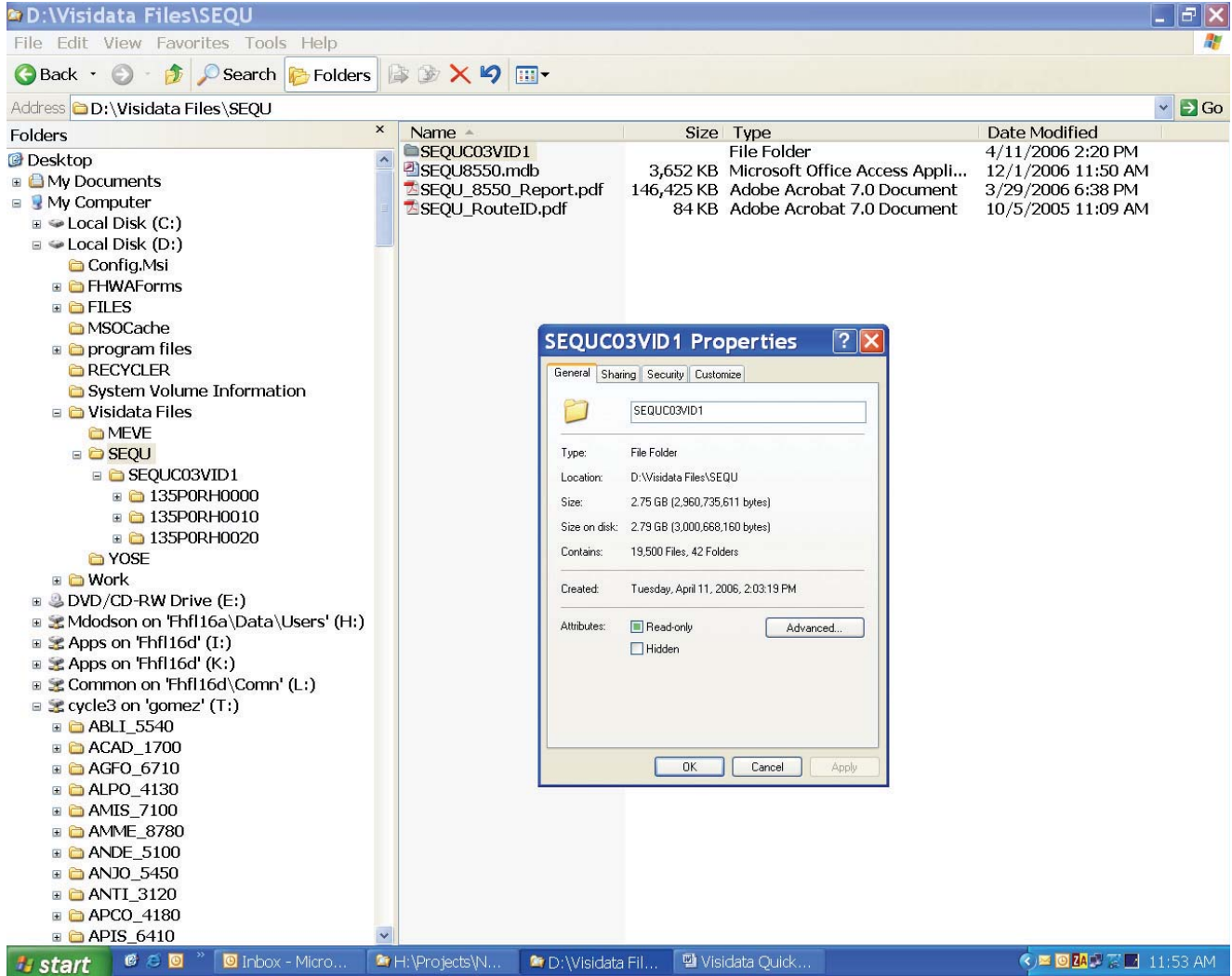
Average FY07 Pay Item Costs (cont'd)			
FP03 Pay Item	Pay Item Description	Units	FY07 Item Cost
55201-0200	STRUCTURAL CONCRETE, CLASS A	CUYD	1230.00
557 Timber Structures			
55701-2000	STRUCTURAL TIMBER/LUMBER	MFBM	5715.00
563 Painting			
56305-0000	ROCK STAIN	SQFT	1.00
56311-1000	WEATHERING AGENT, DESERT	SQFT	0.50
565 Drilled Shafts			
56501-0400	DRILLED SHAFTS, 36-INCH	LNFT	715.00
56501-0600	DRILLED SHAFTS, 48-INCH	LNFT	1265.00
56501-0800	DRILLED SHAFTS, 60-INCH	LNFT	3170.00
566 Shotcrete			
56603-ALL	REINFORCED SHOTCRETE	SQYD	410.00
569 Micropiles			
56901-0000	MICROPILE	LNFT	380.00
56905-0000	MICROPILE LOAD TEST	EACH	26250.00
601 Minor Concrete Structures			
60101-0000	CONCRETE	CUYD	1470.00
60103-0140	HEADWALL FOR 24-INCH CULVERT	EACH	8435.00
60103-0220	HEADWALL FOR 48-INCH CULVERT	EACH	7365.00
60110-0000	CONCRETE COLORING AGENT	LB	10.00
602 Culverts and Drains			
60201-0800	24-INCH PIPE CULVERT	LNFT	205.00
60201-1000	36-INCH PIPE CULVERT	LNFT	185.00
60201-1200	48-INCH PIPE CULVERT	LNFT	210.00
60201-1600	72-INCH PIPE CULVERT	LNFT	330.00
605 Underdrains, Sheet Drains, and Pavement Edge Drains			
60501-0000	STANDARD UNDERDRAIN SYSTEM	LNFT	60.00
60504-0000	GEOCOMPOSITE SHEET DRAIN	SQYD	45.00
609 Curb and Gutter			
60902-ALL	CONCRETE CURB	LNFT	35.00
60901-3100	CURB, STONE, TYPE 1, 8-INCH	LNFT	75.00
60902-1000	CURB&GUTTER, CONCRETE, 12-IN	LNFT	50.00
60905-1000	GUTTER, CONCRETE	LNFT	45.00
60915-1000	WHEELSTOP, CONCRETE	EACH	125.00
610 Horizontal Drains			
61001-0000	HORIZONTAL DRAIN PIPE	LNFT	40.00
61002-0000	COLLECTOR SYSTEM	LNFT	40.00
613 Simulated Stone Masonry Surface			
61301-0000	SIMULATED STONE MASONRY	SQYD	425.00
614 Lean Concrete Backfill			
61401-0000	LEAN CONCRETE BACKFILL	CUYD	175.00
615 Sidewalks, Drive Pads, and Paved Medians			
61501-0100	SIDEWALK, CONCRETE	SQYD	110.00
61501-0200	SIDEWALK, COLORED CONCRETE	SQYD	105.00
61501-1100	SIDEWALK, ASPHALT	SQYD	45.00
61502-1000	DRIVE PAD, CONCRETE	SQYD	135.00
61504-1000	ACCESSIBILITY RAMP, CONCRETE	SQYD	190.00
617 Guardrail			

Average FY07 Pay Item Costs (cont'd)			
FP03 Pay Item	Pay Item Description	Units	FY07 Item Cost
61701-1250	GUARDRAIL, TYPE 2, WOOD POST	LNFT	35.00
61702-0600	TERMINAL SECTION, FLARED	EACH	2360.00
61702-0800	TERMINAL SECTION, TANGENT	EACH	4170.00
61704-2000	REPLACEMENT POST, WOOD	EACH	180.00
61708-1000	REMOVE AND RESET, GUARDRAIL	LNFT	46.00
618 Concrete Barriers and Precast Guardwalls			
61801-0000	CONCRETE BARRIER	LNFT	100.00
61802-0000	CONCRETE GUARDWALL	LNFT	360.00
620 Stone Masonry			
62001-0100	CLASS A MASONRY, FINE POINTED	CUYD	735.00
62001-ALL	RUBBLE MASONRY	CUYD	1255.00
62010-1000	STONE MASONRY GUARDWALL	LNFT	645.00
62010-7000	STONE MASONRY PARAPET	LNFT	825.00
62011-ALL	STONE MASONRY HEADWALL	EACH	5085.00
62025-1000	REMOVE/RESET STONE MASONRY	CUYD	3195.00
62027-1000	REMOVE/RESET STN GUARDWALL	LNFT	475.00
62028-1000	REMOVE/RESET STN HEADWALL	EACH	4430.00
622 Rental Equipment			
62201-ALL	DUMP TRUCK	HOURL	120.00
62201-0350	BACKHOE	HOURL	150.00
62201-0950	WHEEL LOADER, 3 CUBIC YARD	HOURL	170.00
62201-ALL	BULLDOZER	HOURL	195.00
62201-2050	ROLLER	HOURL	185.00
62201-2100	COMPACTOR	HOURL	210.00
62201-2750	MOTOR GRADER	HOURL	175.00
62201-3600	MANLIFT	HOURL	100.00
623 General Labor			
62301-0000	GENERAL LABOR	HOURL	55.00
62302-0100	SPECIAL LABOR, SLOPE SCALING	HOURL	890.00
624 Topsoil			
62401-ALL	FURNISHING/PLACING TOPSOIL	SQYD	10.00
625 Turf Establishment			
62511-1000	SEEDING, DRY METHOD	SQYD	2.00
62511-2000	SEEDING, HYDRAULIC METHOD	SQYD	2.00
629 Rolled Erosion Control Products			
62901-0300	ROLLED EROSION CONTROL	SQYD	5.00
634 Permanent Pavement Markings			
63401-ALL	PAVEMENT MARKINGS	LNFT	0.50
635 Temporary Traffic Control			
63501-0000	TEMPORARY TRAFFIC CONTROL	LPSM	3% EE
645 Locating Utilities			
None	LOCATE UTILITIES	PER WL	600.00
647 Environmental Mitigation			
None	ENVIRONMENTAL MITIGATION	LPSM	5% EE
650 Temporary Diversions			
None	TEMPORARY DIVERSIONS	LNFT	50.00
651 Rockfall Protection			
None	ROCKFALL PROTECTION - MESH	SQFT	15.00

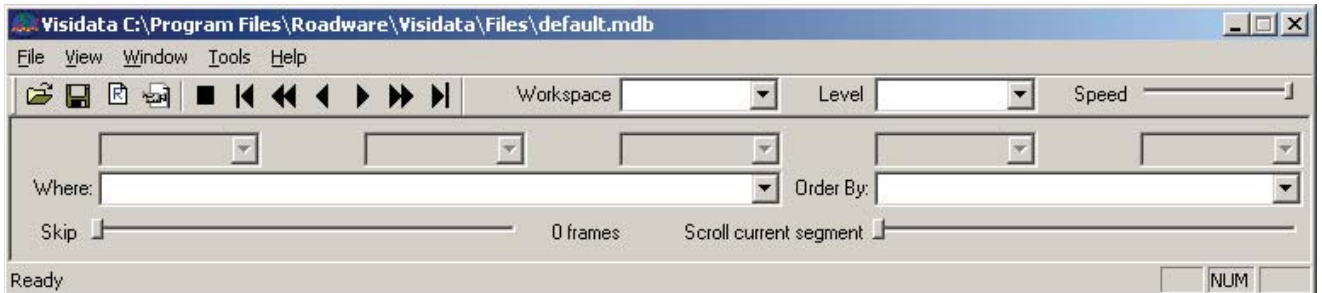
Visidata Quick Start Guide

The purpose of this Quick Start Guide is to give a basic overview on how to open and view the RIP database and video files using the VisiData application. Brief instructions for copying Visidata files onto the field storage devices are also included. Please read these instructions carefully as selecting the wrong option may cause the VisiData application to crash. For further information and detailed instructions on how to use the VisiData application, please refer to the “Visidata Tutorial and User Guide”.

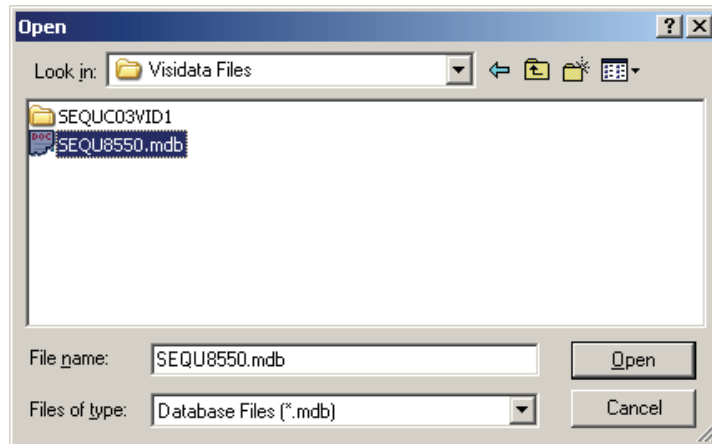
- (1) Install VisiData software onto the laptop that will be taken into the field. You may need assistance from the IT Help Desk.
- (2) Copy VisiData files onto the field storage device, which will usually be an external hard drive (a regular laptop hard drive may not have enough storage space for all of the files, which can be >20GB, depending on the park). This can be done through the coordination with the Division RIP Coordinator, or by the following procedure having once located the proper RIP storage drive location:
 - There are three folders containing RIP information that needs to be copied to the field laptop:
 - **Database** folder
 - **RIP Report pdf** folder
 - **PARK#####VID1** folder
 - Open the Database folder and copy the PARK#####.mdb and PARK_RouteID.pdf files (Not the PARK_Route_Info.mdb) from this folder to the laptop D:\VisiData Files folder (if you do not have a “Local Drive D”, you may create/locate this folder under C:\VisiData Files). These files range from 3 to 15 MB in size.
 - Open the RIP Report pdf folder and copy the PARK_#####_Report.pdf file from this folder to the laptop D:\VisiData Files folder. This report should be printed out and taken in the field for easy reference (preferably color, 2-sided, comb-bound).
 - Copy the entire PARK#####VID1 folder to the laptop D:\VisiData Files folder. These files can be >20GB in size.



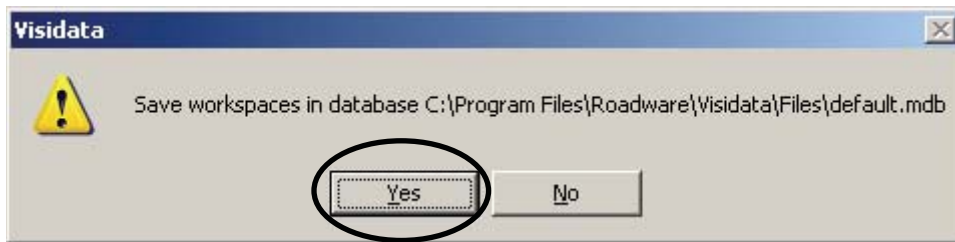
(3) Open the Visidata software



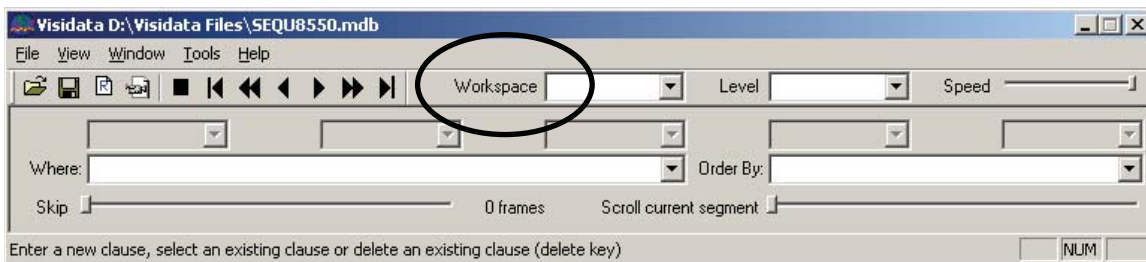
(4) Open the *.mdb Visidata file for the park using the “File” then “Open” commands. In this case the file name is “SEQU8550.mdb”.



Click “No” when the following warning screen pops up asking to save workspace. (If you select “Yes”, be sure to hit “Cancel” in the next window that opens.)

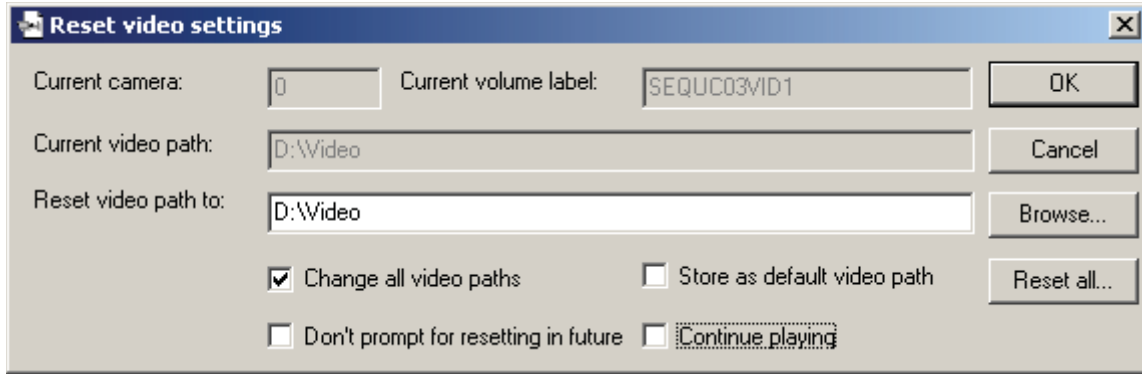


You will then see the following:

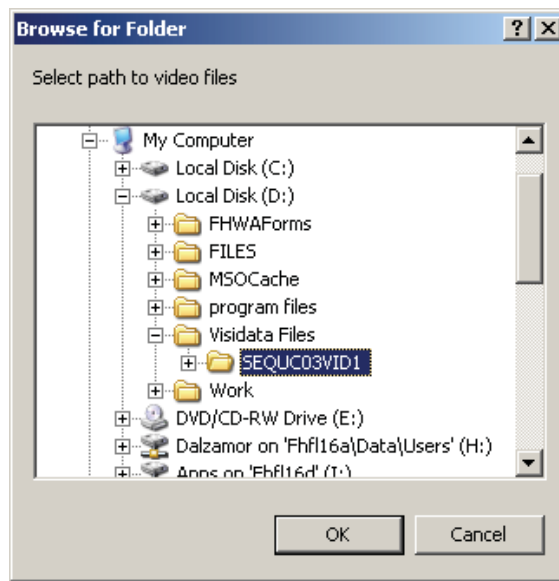


- (5) From the Workspace drop-down menu, select the workspace you want to view. There are two that will be used in the field. They are the “Panorama” and “Features”. The Panorama workspace continuously runs thought the entire route. The Features workspace is the most useful for the NPS Retaining Wall Inventory Program (WIP). It skips through the route from one feature to the next. The features table associated with this workspace tells you exactly what the feature is and at what milepost it is located.

Then click “OK”. The following screen appears. Uncheck “Continue playing” then click “Browse”. Locate the directory were the image files are located.



Then Click “OK”.

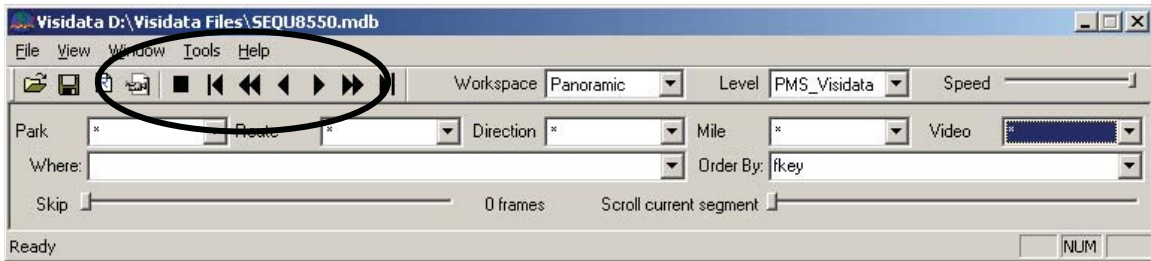


Click “OK” when you return to the “Reset video settings” screen.

- (6) Now you will see the panorama images in the three forward cameras. You will need to place the cameras so they overlap properly, as follows:



- (7) In the main Visidata window, under the Route drop-down menu, choose the route you want to view. To view only the route’s primary direction, under the Direction drop-down menu, select PRI.
- (8) Then you can use the camera buttons to navigate through the route.



You will now also see a features table which tells you what the feature is and where it is located.

Note: The Mile Point in the Features Table is the value to record on the Field Form. The Mile Point on the bottom right-hand corner of each camera is the INCORRECT value, as it will show a Mile Point prior to the feature in the video so the feature can be seen in the view.

Mile Point	Event	Event Code	Event Description	Condition	Comment	Mutcd	Side	Offset
0.2350	UNKN	UNKN	UNKNOWN SIGN	P-R	MISSING SIGN	N/A	R	N/A
0.2360	CBSR	CBSR	CURB START RIGHT	G-D		N/A	R	N/A
0.2780	CBSL	CBSL	CURB START LEFT	G-D		N/A	L	N/A
0.2820	CBSR	CBSR	CURB START RIGHT	G-D		N/A	R	N/A
0.2830	GUID	GEIN	ENTRANCE FEES	G-D	ENTRANCE FEES	N/A	L	N/A
0.2860	DPR	DPR	DROP INLET RIGHT	G-D		N/A	R	N/A
0.2870	REGU	INCO	STOP	G-D		N/A	R	N/A
0.2930	GUID	DEST	CAMPGROUNDS	G-D	CAMPGROUNDS	N/A	R	N/A
0.2940	CBER	CBER	CURB END RIGHT	G-D		N/A	R	N/A
0.2940	CBEL	CBEL	CURB END LEFT	G-D		N/A	L	N/A
0.2960	CBEL	CBEL	CURB END LEFT	G-D		N/A	L	N/A
0.3030	CBSL	CBSL	CURB START LEFT	G-D		N/A	L	N/A
0.3040	PDSL	PDSL	PAVED DITCH START LEFT	G-D		N/A	L	N/A
0.3110	CBEL	CBEL	CURB END LEFT	G-D		N/A	L	N/A
0.3530	PDSR	PDSR	PAVED DITCH START RI...	G-D		N/A	R	N/A
0.3550	CBER	CBER	CURB END RIGHT	G-D		N/A	R	N/A
0.3550	DPR	DPR	DROP INLET RIGHT	G-D		N/A	R	N/A
0.3630	GUID	GEIN	NO GAS IN SEQUOIA O...	G-D	NO GAS IN SEQUOIA OR KINGS CANYON NATIONAL PARK	N/A	R	N/A
0.4160	CBSR	CBSR	CURB START RIGHT	G-D		N/A	R	N/A
0.4170	PDER	PDER	PAVED DITCH END RIGHT	G-D		N/A	R	N/A
0.4240	INTR	INTR	INTERSECTION RIGHT	G-D	913P ENTRANCE SIGN PARKING PULLOUT	N/A	R	N/A
0.4450	INTR	INTR	INTERSECTION RIGHT	G-D	913P ENTRANCE SIGN PARKING PULLOUT	N/A	R	N/A
0.4510	GUID	DEST	SEQUOIA NATIONAL P...	G-D	SEQUOIA NATIONAL PARK	N/A	R	N/A
0.4670	PDEL	PDEL	PAVED DITCH END LEFT	G-D		N/A	L	N/A
0.5020	PDSR	PDSR	PAVED DITCH START RI...	G-D		N/A	R	N/A
0.5030	CBER	CBER	CURB END RIGHT	G-D		N/A	R	N/A
0.5250	INTL	INTL	INTERSECTION LEFT	G-D	RTE 404 SYCAMORE DRIVE	N/A	L	N/A

Note: When changing options within a specific park, you may need to repeat setting up the video location. This is normal.

Note: When closing the VisiData application, you may receive a message asking to Save Workspace in Database. Always select **NO**.

