

Recreation Operational Condition Assessment (REC OCA) Rating Aids

1. Roads & Parking

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2. [Ramps](#)

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- a) Buildings (all types - gatehouse, restroom, shower house, etc)

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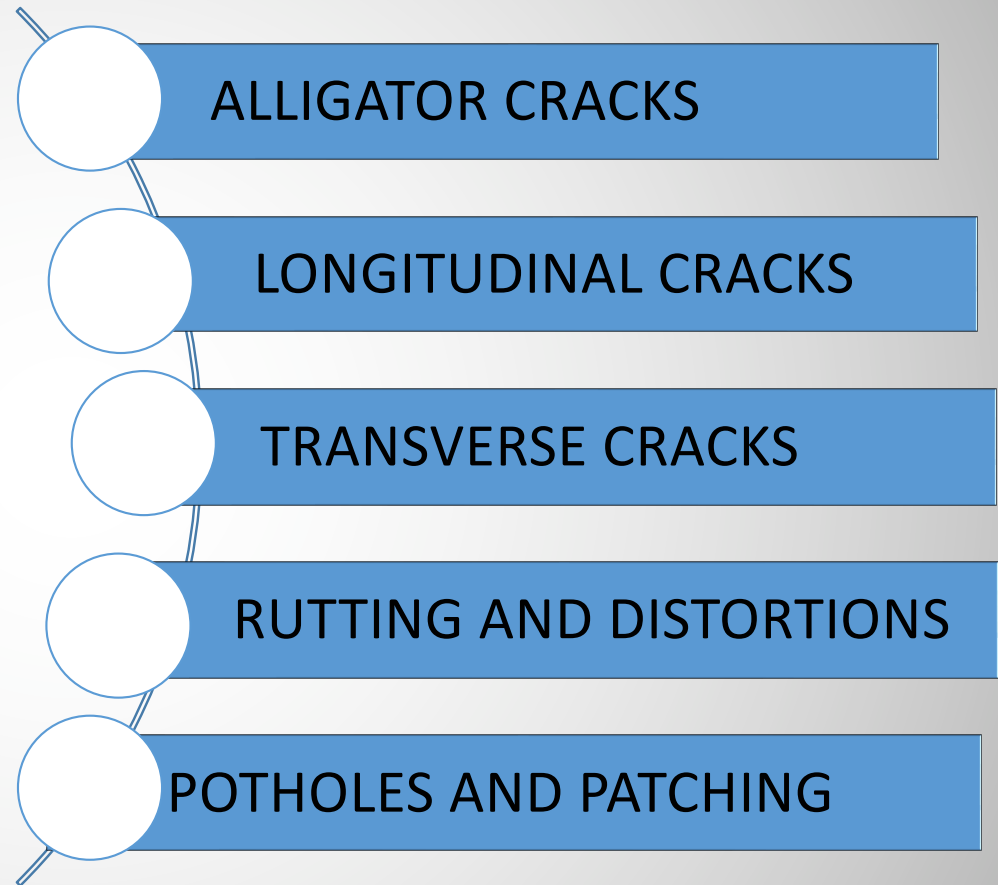
- a) [Traffic Counters](#)
- b) [Retaining Walls, seawalls, gabion, erosion control](#)
- c) [Trails](#)
- d) [Playgrounds/fields/areas](#)



RATING PAVED ROADS



- 1) Each distress is assigned an index based on the severity and/or extent.
- 2) Then the Pavement Condition Rating (PCR) is determined from the **lowest index** (the distress that drives the rating).



LONGITUDINAL CRACKS

Longitudinal cracks run parallel to the pavements centerline.

Rated as follow:

- 1) Identify what the severity is for the Longitudinal cracks (Low or High).
- 2) Identify the extent of those cracks.

RATING CRITERIA		INDEX	
LOW SEVERITY (<= 1/4")	HIGH SEVERITY (> 1/4")	FHWA	OCA
0 - 25% (EXCELLENT)	0 - 5% (EXCELLENT)	97	A
25 - 100% (GOOD)	5 - 20% (GOOD)	90	B
100 - 200% (FAIR)	20 - 50% (FAIR)	73	C
> 200% (POOR 53)	50 - 100% (POOR 53)	53	D
N/A	> 100% (POOR 30)	30	D-

High Severity Cracks Quick Tips

- Can be seen from the windshield when driving the road
- As wide, or wider, than a pencil



A - LOW SEVERITY



B - LOW SEVERITY, 25-100%



B - LOW SEVERITY, 25-100%



C - HIGH SEVERITY, 20-50%



D - HIGH SEVERITY, 50-100%



D - HIGH SEVERITY – ALLIGATOR?



TRANSVERSE CRACKS

Transverse cracks run perpendicular to the pavements centerline.

Rated as follow:

- 1) Is the cracking $> \frac{1}{4}$ " or $< \frac{1}{4}$ "?
- 2) If $> \frac{1}{4}$ ", are they more or less than 30' apart?
- 3) Are the $\frac{1}{4}$ " cracks less than 15' apart?
- 4) Is the cracking present on more than 25% of the route or less than?

RATING CRITERIA	FHWA	OCA
NOT PRESENT	97	A
$< \frac{1}{4}$ " WIDE OR $> \frac{1}{4}$ " SPACED MORE THAN 30' APART	90	B
$> \frac{1}{4}$ " WIDE, SPACING $< 30'$ APART, AND LESS THAN 25 % OF SURFACE	90	B-
$> \frac{1}{4}$ " WIDE, SPACING $< 30'$ APART, AND MORE THAN 25 % OF SURFACE	73	C
$> \frac{1}{4}$ " WIDE, SPACING $< 15'$ APART, AND MORE THAN 25 % OF SURFACE	53	D

Transverse Cracks Quick Tips

- Know the distance between wheels on your vehicle, you will be able to feel high severity transverse cracks and determine if they are more or less than 15" apart

A - NOT PRESENT



B - $< \frac{1}{4}$ ", $> 30'$ APART



B - $> \frac{1}{4}$ ", $< 30'$, $< 25\%$



B - $> \frac{1}{4}$ ", $< 30'$, $< 25\%$



C - $> \frac{1}{4}$ ", $< 30'$, $> 25\%$



D - $> \frac{1}{4}$ ", $< 15'$, $> 25\%$



ALLIGATOR CRACKS

Interconnected cracks, the cracking pattern resembles that of an alligator's skin.

Blocks are less than 1 foot square

Rated as follow:

RATING CRITERIA	FHWA	OCA
NOT PRESENT (EXCELLENT)	97	A
< 5% OF SURFACE (GOOD)	90	B
> 5 - 25% OF SURFACE (FAIR)	73	C
> 25 - 50% OF SURFACE (POOR 53)	53	D
> 50% OF SURFACE (POOR 30)	30	D-

A - NOT PRESENT



B - LESS < 5% OF SURFACE



C - > 5 - 25%



C - > 5 - 25%



D - > 25 - 50%



D - - > 50 %



POTHOLES AND PATCHING

Potholes are the loss of pavement structure caused by weather or inadequate strength of the pavement layers.

Patches are pavement surface repair with HMA or cold asphalt patching material.

Rated as follow:

RATING CRITERIA	FHWA	OCA
NOT PRESENT	97	A
0 - 5% OF SURFACE	90	B
> 5 - 25% OF SURFACE	73	C
> 25 - 50% OF SURFACE	53	D
> 50% OF SURFACE	30	D-

A - NOT PRESENT



B - LESS < 5% OF SURFACE



C - > 5 - 25%



C - > 5 - 25%



D - > 25 - 50%



D - - > 50 %



RUTTING AND DISTORTION

A rut is a longitudinal surface depression along the wheel path.

CLEARLY VISIBLE RUTTING REQUIRING REMEDIATION (Generally ruts >1")

USACE tends to have issue with tree roots causing distortions in roadways.



Or slumping of roadway edges



Rated as follow:

RATING CRITERIA	FHWA	OCA
0 - 5% OF LENGTH	97	A
> 5 - 25% OF LENGTH	90	B
> 25 - 50% OF LENGTH	73	C
> 50% OF LENGTH	53	D

A - NOT PRESENT



> 5 – 25%



> 25 – 50%



B - 0 - 5% OF LENGTH



> 5 – 25%



> 50%



SHORTCUTS TO RATINGS

Quick Ratings

Sometimes roads or parking can be rated without stepping through all the distresses. We call these quick ratings.

- Quick Excellent
- Not Rated
(e.g. construction, flooded, covered in debris)
- Poor/Failed – PCR = 0 / F
(impassable or no longer resembles paved surface)

You are still required to photograph the road, when quick rating!



EM 1110-1-400 – Recreation Facility Design Standards

		Description	Required Feature/Minimum-Maximum Requirement	Comments
	Roads	Lighting	Required at major intersections	
		One-way Road	Paved or hardened surface	
		One-way Road	Minimum paved width = 14'	
		One-way Road	Width of shoulder base on each side = 2'	
		One-way Road	Minimum clearing width for construction = 20'	
		One-way Road	Crowned slope for drainage	
		One-way Road	Minimum overhead clearance = 16'	
		One-way Road	Minimum centerline turning radius for curves and turnouts = 50'	
		One-way Road	No trees within: 3' of pavement; ditches; back slope areas	
		Service Road	Paved or hardened surface	
		Service Road	Width of shoulder base on each side = 1.5'	
		Two-way Road	Paved or hardened surface	
		Two-way Road	Minimum paved width = 24'	
		Two-way Road	Width of shoulder base on each side = 2'	
		Two-way Road	Minimum clearing width for construction = 30'	
		Two-way Road	Crowned slope for drainage	
		Two-way Road	Minimum overhead clearance = 16'	
		Two-way Road	Minimum centerline turning radius for curves and turnouts = 50'	
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	One-way Road	Minimum centerline turning radius for curves and turnouts = 50'	
	One-way Road	No trees within: 3' of pavement; ditches; back slope areas	
	Service Road	Paved or hardened surface	
	Service Road	Width of shoulder base on each side = 1.5'	
	Two-way Road	Paved or hardened surface	
	Two-way Road	Minimum paved width = 24'	
	Two-way Road	Width of shoulder base on each side = 2'	
	Two-way Road	Minimum clearing width for construction = 30'	
	Two-way Road	Crowned slope for drainage	
	Two-way Road	Minimum overhead clearance = 16'	
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		One-way Road	Minimum centerline turning radius for curves and turnouts = 50'	
		One-way Road	No trees within: 3' of pavement; ditches; back slope areas	
		Service Road	Paved or hardened surface	
		Service Road	Width of shoulder base on each side = 1.5'	
		Two-way Road	Paved or hardened surface	
		Two-way Road	Minimum paved width = 24'	
		Two-way Road	Width of shoulder base on each side = 2'	
		Two-way Road	Minimum clearing width for construction = 30'	
		Two-way Road	Crowned slope for drainage	
		Two-way Road	Minimum overhead clearance = 16'	
		Two-way Road	Minimum centerline turning radius for curves and turnouts = 50'	
		Two-way Road	No trees within: 3' of pavement; ditches; back slope areas	



Operational Condition Assessment (OCA) – 1b. Paved Parking

Evaluation Method:

Federal Highways Administration
(FHWA) Simplified Manual
Pavement Condition Rating (PCR)

Distress Rating Criteria:

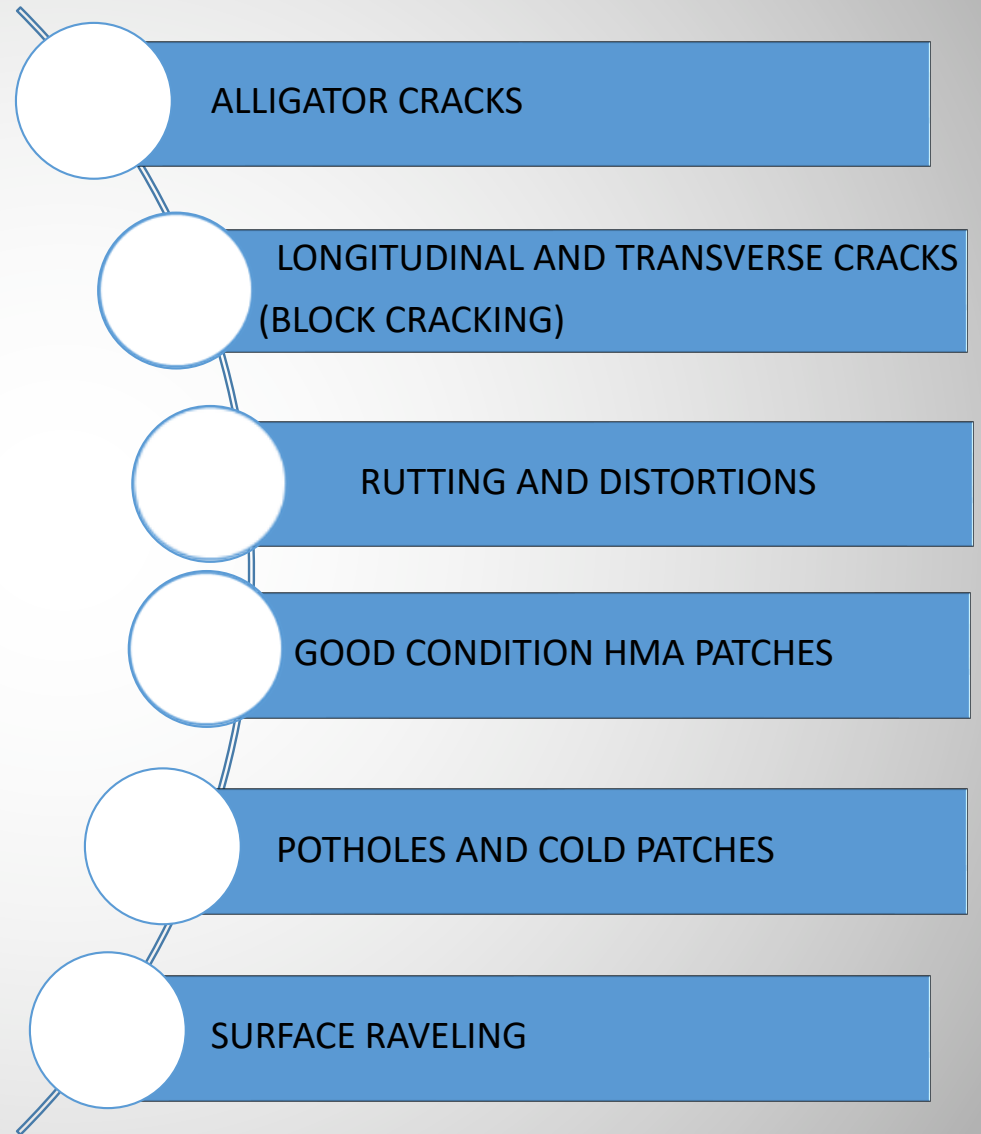
- Alligator Cracking
- Longitudinal/Transverse/Block Cracking
- HMA (hot mix asphalt) Patches
- Potholes/Cold Patches
- Rutting/Distortions
- Surface Raveling



RATING PAVED PARKING



Each distress is assigned an index based on severity and extent.



LONGITUDINAL AND TRANSVERSE CRACKS (BLOCK CRACKING)

Block crack are interconnected cracks that form a square or rectangle. Longitudinal and transverse cracks are “straight” and intersect at a near 90-degree angles.

Rated as follow:

RATING CRITERIA	INDEX
NOT PRESENT / EXCELLENT	97/A
< 1/4" WIDE OR > 1/4" SPACED <u>MORE THAN</u> 12' APART (GOOD-1)	90/B
> 1/4" WIDE, SPACING < 12' APART, AND <u>LESS THAN</u> 25% OF SURFACE (GOOD-2)	90/B-
> 1/4" WIDE, SPACING < 12' APART, AND <u>MORE THAN</u> 25 % OF SURFACE (POOR 53)	53/D

NOT PRESENT / A



< 1/4" AND > 12' / B



> 1/4" AND > 12' / B



> 1/4" AND < 12' AND <25% / B-



> 1/4" AND > 25% / D



> 1/4" AND > 25% / D



ALLIGATOR CRACKS

Interconnected cracks, the cracking pattern resembles that of an alligator's skin.

Rated as follow:

RATING CRITERIA	INDEX
NOT PRESENT (EXCELLENT)	97/A
< 5% OF SURFACE (GOOD)	90/B
5 - 25% OF SURFACE (FAIR)	73/C
25 - 50% OF SURFACE (POOR 53)	53/D
> 50% OF SURFACE (POOR 30)	30/D-

NOT PRESENT



< 5% OF SURFACE



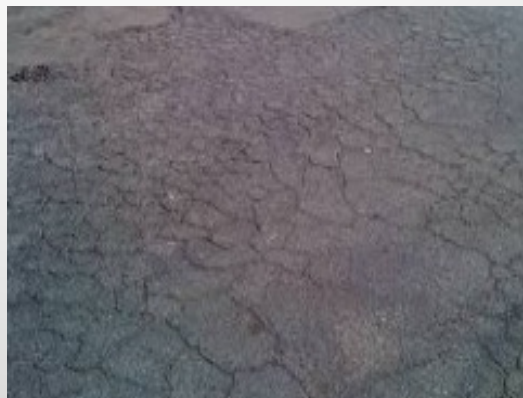
5 – 25%



25 – 50%



> 50%



> 50%



GOOD CONDITION HMA PATCHES

Hot Mix Asphalt is a mixture of binder and well-graded aggregate. HMA patches are used for longer term repair on road surfaces.

The quantity is of HMA patches is only collected when they are in **good condition**.

Rated as follow:

RATING CRITERIA	INDEX
NOT PRESENT OR < 1% OF SURFACE (EXCELLENT)	97/A
< 25% OF SURFACE (GOOD)	90/B
>25% OF SURFACE (FAIR)	73/C

NOT PRESENT



NOT PRESENT



< 25% OF SURFACE



< 25% OF SURFACE



> 25% OF SURFACE



> 25% OF SURFACE



POTHOLES AND COLD PATCHES

Potholes are the loss of pavement structure caused by traffic or inadequate strength of the pavement layers.

Patches are pavement surface repair with cold asphalt patch material.

Rated as follow:

RATING CRITERIA	INDEX
NOT PRESENT (EXCELLENT)	97/A
5% OF SURFACE (GOOD)	90/B
5 - 15% OF SURFACE (FAIR)	73/C
15 - 30% OF SURFACE (POOR 53)	53/D
> 30% OF SURFACE (POOR 30)	30/D-

NOT PRESENT



< 5% OF SURFACE



5 – 15% OF SURFACE



5 – 15% OF SURFACE



15 – 30% OF SURFACE



> 30% OF SURFACE



RUTTING AND DISTORTION

A rut is a longitudinal surface depression along the wheel path. However wheelpaths can be difficult to determine in a parking area.

USACE raters should be alert for tree roots causing distortions in parking lots.



Rated as follow:

RATING CRITERIA	INDEX
NOT PRESENT (EXCELLENT)	97/A
< 1" DEEP & <25% OF SURFACE (GOOD)	90/B
<1" DEEP & >25% OF SURFACE (FAIR)	73/C
1-2" DEEP & >25% OF SURFACE (POOR 53)	53/D
>2" DEEP & >25% OF SURFACE (POOR 30)	30/D-

NOT PRESENT



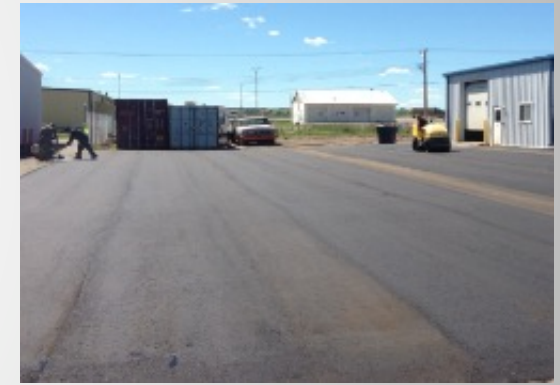
< 1" DEEP & < 25%



< 1" DEEP & < 25%



< 1" DEEP & > 25%



1 – 2" DEEP & >25%



> 2" DEEP & > 25%



SURFACE RAVELING AND BLEEDING

Raveling is the loss of fine (sand) and coarse (gravel) aggregates in asphalt. Typically due to loss of bonding between the aggregate and the asphalt binder.

Bleeding is asphalt binder that was pushed to the surface usually during hot weather.

If there has been recent rain, look for aggregate collecting in low spots, cracks or parking blocks.



Rated as follow:

RATING CRITERIA	INDEX
NOT PRESENT OR < 1% OF SURFACE (EXCELLENT)	97/A
< 25% OF SURFACE (GOOD)	90/B
25 - 100% OF SURFACE (FAIR)	73/C

NOT PRESENT



NOT PRESENT



BLEEDING



RAVELING



RAVELING



BLEEDING

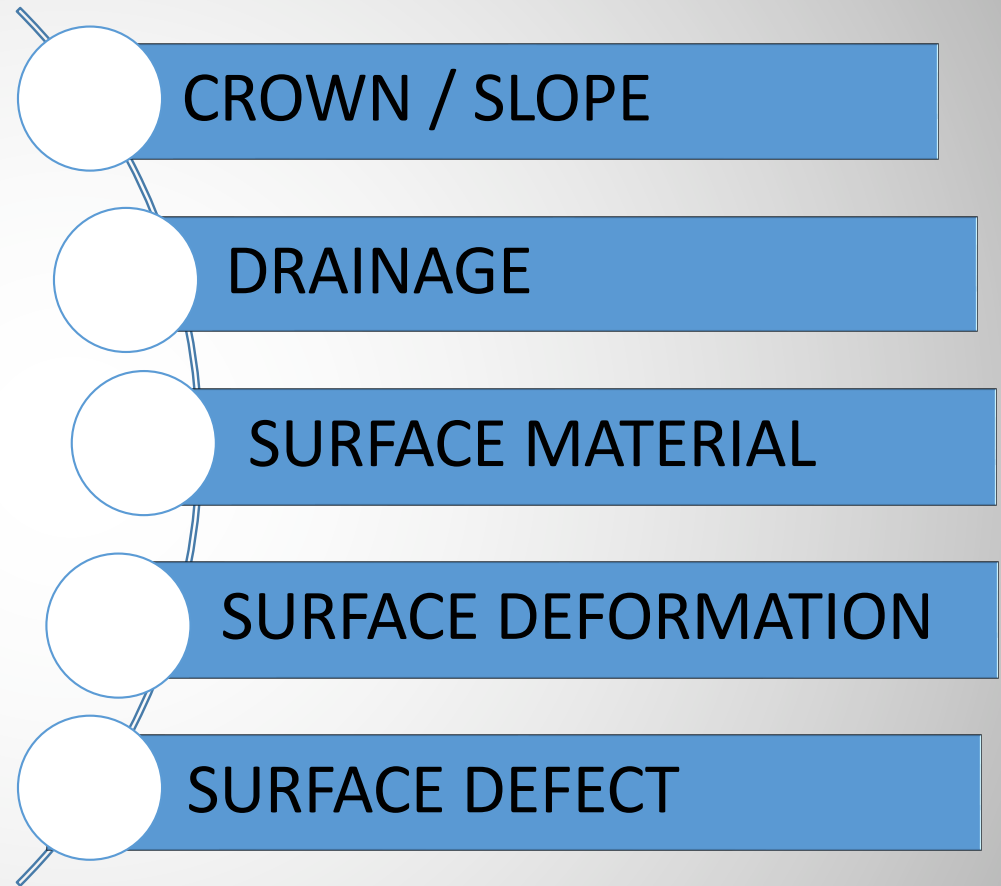


EM 1110-1-400 – Recreation Facility Design Standards

	Description	Required Feature/Minimum-Maximum Requirement	Comments
Parking Lot / Parking Area	Inside turning radius	30' Minimum	
	Lighting	Required	
	One-way Maneuvering aisles & access areas	15' Minimum	
	Parking Area	No more than 500' from activity served	
	Parking Grade	Grade no more than 8%	
	car space, standard-angled	9'x18'	
	car space, standard-parallel	8'x20'	
	car space, standard-perpendicular	9'x16'	
	launch ramp space, angled pull-through	10'x42'	
	oversize vehicle-angled	10'x40'	
	oversize vehicle-parallel	10'x40'	
	Two-way Maneuvering aisles & access areas	24' Minimum	
	UA, all types	Add 5' to minimum width for all types of spaces	



UNSURFACED DISTRESSES FOR ROADS AND PARKING



- 1) The crown/slope and drainage are the most important factors when rating unpaved roads and parking
- 2) When unpaved roads or parking do not drain properly, they deteriorate rapidly.

CROWN / SLOPE

The crown/slope is the road cross-section, typically measured in percent or expressed as inches of vertical change per foot of horizontal distance.

Rated as follow:

RATING CRITERIA	INDEX
CENTERLINE IS VISIBLY HIGHER THAN THE SIDES NEW ROAD (EXCELLENT)	5/A
CENTERLINE IS HIGHER THAN THE SIDES NOT A NEW ROAD (GOOD)	4/B
CENTERLINE IS MODERATELY HIGH ROAD COULD USE GRADING (FAIR)	3/C
ROAD IS FLAT / NO SLOPE, WATER PONDING EVIDENT, IMPROVEMENT IS NEEDED (POOR)	2/D
ROAD IS PRACTICALLY IMPASSABLE REQUIRES RECONSTRUCTION (FAILED)	1/F

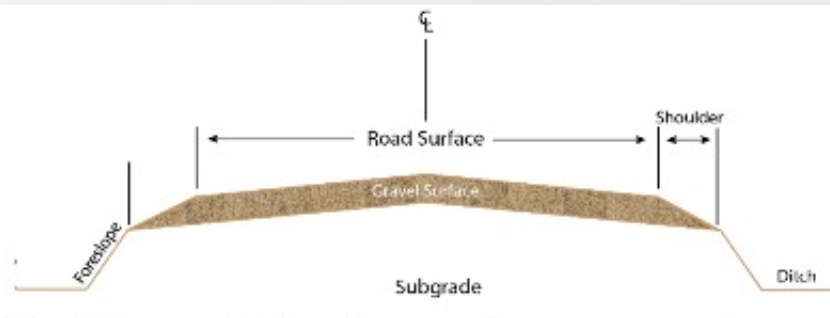


Figure 1: The components of the roadway cross section.

ROADWAY CROSS SECTION

RATED – EXCLELENT (5) A



RATED – GOOD (4) B



RATED – FAIR (3) C



RATED – FAIR (3) C



RATED – POOR (2) D



RATED – FAILED (1) F



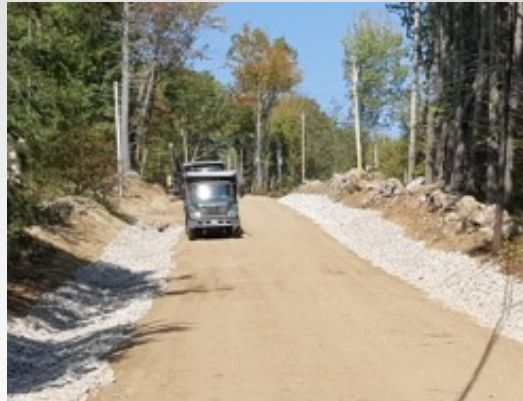
DRAINAGE

Roadside ditches and culverts must be able to handle surface water flow. Without good drainage water will pond on the roadway.

Rated as follow:

RATING CRITERIA	INDEX
100% ADEQUATE DITCHES / CLEAN (EXCELLENT)	5/A
75% ADEQUATE DITCHES / MINOR DEBRIS (GOOD)	4/B
50% ADEQUATE DITCHES / CLEANING NEEDED (FAIR)	3/C
25% ADEQUATE DITCHES / PARTLY FULL (POOR)	2/D
NO DITCHES / FULL OR DAMAGED (FAILED)	1/F

RATED – EXCELLENT (5) A



RATED – GOOD (4) B



RATED – GOOD (4) B



RATED – FAIR (3) C



RATED – POOR (2) D



RATED – FAILED (1) F



SURFACE MATERIAL

Unsurfaced roads require an adequate layer of material to carry and distribute the loads to the subsoils. A minimum layer of 6" is normally required.

Rated as follow:

RATING CRITERIA	INDEX
ADEQUATE GRAVEL AND SAND MIXED (EXCELLENT)	5/A
GOOD LAYER / MINOR LOOSE MATERIAL (GOOD)	4/B
FAIR LAYER / SOME SUBSOIL VISIBLE (FAIR)	3/C
POOR LAYER / SUBGRADE VISIBLE (POOR)	2/D
SOFT / LITTLE AGGREGATE, SUBGRADE VISABLE THROUGHOUT, OVERGROWN VEGETATION (FAILED)	1/F

RATED – EXCELLENT (5) A



RATED – GOOD (4) B



RATED – FAIR (3) C



RATED – FAIR (3) C



RATED – POOR (2) D



RATED – FAILED (1) F



SURFACE DEFORMATION

Surface deformation consist of “washboard”, “potholes” and “ruts”. They are more prevalent under heavy traffic and under loose aggregate conditions.

Depth of the deformation tends to drive the rating when the area of deformation is greater than the percent's below.

Rated as follow:

RATING CRITERIA	INDEX
NOT PRESENT (EXCELLENT)	5/A
SLIGHT DEFORMATIONS (GOOD)	4/B
<2" DEFORMATIONS / 10 – 25% OF SURFACE (FAIR)	3/C
<4" DEFORMATIONS / 10 – 25% OF SURFACE(POOR)	2/D
>4" DEFORMATIONS / >25% OF SURFACE (FAILED)	1/F

RATED – EXCELLENT (5) A



RATED – GOOD (4) B



RATED – GOOD (4) B



RATED – FAIR (3) C



RATED – POOR (2) D



RATED – FAILED (1) F



SURFACE DEFECTS (DUST AND LOOSE AGGREGATE)

Roadway surface defects refers to dust and loose aggregates. Good material has a combination of large aggregate, sand, and fine material or binder and holds up better to traffic and environmental factors. Look for piling up outside of the vehicle routes or encroachment of vegetation.

Rated as follow:

RATING CRITERIA	INDEX
DUST VEGETATION NOT PRESENT (EXCELLENT)	5/A
DUST / MODERATE LOOSE MATERIAL (GOOD)	4/B
MODERATE DUST / LOOSE MATERIAL, VEGETATION ENCROACHING ALONG SHOULDER (FAIR)	3/C
SEVERE LOOSE MATERIAL, VEGETATION ENCROACHING IN ROADWAY (POOR)	2/D
LITTLE TO NO MATERIAL / OVERGROWN VEGETATION (FAILED)	1/F

RATED – EXCLELENT (5) A



RATED – GOOD (4) B



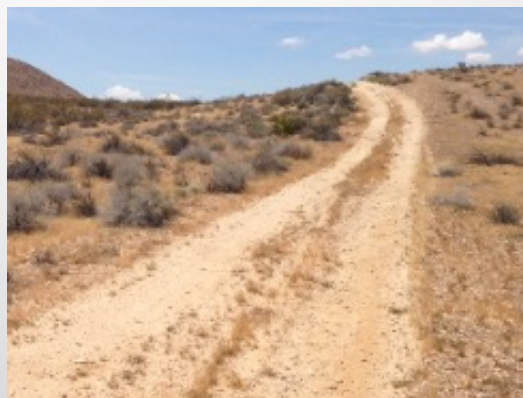
RATED – GOOD (4) B



RATED – FAIR (3) B



RATED – POOR (2) D



RATED – FAILED (1) F



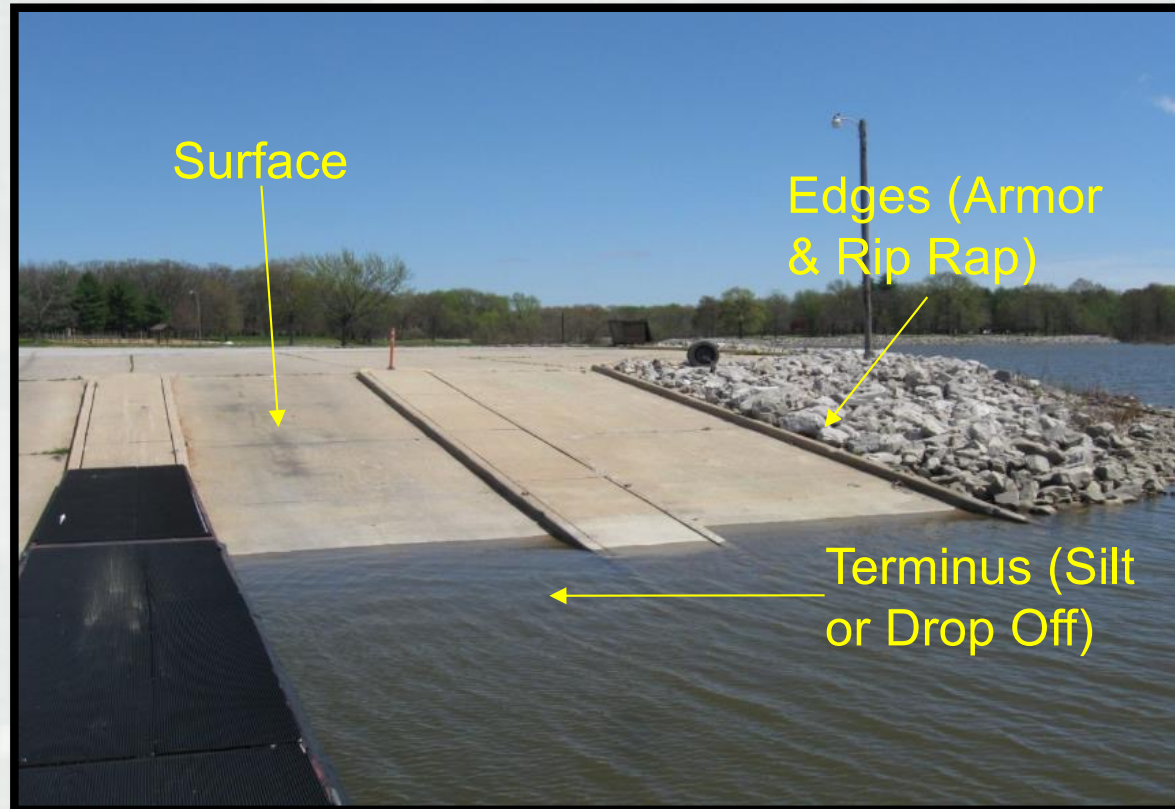
Operational Condition Assessment (OCA) – Ramps

2.a: Boat Ramps

Definition: Launching ramps or lanes designed and maintained to provide convenient, safe access to public waters

Facility Components:

1. Surface
2. Edges: Armor & Protection(rip rap, etc)
3. Terminus (silt, sediment, or drop off)

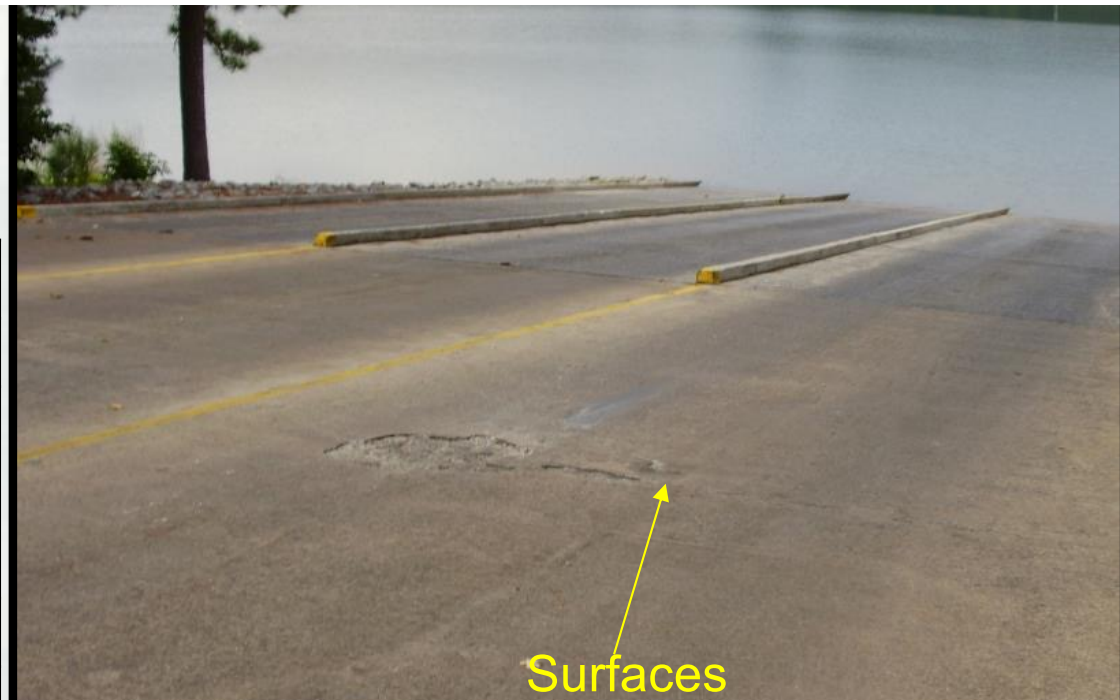


Component Category:

- Surfaces

Hardened surface material designed for launching boats: concrete, asphalt, gravel, etc

No damage or deterioration	A
Transitioning	A -
GOOD: Few small cracks may be present, slight chipping of concrete or asphalt, good aggregate. <20% of Surface	B
Transitioning	B -
FAIR: Surface has more numerous and larger cracks. Chips or potholes present; gravel or aggregate is missing or thin. 20-50% of surface	C
Transitioning	C -
POOR: <u>Major</u> surface cracking and chipping ramp suffers from displaced sections, rebar may be exposed; 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of impacted	F/C F



Component Category:

- Edges: Armoring & Protection

Rip rap, rubble or stone placed on edges to prevent against motor scouring & wave action erosion

No damage or deterioration	A
Transitioning	A -
GOOD: Rip rap protection good, may be very minor erosion occurring on edges < 20% of impacted	B
Transitioning	B -
FAIR: Rip rap protection is inadequate or beginning to fail. Erosion on edges and undercutting slab. 20-50% impacted	C
Transitioning	C -
POOR: riprap protection needs <u>significant</u> replenishment or is absent; edges of ramp are significantly undercut by erosion and edges are cracked and broken. 50-80% impacted	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of impacted	F/CF

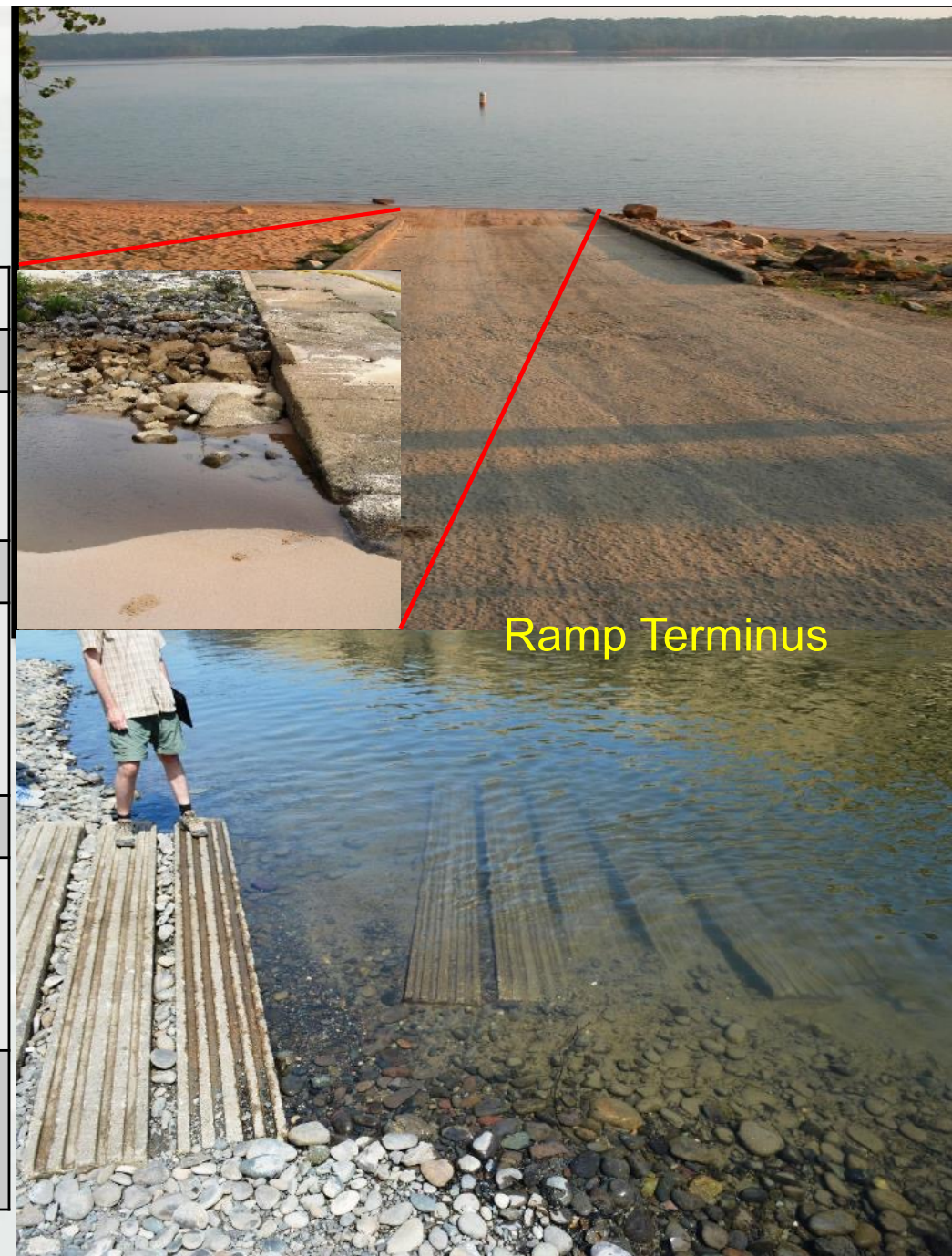


Component Category:

- Ramp terminus:

End of the ramp free from impediments such as sediment, siltation, scour holes, drop offs or obtrusive vegetation

No damage or deterioration	A
Transitioning	A -
GOOD: No drop off or sediment present at end of the ramp. Very little vegetation encroaching near sides/end. <20% of Surface	B
Transitioning	B -
FAIR: Drop off or sediment present at end of the ramp may impair use. Vegetation is encroaching near sides and end. 20-50% impacted	C
Transitioning	C -
POOR: Significant drop-off is present at end of ramp or sediment is over the end of the ramp. Vegetation or debris frequently causes the ramp to be unusable. 50-80% impacted	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced. > 80% of impacted	F/CF



EM 1110-1-400 – Recreation Facility Design Standards

	Description	Required Feature / Minimum Requirement	Comments
Launch Ramp / Boat Ramp	Width	Minimum lane width of 15'	
	Slope	Minimum slope of 12 degrees Maximum slope of 16 degrees	
	# of Lanes	Minimum of two lanes for standard launch ramps, with actual number of lanes determined by usage demand	
	General Considerations	Access road to launch ramps require a deliberate turn from the approach onto the ramp. If a deliberate turn is not possible, use traffic control devices such as barricades, traffic islands, or berms to alert drivers that access roads are in direct alignment with the ramp	
	Turn Radius	A vertical curve (minimum 15') constructed at the top of the ramp to: - Enhance the driver's vision while backing a trailer - Prevent dragging on the ramp surface at the juncture of the ramp apron	
	Apron	Launch ramp and ramp approach turnaround apron constructed of reinforced concrete: Minimum thickness of 6" over a 6" base of compacted aggregate	
	Surface material	A finished launch ramp surface of 1"x1" "V" grooves to provide maximum traction and make the surface self-cleaning: - Aligned at 60 degrees to the longitudinal axis - "V" groove direction alternated from lane to lane to aid in launch lane delineation	
	Dock	Courtesy Docks provided	
	UA	UA loading platform or other UA boarding means provided	
	Lighting	Area lighting illuminates the launch ramp, parking area, and tie-down area	
	Restroom	Restroom provided within 500'	
	Lighting	Required	
	Parking Spaces - Number & Type	30 oversize & 5 standard each launch lane	

Operational Condition Assessment (OCA) – Ramps

2.b: Courtesy Dock:

Definition: Facility where the sole purpose is loading/off loading boats, usually associated with a boat ramp. If sole purpose is for fishing it is a fishing pier/dock listed under structures.

Types: Floating, fixed, stationary, or moveable

Defining features:

- Floatation
- Pilings/Posts/Poles
- Decking
- Railings & Hardware



Component Category:

- Floatation

No damage or deterioration	A
Transitioning	A -
GOOD: Floatation material is present and secure. Very few punctures or holes in floats. <20% impacted	B
Transitioning	B -
FAIR: Flotation material is loose with holes and punctures in material, not floating as high as designed. 20-50% impacted	C
Transitioning	C -
POOR: Flotation material is very loose or missing. Holes and punctures in material causing floats to list or sink. 20-50% of surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of impacted	F/ CF
NOT APPLICABLE	NA

EXCLELENT (A)



GOOD (B)



FAIR (C)



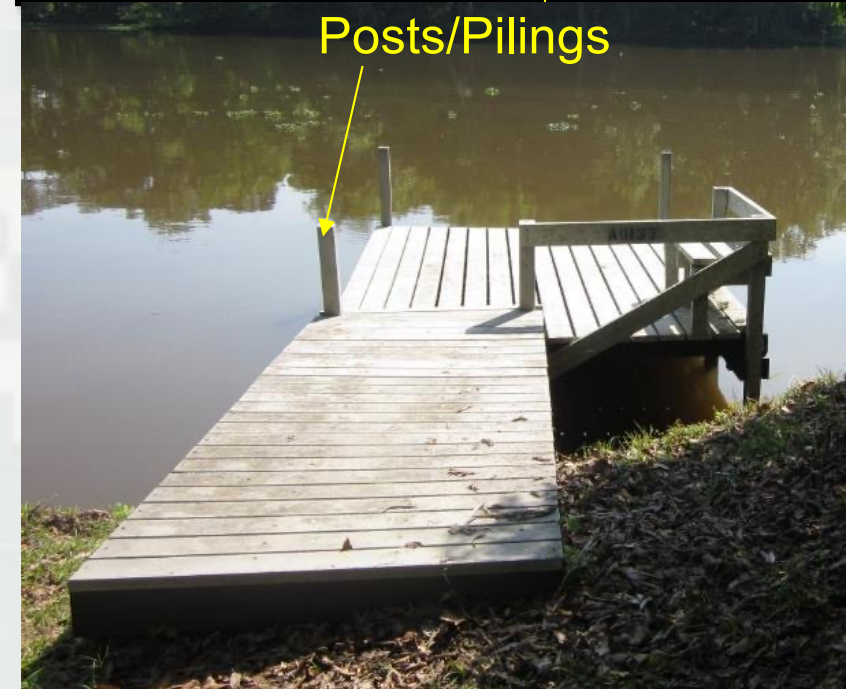
POOR (D)



Component Category:

- Pilings/Posts

No damage or deterioration	A
Transitioning	A -
GOOD: Posts or pile material appears structurally sound and has very little deterioration, rust, etc. <20% impacted	B
Transitioning	B -
FAIR: Posts or pile material is moderately deteriorated and may have negative impact on holding strength. 20-50% impacted	C
Transitioning	C -
POOR: Posts or pile material is significantly bent, broken, rusted or otherwise deteriorated. 20-50% of surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of impacted	F/ CF
NOT APPLICABLE	NA

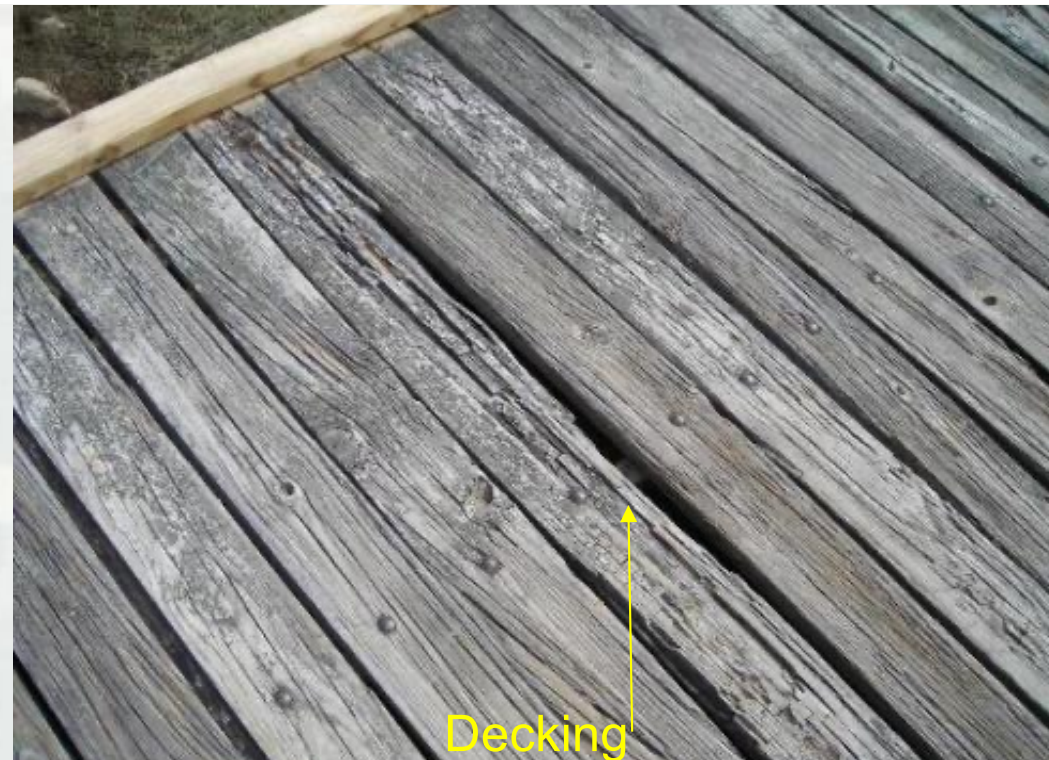


Posts/Pilings

Component Category:

- Decking

No damage or deterioration	A
Transitioning	A -
GOOD: Decking is secure with very few small cracks present < 20% of surface impacted	B
Transitioning	B -
FAIR: Decking is loose or cracked with a few missing pieces. Some warped or bent pieces. 20-50% of surface	C
Transitioning	C -
POOR: Decking needs <u>significant</u> replenishment or replacement; loose, missing or splintered decking cause potential hazards. 50-80% impacted	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of impacted	F/CF



Component Category:

- Railings & Hardware:

No damage or deterioration	A
Transitioning	A -
GOOD: Paint/stain slightly faded, minor cracking or chipping with no water intrusion. Cleats and tie downs are in place. Structural members and anchorages show very little rust. <20% of Surface	B
Transitioning	B -
FAIR: Handrail showing moderate signs of rot, rust, cracking or deterioration. Cleats and tie downs are loose or busted. Structural members and anchorages showing moderate amount of rusting 20-50% impacted	C
Transitioning	C -
POOR: Handrail is loose and showing significant signs of deterioration, to the point where failure is possible. Cleats and tie downs are missing. Structural members and anchorages show significant signs of rust and deterioration, 50-80% impacted	D
FAILING/FAILED: Severe deterioration of all sub-components, should be closed or replaced > 80% of impacted	F/ CF
NOT APPLICABLE	NA



BUILDING STRONG®

EM 1110-1-400 – Recreation Facility Design Standards

	Description	Required Feature/Minimum-Maximum Requirement	Comments
Courtesy Dock	Height	Maximum height of the deck above the water = 30"	
	Construction	Rust-resistant construction	
	Surface material	Non-skid decking surface	
	Construction	Rot-resistant construction materials	
	Floatation	Fully encapsulated units resistant to oil, gas, marine organisms, and ultraviolet light	
	Floatation	Flotation units do not become waterlogged if punctured	
	Gangway	Gangway minimum width = 48"	
	Gangway	Gangway handrails (34" high) located on both sides if slope greater than 1:20 for UA, Guardrails 42" high with an intermediate rail 21" high	
	Load	Capability to withstand a minimum live load of 50 psf	
	Gangway	Maximum gap height between the structure and the gangway lip not to exceed 1"	



Operational Condition Assessment (OCA) – Buildings & Structures

3.a: Buildings (all types)

Constructed Asset: may be located in any PSA subtype (Campgrounds – access points)

Types: Restrooms, Showerhouse, Gatehouse, Entrance Station, Fish Cleaning Station, etc

Defining features: 4 walls & a roof

Facility Components:

1. Roof
2. Walls & Exterior Surfaces
3. Doors & Windows
4. Foundation/Structure
5. Interior Surfaces & Fixtures



Component Category:

• Roof

Upper covering of a building: asphalt, metal, concrete, wood shake, tile, vinyl, rolled/flat.

No damage or deterioration	A
Transitioning between	A -
GOOD: Minor damage, deterioration or repairable problems visible. <10% of Surface impacted	B
Transitioning between	B -
FAIR: some damage to or deterioration of roof covering, ie: dents, rust, cracked and peeling paint, loose, damaged or curling shingles. Failure is becomes evident 10-50% of Surface	C
Transitioning between	C -
POOR: significant damage to or deterioration of roof covering. 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/C F



Component Category:

• Walls & Exterior Surfaces

Siding or cladding surfaces for the outside of a building: wood, board/batten, brick/block/stone, stucco, vinyl, metal, composite, concrete

No damage or deterioration	A
Transitioning	A -
GOOD: Paint slightly faded, minor cracking or chipping with no water intrusion < 20% of Surface	B
Transitioning	B -
FAIR: Paint moderately faded, larger cracking or chipping with first signs of water intrusion 20-50% of Surface	C
Transitioning	C -
POOR: Significant paint loss or fading. Cracked, chipped or rot allows apparent water intrusion penetrating into frame 50-80% of Surface	D
FAILING/FAILED: Severe peeling and paint loss, severe rot and water extrusion > 80% of Surface	F/ CF



BUILDING STRONG®

Distress Category:

• Doors & Windows

Hinged, sliding or revolving barriers to entrance. Includes frames and jams

No damage or deterioration	A
Transitioning	A -
GOOD: doors and windows all work as designed; doors have minor damage, ie: dents, scratches; screens have very small tears or holes < 20% of Surface Distress	B
Transitioning	B -
FAIR: one or more doors or windows do not operate smoothly; doors or jams are rusting or warping; one to two windows are cracked; screens are torn and/or bent 20-50% of Surface	C
Transitioning	C -
POOR: one or more doors or windows do not operate; doors are severely rusted, dented, or sprung; one or more windows are badly cracked or broken; screens are severely damaged or missing 50-80% of Surface	D
FAILING/FAILED: Severe rot and water extrusion. Inoperable due to broken parts or > 80% of Surface	F/C F



BUILDING STRONG®

Component Category:

• Foundation & Structural

Foundations, Columns, Beams, Structural Walls

No damage or deterioration	A
Transitioning	A -
GOOD: Minor shrinkage or expansion cracks in floors and foundations, no disruptions of service. < 20% of Surface	B
Transitioning	B -
FAIR: Settlement cracks creating problems for certain equipment. Distinct signs of leaking or water penetration into building 20-50% of Surface	C
Transitioning	C -
POOR: Foundations, columns, beams or structural walls showing significant signs of failure or distress such as settling, subsistence, cracking or crushing. 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/C F



BUILDING STRONG®

Component Category:

• Interior Surfaces & Fixtures

Floor coverings, ceilings, partitions, walls, electric and plumbing fixtures, mirrors, etc

No damage or deterioration	A
Transitioning	A -
GOOD: floor covering somewhat scratched or marred; ceiling surface smooth may have few small cracks or holes; some damage to walls ie: scratches, small holes, small cracks; electric and plumbing fixtures intact, counters, porcelain fixtures and partitions, with little stained or discolored; < 10% of Surface	B
Transitioning	B -
FAIR: floor covering worn, cracked or chipped; damage to ceilings ie: watermarks, cracks, holes, some loose surfacing material, some trim missing; damage to walls ie: loose wall covering, trim missing, larger holes, gouges or cracks; electric and plumbing fixtures chipped, cracked, leaking or not completely functioning as designed; counters and porcelain fixtures chipped or cracked; partitions loose or scratched 10-50% of Surface	C
Transitioning	C -
POOR: floor covering significantly worn, broken or coming up; ceilings have holes in them or are sagging; significant damage to walls ie: seriously marred surfaces, vandalism; electric and plumbing fixtures broken, missing or inoperable; counters, porcelain fixtures and partitions broken or missing; 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/CF



EM 1110-1-400 – Recreation Facility Design Standards

	Description	Required Feature/Minimum-Maximum Requirement	Comments
Restrooms and Shower Houses (Waterborne)	Dressing Area	For shower houses, An individual dressing area for each shower stall (a bench, shelf, and clothing hooks)	
	Drinking Fountain	1 required for each water borne facility	
	Electric Hand dryer/Paper Towels	In campground restrooms & Shower houses, electric hand dryer or paper towel dispenser, 1 every 2 sinks	
	Floors	Comprised o f non-skid materials, such as non-skid porcelain or ceramic tile, poured-in-place epoxy flooring, or any other durable waterproof material	
	Floors	Sloped a minimum of 1/4"/foot toward shower and floor drains for quick and complete drainage of water	
	Floors	Color choice visually separates floors from walls, partitions, and other interior features	
	Floors	Floor and wall have a 70% contrast at the base	
	UA	Universally Accessible	
	Partitions	Toilet Partition constructed from solid, vandal-resistant panels	
	Latches	Privacy latches for stalls and dressing areas	
	Lighting	Lighting	
	Sinks	Sinks	
	Water	Potable water faucet	
	Trash Receptacles	Trash Receptacle	
	General Considerations	Urinals for 50% of men's toilet fixtures at non-unisex facilities	
	General Considerations	Provide 50% more toilet fixtures for women than men at non-unisex facilities	
	Ventilation	Minimum ventilation rate of 2 cfm per square foot	
	Exterior	Exterior of the structure in keeping with the theme of the recreation area	
	GFCI Electrical Outlets	In campground restrooms & Shower houses, GFCI protected electrical outlets, 1 per every 2 sinks	

EM 1110-1-400 – Recreation Facility Design Standards

	Description	Required Feature/Minimum-Maximum Requirement	Comments
Restrooms and Shower Houses (Waterborne) cont.	Interior Finish	Surfaces without a waterproof impenetrable finish painted with permanent waterproof paint, facilitating removal of graffiti	
	Lighting (Exterior)	Vandal-resistant, bug-proof exterior lighting provided	
	Lighting (Interior)	A minimum of two light sources to accommodate UA. May be accomplished with windows on two walls or a combination of sources, i.e. electric lighting, skylight, or window	
	Lighting (Interior)	Light and color sufficient on floor surfaces that objects are visible to all users	
	Mirror	In campground restrooms & Shower houses, Mirror, vandal proof, 1 above each sink	
	Parking Spaces - Number & Type	# of standard spaces that will fit into area - parking area equal to length of restroom facility at a minimum	
	Shelving	In campground restrooms & Shower houses, shelving above sinks and clothing hooks nearby	
	Shelving	In shower houses, shelf for toiletries in shower stall	
	Shower Unit	For shower houses, Provide a minimum of one fully equipped (privacy latch, toilet fixture, showerhead, sink, mirror, hand dryer) unisex shower unit at each campground	
	Sinks (campground)	In campground restrooms & Shower houses, sinks inserted into counters for increased user convenience	
	Stool	In day use area restrooms, 1 stool per gender, per 30 parking spaces	



EM 1110-1-400 – Recreation Facility Design Standards

	Description	Required Feature/Minimum-Maximum Requirement	Comments
Entrance Station / Gatehouse	Design	Designed to promote customer recognition of the park entry. Visual indicators besides the building itself may include items such as park entrance signs and gated access points	
	Design	Designed for ease in collecting fees and distributing information to park customers. This includes provision of a customer service parking area located out of the flow of traffic. The parking area shall be sized to accommodate full-length RV units plus towed units	
	UA	Universally Accessible	
	Design	Provide an outside service window, a customer walk-in area, or both	
	Design	Designed so that the exterior appearance of the entrance station building is in keeping with the theme of the recreation area	
	General Considerations	Facility finishes, both interior and exterior, are selected for low maintenance and a high level of durability.	
	Location	Placed to provide one single point of entry into area	
	Location	Located to accommodate incoming and outgoing traffic flows, as dictated by local conditions including terrain and traffic volume	
	Safety & Security	Provide for secure placement of a vault or safe	
	Safety & Security	Designed to accommodate daily, seasonal, or partial park closure for safety, security and economy	
	Worker Accommodations	Universally Accessible	
	Worker Accommodations	Provide interior work area sized to accommodate all required equipment (computers, printers, radios, weather radios, safes, etc.) and provide adequate workspace	
	Worker Accommodations	Provide adequate power and lightning/surge protection for HVAC, computer, and communication equipment	
	Worker Accommodations	Provide a heating and cooling system adequate to protect computer equipment and provide comfort for attendants and customers.	
Fish Cleaning Station	Lighting (Exterior)	Exterior lighting illuminates the area within a 50' radius of the fish cleaning station with an outer edge minimum of 5 lux, increasing to 50 lux next the structure	
	Lighting (Interior)	Light levels ranging from 500 to 700 lux	
	Parking Spaces - Number & Type	1 oversize every two fish cleaning spaces	
	Water	Potable water available	

Operational Condition Assessment (OCA) – Structures

4a. Fishing Piers/dock/jetty

Definition: Facility with primary purpose is casting, fishing or viewing. If purpose is tied to the boat ramp and loading/unloading vessels, rate as courtesy dock.

Types: Floating dock, fixed pier, jetty or bulkhead

Defining features:

Facility Components:

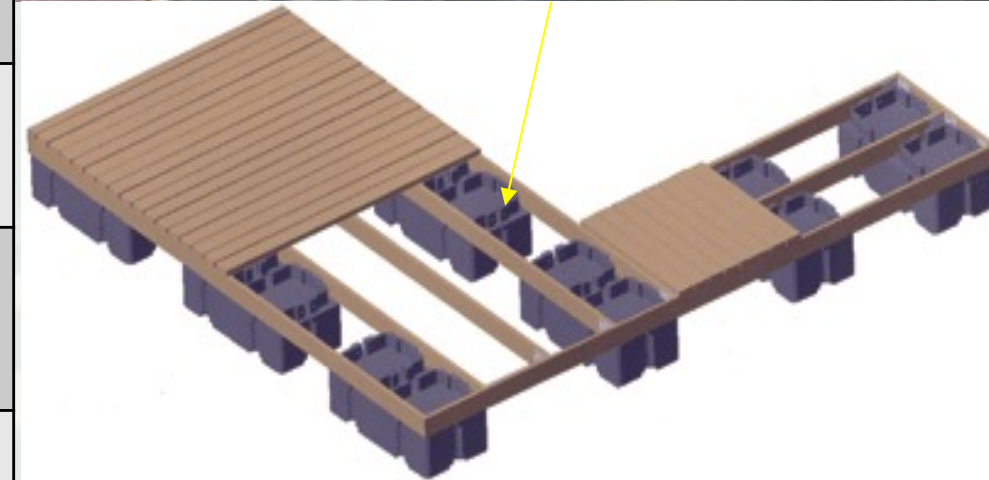
1. Floatation
2. Pilings/Posts/Beams
3. Decking
4. Railings & Hardware



Component Category:

- Floatation**

No damage or deterioration	A
Transitioning	A -
GOOD: Floatation material is present and secure. Very few punctures or holes in floats. <20% impacted	B
Transitioning	B -
FAIR: Flotation material is loose with holes and punctures in material, not floating as high as designed. 20-50% impacted	C
Transitioning	C -
POOR: Flotation material is very loose or missing. Holes and punctures in material causing floats to list or sink. 20-50% of surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of impacted	F/C F
NOT APPLICABLE	NA



Component Category:

- Pilings/Posts

Note: structural concerns should be noted and passed along to qualified experts for further inspection to whether the asset can be deemed safe

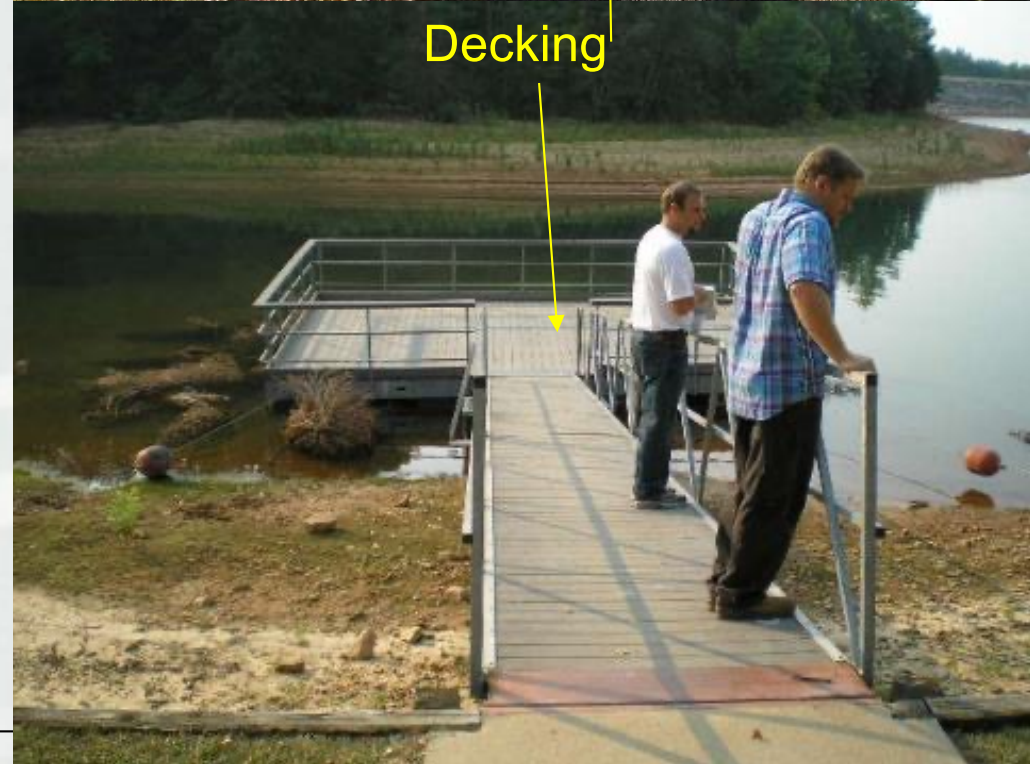
No damage or deterioration	A
Transitioning	A -
GOOD: Posts or pile material appears structurally sound and has very little deterioration, rust, etc. <20% impacted	B
Transitioning	B -
FAIR: Posts or pile material is moderately deteriorated and may have negative impact on holding strength. 20-50% impacted	C
Transitioning	C -
POOR: Posts or pile material is significantly bent, broken, rusted or otherwise deteriorated. 20-50% of surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of impacted	F/ CF
NOT APPLICABLE	NA



Component Category:

- Decking

No damage or deterioration	A
Transitioning	A -
GOOD: Decking is secure with very few small cracks present < 20% of surface impacted	B
Transitioning	B -
FAIR: Decking is loose or cracked with a few missing pieces. Some warped or bent pieces. 20-50% of surface	C
Transitioning	C -
POOR: Decking needs <u>significant</u> replenishment or replacement; loose, missing or splintered decking cause potential hazards. 50-80% impacted	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of impacted	F/CF



Component Category:

- Railings & Hardware:

No damage or deterioration	A
Transitioning	A -
GOOD: Paint slightly faded, minor cracking or chipping with no water intrusion Structural members and anchorages show very little rust. <20% of Surface	B
Transitioning	B -
FAIR: Handrail showing moderate signs of rot, rust, cracking or deterioration. Structural members and anchorages showing moderate amount of rusting or deterioration 20-50% impacted	C
Transitioning	C -
POOR: Handrail is loose and showing significant signs of deterioration, to the point where failure is possible Structural members and anchorages show significant signs of rust and deterioration 50-80% impacted	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of impacted	F/CF
NOT APPLICABLE	NA



EM 1110-1-400 – Recreation Facility Design Standards

	Description	Required Feature/Minimum-Maximum Requirement	Comments
Fishing Pier / Dock	Size	Sized to carrying capacity and demonstrated need	
	Railing	Safety railing installed, 42" high with a mid-rail 21" high, with lower sections dispersed throughout for UA	



Operational Condition Assessment (OCA) –Structures

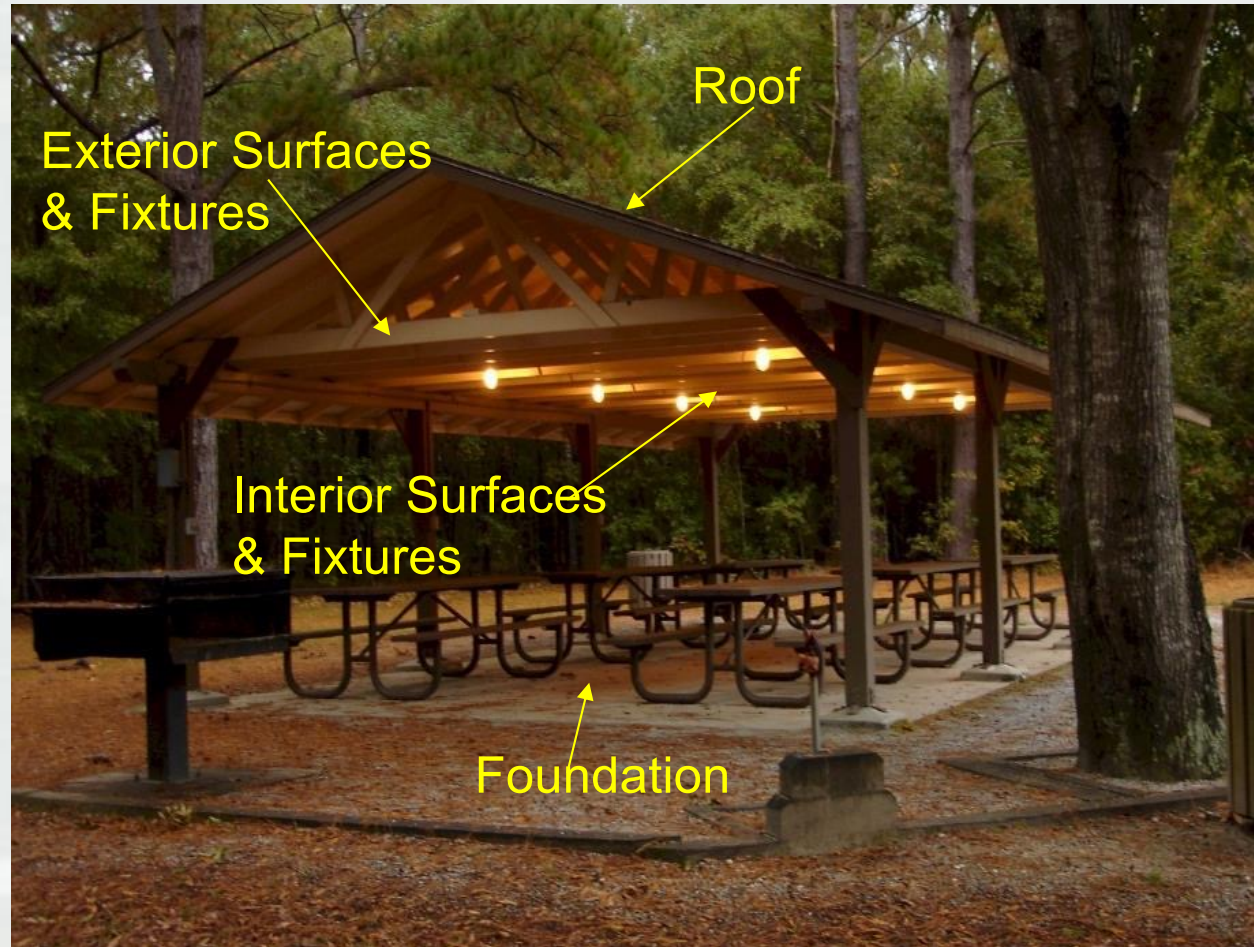
4b. Group/Picnic Shelters

Definition: Facility with primary purpose of hosting group activity such as picnics, reunions, weddings, weigh ins or other events.

Defining features: May have a roof and 1-3 walls. If 4 walls and a roof, rate as a building

Facility Components:

1. Roof
2. Exterior Surfaces & Fixtures
3. Foundation/Structure
4. Interior Surfaces & Fixtures



Component Category:

- **Roof**

Upper covering of a building: asphalt, metal, concrete, wood shake, tile, vinyl, rolled/flat.

No damage or deterioration	A
Transitioning between	A -
GOOD: Minor damage, deterioration or repairable problems visible. <10% of Surface impacted	B
Transitioning between	B -
FAIR: some damage to or deterioration of roof covering, ie: dents, rust, cracked and peeling paint, loose, damaged or curling shingles. Failure is becomes evident 10-50% of Surface	C
Transitioning between	C -
POOR: significant damage to or deterioration of roof covering. 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/CF



Component Category:

- Exterior Surfaces

Siding or cladding surfaces for the outside of a building: wood, board/batten, brick/block/stone, stucco, vinyl, metal, composite, concrete

No damage or deterioration	A
Transitioning	A -
GOOD: Paint slightly faded, minor cracking or chipping with no water intrusion < 20% of Surface	B
Transitioning	B -
FAIR: Paint moderately faded, larger cracking or chipping with first signs of water intrusion 20-50% of Surface	C
Transitioning	C -
POOR: Significant paint loss or fading. Cracked, chipped or rot allows apparent water intrusion penetrating into frame 50-80% of Surface	D
FAILING/FAILED: Severe peeling and paint loss, severe rot and water extrusion > 80% of Surface	F/CF



Exterior Surfaces



Component Category:

- Foundation & Structural
Foundations, Columns, Beams

No damage or deterioration	A
Transitioning	A -
GOOD: Minor shrinkage or expansion cracks in floors and foundations, no disruptions of service. < 20% of Surface	B
Transitioning	B -
FAIR: Settlement cracks creating problems for certain equipment. Distinct signs of leaking or water penetration into building 20-50% of Surface	C
Transitioning	C -
POOR: Foundations, columns, beams or structural walls showing significant signs of failure or distress such as settling, subsistence, cracking or crushing. 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/CF

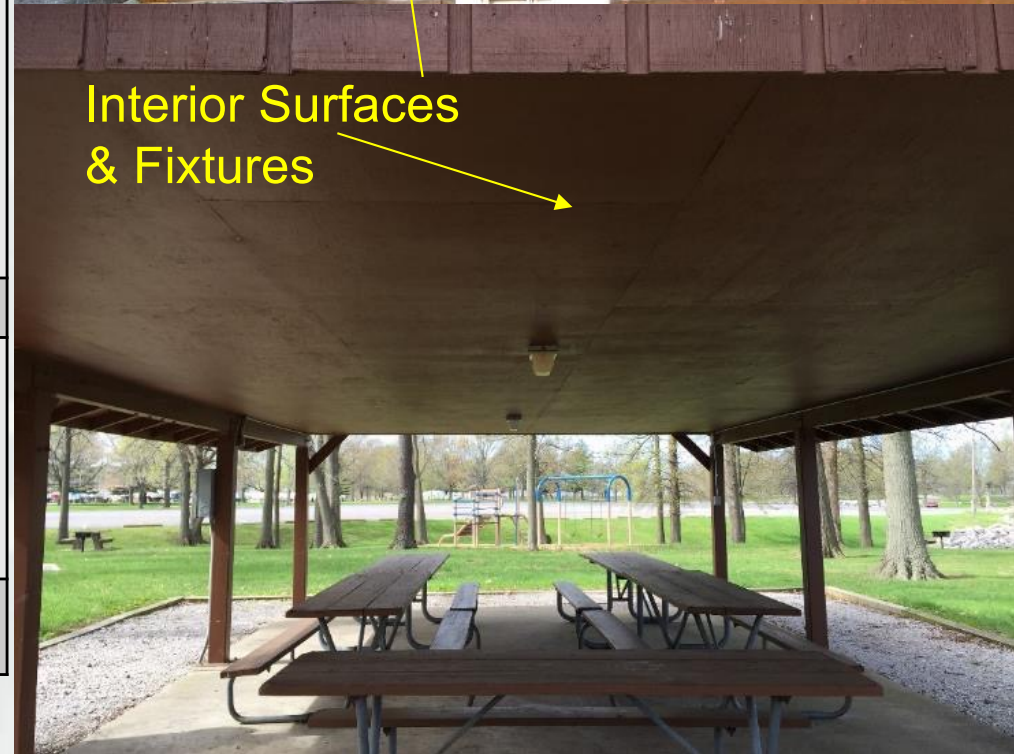


Component Category:

- Interior Surfaces

ceilings, partitions, walls, electric and plumbing fixtures, etc

No damage or deterioration	A
Transitioning	A -
GOOD: ceiling surface smooth may have few small cracks or holes; some damage to walls ie: scratches, small holes, small cracks; electric and plumbing fixtures intact, counters, porcelain fixtures and partitions, with little stained or discolored; < 10% of Surface	B
Transitioning	B -
FAIR: cracked or chipped; damage to ceilings ie: watermarks, cracks, holes, some loose surfacing material, some trim missing; damage to walls ie: loose wall covering, trim missing, larger holes, gouges or cracks; electric and plumbing fixtures chipped, cracked, leaking or not completely functioning as designed; counters and porcelain fixtures chipped or cracked; partitions loose or scratched 10-50% of Surface	C
Transitioning	C -
POOR: broken or coming up; ceilings have holes in them or are sagging; significant damage to walls ie: seriously marred surfaces, vandalism; electric and plumbing fixtures broken, missing or inoperable; counters, porcelain fixtures and partitions broken or missing; 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/CF



Interior Surfaces
& Fixtures

EM 1110-1-400 – Recreation Facility Design Standards

	Description	Required Feature/Minimum-Maximum Requirement	Comments
Group Shelter	Electric	Electrical outlets with GFCI	
	Tables	Picnic Tables	
	Trash Receptacles	Convenient trash facilities	
	Restroom	Convenient restroom facilities	
	Maintenance & Access	Sited on a concrete pad that extends a minimum of 5' beyond the edge of the support posts to accommodate universal access, designed for positive drainage	
	Maintenance & Access	All floors and access surfaces designed to provide adequate drainage.	
	Maintenance & Access	Vehicular service access for maintenance	



Operational Condition Assessment (OCA) – Structures

4c. Amphitheater

Definition: facility with purpose to host interpretive programs, events or other demonstrations

No damage or deterioration	A
Transitioning	A -
GOOD: Few observed deficiencies, but none are serious and performance and safety are not affected. Component exhibits normal wear and tear.	B
Transitioning	B -
FAIR: Several observed deficiencies, but none are considered serious (clear mode of failure is not evident). Performance is affected in that maintenance has increased.	C
Transitioning	C -
POOR: Numerous or serious observed deficiencies (clear mode of failure is evident). Maintenance is greatly increased with recent or frequent service loss.	D
FAILING/FAILED: Components are completely or imminently failed; will not perform as constructed.	F/CF
Not Applicable	NA



EM 1110-1-400 – Recreation Facility Design Standards

Amphitheater	General Considerations	Sited to minimize distracting noises from boats, campsites, or other activities	
	General Considerations	Impact areas such as walkways, aisles and the area in front of benches surfaced with gravel or crushed stone to provide a firm and stable surface	
	General Considerations	Accessible seating areas and companion seats	
	Parking Spaces - Number & Type	1 standard every four seats	



Operational Condition Assessment (OCA) – Structures

4d. Fish Cleaning Station

Definition: facility designed and constructed purely for the purpose of cleaning fish

Defining features: If has 4 walls and roof, rate as building, otherwise see below

No damage or deterioration	A
Transitioning	A -
GOOD: Few observed deficiencies, but none are serious and performance and safety are not affected. Component exhibits normal wear and tear.	B
Transitioning	B -
FAIR: Several observed deficiencies, but none are considered serious (clear mode of failure is not evident). Performance is affected in that maintenance has increased.	C
Transitioning	C -
POOR: Numerous or serious observed deficiencies (clear mode of failure is evident). Maintenance is greatly increased with recent or frequent service loss.	D
FAILING/FAILED: Components are completely or imminently failed; will not perform as constructed.	F/C F
Not Applicable	NA



EM 1110-1-400 – Recreation Facility Design Standards

Fish Cleaning Station	Lighting (Exterior)	Exterior lighting illuminates the area within a 50' radius of the fish cleaning station with an outer edge minimum of 5 lux, increasing to 50 lux next the structure	
	Lighting (Interior)	Light levels ranging from 500 to 700 lux	
	Parking Spaces - Number & Type	1 oversize every two fish cleaning spaces	
	Water	Potable water available	



Operational Condition Assessment (OCA) – Sites

5a. Campsites

Definition: Facility used for the sole purpose of overnight camping

Types: May be pull in, back in, drive through, gravel or paved. Includes primitive, electric, sewer, double sites, etc. If an amenity doesn't exist at the site you are rating, it's N/A.

Defining features:

Facility Components:

1. Parking Spur
2. Impact areas
3. Tables
4. Canopies
5. Cookers, fire rings, grills



Component Category:

- Parking Spur

No damage or deterioration	A
Transitioning	A-
GOOD: surfaces have some small cracks, spalls, bumps or depressions; minor deterioration of containment barriers; surfacing material adequate; some vegetation and debris has encroached into impact zones < 20% of Surface impacted	B
Transitioning	B-
FAIR: surfaces have significant cracking and/or holes, not uniformly smooth, rutted or some holes; containment barriers are loose, chipped or warped; surfacing material inadequate and eroded in places; significant vegetative encroachment and debris deposits 20-50% of Surface	C
Transitioning	C-
POOR: surfaces have major irregularities; containment barriers are severely deteriorated, damaged or missing; surfacing material is very thin; defined impact zone is highly obscured 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/C F



Component Category:

- Impact Area

No damage or deterioration	A
Transitioning	A-
GOOD: surfaces have some small cracks, spalls, bumps or depressions; minor deterioration of containment barriers; surfacing material adequate; some vegetation and debris has encroached into impact zones < 20% of Surface impacted	B
Transitioning	B-
FAIR: surfaces have significant cracking and/or holes, not uniformly smooth, rutted or some holes; containment barriers are loose, chipped or warped; surfacing material inadequate and eroded in places; significant vegetative encroachment and debris deposits 20-50% of Surface	C
Transitioning	C-
POOR: surfaces have major irregularities; containment barriers are severely deteriorated, damaged or missing; surfacing material is very thin; defined impact zone is highly obscured 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/ CF



Component Category:

- Tables

No damage or deterioration	A
Transitioning	A-
GOOD: table units intact, slight chipping or cracking, small dents; surfaces are slightly marred; supports are solid <20% of Surface	B
Transitioning	B-
FAIR: tables have significant cracks, chips; surfaces are slightly warped, gouged, splintered and/or pitted; paint is starting to chip and peel; tables wobble slightly 20-50% of Surface	C
Transitioning	C-
POOR: tables are severely cracked and/or chipped, warped, bent, broken or have parts missing; surfaces are uneven and rough; significant loss of paint; tables are loose and rickety 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/CF



Component Category:

- Canopies

No damage or deterioration	A
Transitioning	A-
GOOD: Solid and firm; slight damage resulting from normal wear and tear; very light rust or rot <20% of Surface Distress	B
Transitioning	B-
FAIR: Very little wobble; some damage such as dents, holes or splinters; paint flaking and beginning to peel; some rust or rot 20-50% of Surface	C
Transitioning	C-
POOR: Loose and wobbly, parts missing, canopy top sagging; significant damage or deterioration; peeling and missing paint 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/ CF



Component Category:

- Cookers, Fire Rings, Grills

No damage or deterioration	A
Transitioning	A-
GOOD: plumb and functional as designed; solid; some rust; minor dents and scrapes; slightly weathered, overall good paint coverage. < 20% of Surface	B
Transitioning	B-
FAIR: slightly off plumb or unlevel; still mostly functional as designed; some wobble; slightly bent; dents, scrapes or gouges; warped or bowed wood; significant rust; paint missing or peeling 20-50% of Surface	C
Transitioning	C-
POOR: not plumb, leaning or very unlevel; very marginally functional; significantly dented or bent; wobbly; holes in sides or bottom; rusted through rungs or grills; broken or missing wood. 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/CF



EM 1110-1-400 – Recreation Facility Design Standards

	Description	Required Feature/Minimum-Maximum Requirement	Comments
Campground	Conflict of Use	Physically separated from day use areas	
	Entry	Single point of entry to the campground provided	
	Facilities	Designed and developed to offer a variety of facilities and camping experiences	
	Vegetation	Existing vegetation preserved for screening, buffering, and shade. Climate and geographic location mandate amount of shade and screening that is desirable for each development	
	Dump Station	Access to sanitary dump station provided (except primitive areas)	
	Water	A minimum of one water spigot per four campsites	
Campsites	Impact area (all types)	Hardened Impact area located on the passenger side, covering up to 625sf, bordered by concrete curbing, plastic timbers, or other approved material (Minimum size for tent only sites = 16'x16')	
	Water (all types)	Water within 500'	
	All site types	Picnic Tables	
	All site types	Fire ring/grill	
	All site types	Lantern Hanger	
	All site types	Restroom within 500'	
	All site types	Trash Service	
	All site types	Level Parking Spur	
	Back-in site	Spur width = 12' Minimum	
	Back-in site	Length = 70' minimum where terrain allows	
	Back-in site	Campsite alignment = 40-60 degree angle	
	Electrical Sites	Have 50, 30, & 20 amp (GFCI) hookups located at the pedestal	



EM 1110-1-400 – Recreation Facility Design Standards

	DESCRIPTION	Required Feature / Minimum Requirement	Comments
Campsites (cont)	Electrical Sites	Located at the driver side rear of the campsite	
	Electrical Sites	Between 5' & 15' from the back of the pad	
	Electrical Sites	11' from the center of the pad	
	Group Site	Access to additional parking	
	Group Site	Additional on-site parking (1-3 spaces)	
	Group Site	Group Grill	
	Multi-purpose site	Access to additional parking	
	Park Attendant Site	Access to additional parking	
	Park Attendant Site	Individual water hookup	
	Park Attendant Site	Individual electric hookup	
	Park Attendant Site	Individual Sewage hookup	
	Park Attendant Site	Universally Accessible	
	Park Attendant Site	Dedicated telephone line	
	Parking Spaces - Number & Type	1-3 standard spaces for each campsite	



Operational Condition Assessment (OCA) – Sites

5b. Picnic Sites

Definition: Facilities whose primary purpose is for day use based picnicking. If overnight stays occur here rate as campsite

Types: Primitive, electric, canopied, open, etc. If an amenity doesn't exist to rate, it's N/A.

Facility Components:

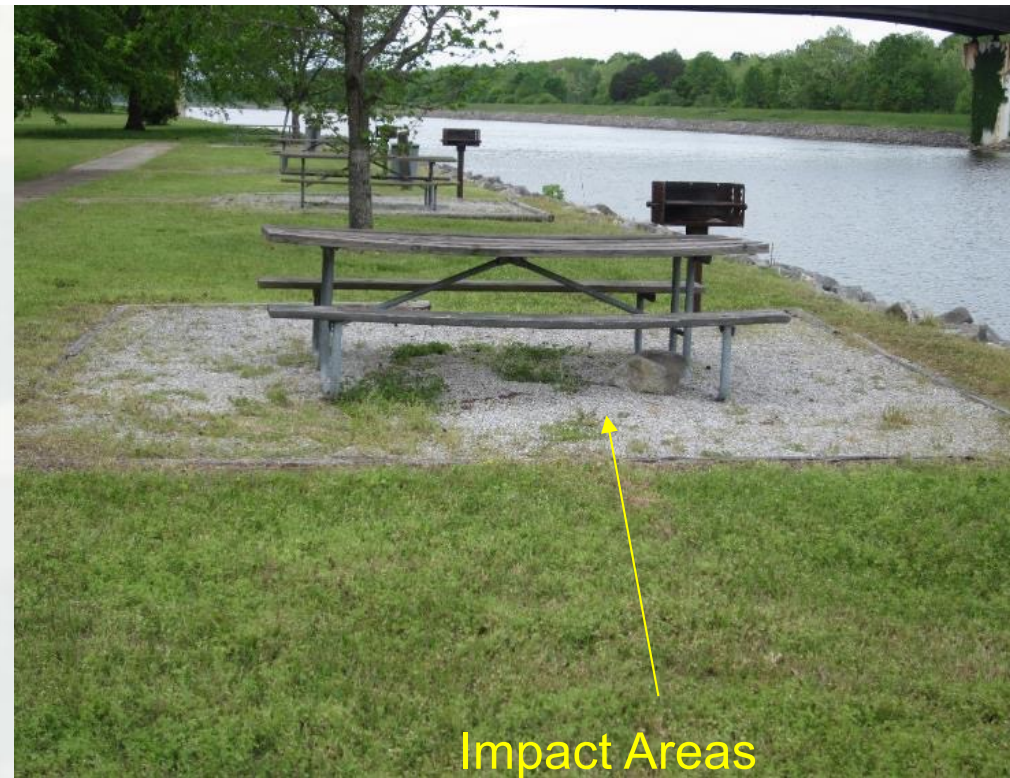
1. Impact areas
2. Tables
3. Canopies
4. Cookers, fire rings, grills



Component Category:

- Impact Area

No damage or deterioration	A
Transitioning	A-
GOOD: surfaces have some small cracks, spalls, bumps or depressions; minor deterioration of containment barriers; surfacing material adequate; some vegetation and debris has encroached into impact zones < 20% of Surface impacted	B
Transitioning	B-
FAIR: surfaces have significant cracking and/or holes, not uniformly smooth, rutted or some holes; containment barriers are loose, chipped or warped; surfacing material inadequate and eroded in places; significant vegetative encroachment and debris deposits 20-50% of Surface	C
Transitioning	C-
POOR: surfaces have major irregularities; containment barriers are severely deteriorated, damaged or missing; surfacing material is very thin; defined impact zone is highly obscured 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/ CF



Component Category:

- Tables

No damage or deterioration	A
Transitioning	A-
GOOD: table units intact, slight chipping or cracking, small dents; surfaces are slightly marred; supports are solid <20% of Surface	B
Transitioning	B-
FAIR: tables have significant cracks, chips; surfaces are slightly warped, gouged, splintered and/or pitted; paint is starting to chip and peel; tables wobble slightly 20-50% of Surface	C
Transitioning	C-
POOR: tables are severely cracked and/or chipped, warped, bent, broken or have parts missing; surfaces are uneven and rough; significant loss of paint; tables are loose and rickety 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/CF



Component Category:

- Canopies

No damage or deterioration	A
Transitioning	A-
GOOD: Solid and firm; slight damage resulting from normal wear and tear; very light rust or rot <20% of Surface Distress	B
Transitioning	B-
FAIR: Very little wobble; some damage such as dents, holes or splinters; paint flaking and beginning to peel; some rust or rot 20-50% of Surface	C
Transitioning	C-
POOR: Loose and wobbly, parts missing, canopy top sagging; significant damage or deterioration; peeling and missing paint 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/CF



Component Category:

- Cookers, Fire Rings, Grills

No damage or deterioration	A
Transitioning	A-
GOOD: plumb and functional as designed; solid; some rust; minor dents and scrapes; slightly weathered, overall good paint coverage. < 20% of Surface	B
Transitioning	B-
FAIR: slightly off plumb or unlevel; still mostly functional as designed; some wobble; slightly bent; dents, scrapes or gouges; warped or bowed wood; significant rust; paint missing or peeling 20-50% of Surface	C
Transitioning	C-
POOR: not plumb, leaning or very unlevel; very marginally functional; significantly dented or bent; wobbly; holes in sides or bottom; rusted through rungs or grills; broken or missing wood. 50-80% of Surface	D
FAILING/FAILED: Severe deterioration of all components, should be closed or replaced > 80% of Surfaces	F/CF



EM 1110-1-400 – Recreation Facility Design Standards

		Description	Required Feature/Minimum-Maximum Requirement	Comments
Picnic Area / Day Use Sites		Conflict of Use	Separated from non-compatible uses such as campgrounds and marinas by a minimum of 200'	
		Trash Receptacles	Access to trash facilities. At parks using individual trash receptacles, one container provided for every four tables	
		Grills	Pedestal grill	
		Parking Spaces - Number & Type	2 standard each table	
		Picnic Table	Level Placement	
		Picnic Table	Placed 10' away from fire ring or grill	
		Picnic Table	Sited away from the edge of impact areas, steep slopes, or other obstacles	
		Picnic Table	Standard table shall accommodate UA	
		Picnic Table	Rounded or chamfered edges	
		Picnic Table	No protruding bolts or other safety hazards	
		Picnic Table	When anchored, anchoring method eliminates safety hazards such as protruding stakes and chains	
		Picnic Table	All parts splinter-resistant and treated with coating approved for human contact	



Operational Condition Assessment (OCA) – Sites

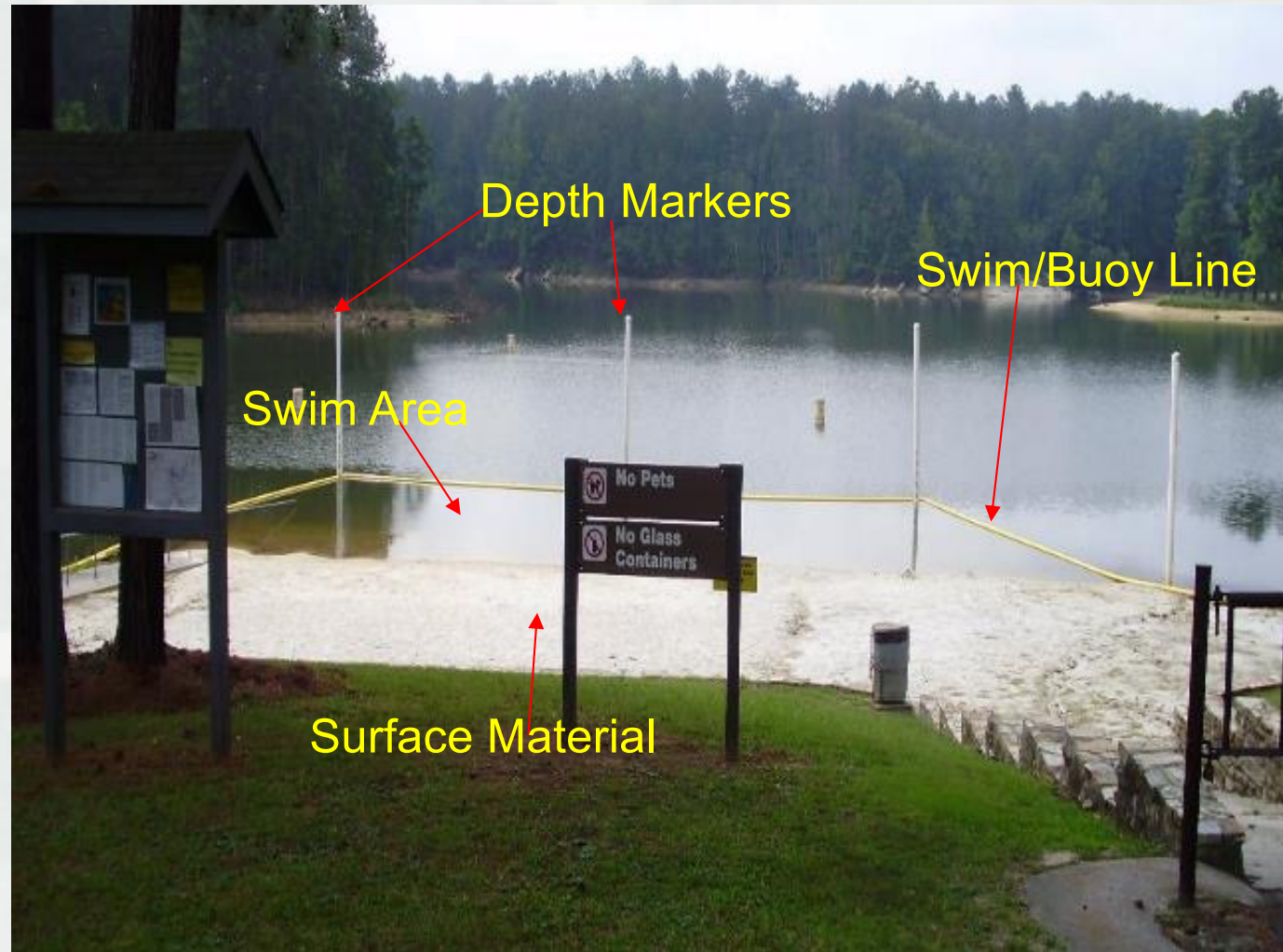
5c. Beaches/Swim Areas

Definition: An area developed and designated for swimming, bathing or wading. The area is separated from the surrounding area by rope or buoys to prevent other activities, such as boating, from occurring within the area. Underwater inspections may be necessary to fully identify siltation, obstructions or drop-offs. Also, continual or frequent water quality test failures constitute failure/closure.

Defining features:

Facility Components:

1. Swim Line
2. Depth Markers
3. Surface Material
4. Swim area



Component Category:

- **Swim Line:** Swim area limits shall be delineated, options include:
 - Floating pipeline
 - Buoy line

No damage or deterioration	A
Transitioning	A-
GOOD: Delineation line is in place and good condition with little or no deterioration. Floats high in the water making safe swimming area apparent.	B
Transitioning	B-
FAIR: swim delineation line is apparent but not uniformly smooth. May be missing a float or buoy, but line is intact. 20-50% of Surface	C
Transitioning	C-
POOR: swim delineation line is not apparent or not uniformly smooth, or intact. Holes or missing buoys may cause swim line to dip or sink	D
FAILING/FAILED: swim delineation line is missing or has deteriorated to the point where it is uncertain where the safe swim area can be located.	F/CF



Component Category:

- **Depth Markers** A minimum of two depth markers (delineating each 1' change in water depth) installed in the designated swimming area. The number of depth markers installed adequate for all water users to determine the water depth

No damage or deterioration	A
Transitioning	A-
GOOD: Depth markers are clearly present with markings and language easy to read. May have some scuffs, scratches or dents that make reading more difficult	B
Transitioning	B-
FAIR: depth markers are present but may be leaning or loose. Markings and numbers are present but have significant flaws that make reading difficult 20-50% of Surface	C
Transitioning	C-
POOR: depth markers are present but are leaning or loose to such a degree that it is becoming unuseful. Markings and numbers have severe flaws	D
FAILING/FAILED: depth markers are not present or damaged to the point where they do not serve their intended purpose.	F/CF



Component Category:

- Surface Material

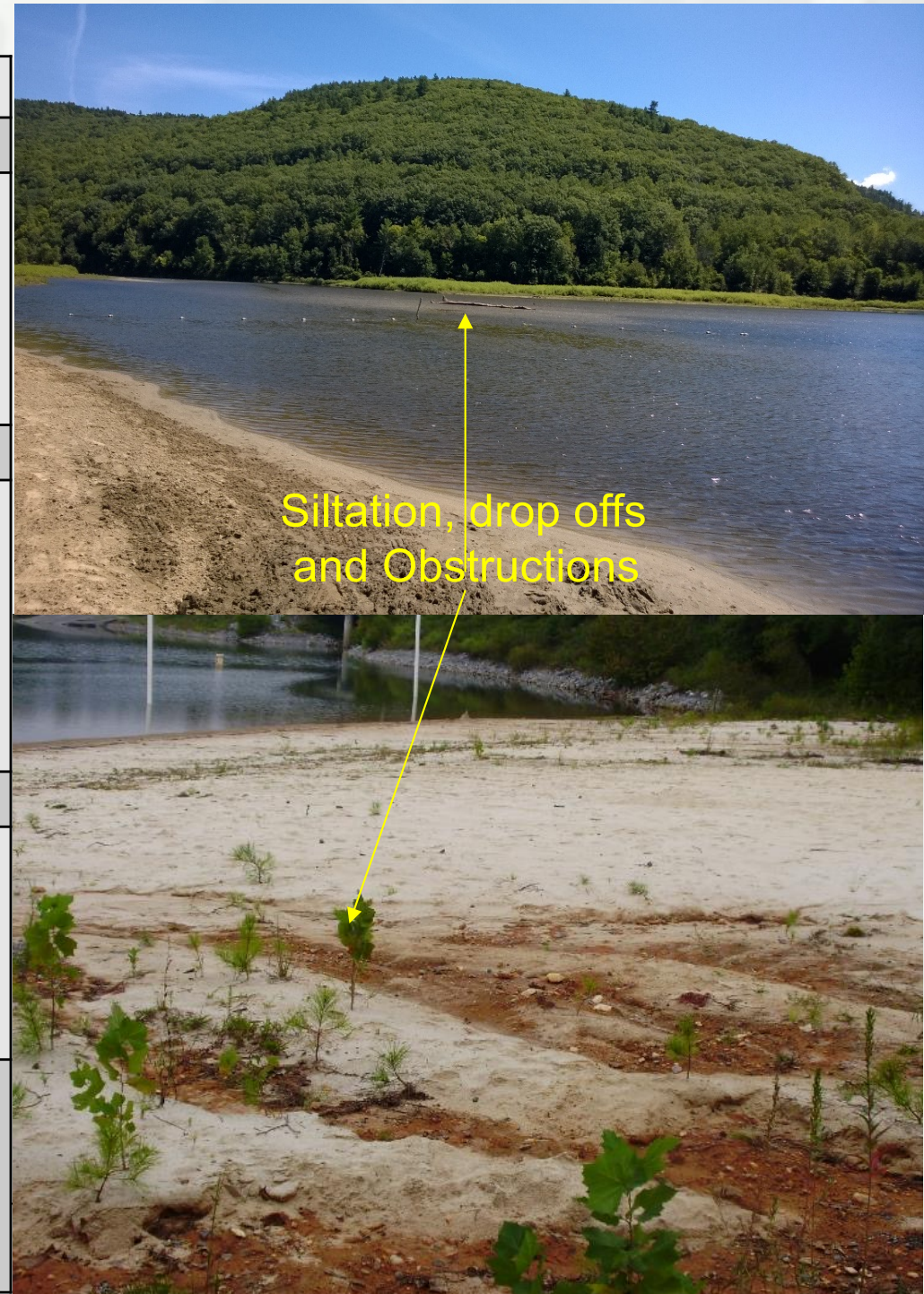
No damage or deterioration	A
Transitioning	A-
GOOD: surfaces have some small cracks, spalls, bumps or depressions; minor deterioration or erosion; surface material adequate; some vegetation and debris has encroached < 20% of Surface impacted	B
Transitioning	B-
FAIR: surfaces have significant cracking and/or holes, not uniformly smooth, rutted or some holes; surfacing material inadequate and eroded in places; significant vegetative encroachment and debris deposits 20-50% of Surface	C
Transitioning	C-
POOR: surfaces have major irregularities; damaged or missing; surface material is very thin or absent; major rutting or erosion; severe vegetative encroachment and debris deposits 50-80% of Surface	D
FAILING/FAILED: Severe deterioration or erosion; vegetation has taken over completely, debris making unusable > 80% of Surfaces	F/ CF



Component Category:

- Swim Area

No damage or deterioration	A
Transitioning	A-
GOOD: Swim area free of obstructions, drop offs or siltation. minor amounts of erosion may be present; minor amounts of vegetation and debris has encroached < 20% of Swim area impacted	B
Transitioning	B-
FAIR: Swim area has few minor obstructions such as sticks or rocks, small holes or drop offs or moderate siltation. Moderate amounts of erosion may be present; moderate amounts of vegetation and debris have encroached. 20-50% of Swim area impacted	C
Transitioning	C-
POOR: Swim area numerous obstructions such as limbs or rocks, large holes or drop offs and major siltation. Large amounts of vegetation and debris have encroached. 50-80 % of Swim area impacted	D
FAILING/FAILED: Severe drop offs, siltation or debris in swimming area. Siltation, debris or vegetation encroachment severe enough that cannot perform as designed at normal pool/lake elevations. > 80% of Swim area.	F/ CF



EM 1110-1-400 – Recreation Facility Design Standards

	DESCRIPTION	Required Feature / Minimum Requirement	Comments
Swim Beach	Design	Barriers and coves often offer protection against wind and wave action, but dead-water coves should be avoided. Swim areas shall be located where adequate water circulation is present to: - Assure continued acceptable water quality - Remove surface debris that may deposit on the swim area	
	Design	Swim area sites located in areas where extensive sedimentation will not be a problem	
	Design	Design of swim area provides protection from boats, fuel spillage, and drainage from sewage and boat wakes	
	Drainage	Runoff and drainage with pollution potential from any area upland of the swim area must be diverted	
	Lake Fluctuation	Daily, seasonal, and yearly water level fluctuations due to irrigation, flood control, evaporation, power generation, or other factors must be considered in swim area design to assure optimum utilization	
	Slope	Swim area gradient smooth and constant, without underwater obstructions, and designed to eliminate sudden changes in grade or drop-offs in the 0 to 5' depth	
	Slope	Slopes in the underwater portion of swim areas: - Range from 2% to 5% - Do not exceed 10%	
	Slope	The maintained underwater gradient shall extend a minimum of 10' beyond the delineated swim area	
	Slope	The maintained underwater gradient shall be designed for water depths not to exceed 6' (vertical) at the normal pool elevation typically experienced during the swimming season	
	Swimline	Swim area limits shall be delineated, options include: - Floating pipeline - Buoy line	
	Depth Markers	A minimum of two depth markers (delineating each 1' change in water depth) installed in the designated swimming area. The number of depth markers installed adequate for all water users to determine the water depth	
	Bouys	A minimum of two "Boats Keep Out" bouys installed not less than 100' beyond the delineated swim area	
	General Considerations	Water safety, emergency phone numbers, and Title 36 regulations posted on protected bulletin boards that are located so that swimmers see them before entering the area	
Restroom	Restrooms located within 500'		
Parking Spaces - Number & Type	1 standard every three swimmers		

Operational Condition Assessment (OCA) – Part 6

Utilities

Definition: Each utility will be rated as a whole system within a Project Site Area rather than to a specific facility. This will require visual observation, collaboration with local staff and maintenance reports

Types: Electric, Sewer/Septic, Water, Dump Stations, Treatment facilities

Facility Components:

- a) Electric Systems
- b) Water Systems
- c) Sewer Systems
- d) Dump Station



Part 6a: Electric Systems

Included panels, boxes, outlets, pedestals, wiring and switches. Combination of observed condition and testimony of reliability from project personnel

No damage or deterioration	A
Transitioning	A -
GOOD: Few observed deficiencies, but none are serious and performance and safety are not affected. Component exhibits normal wear and tear.	B
Transitioning	B -
FAIR: Several observed deficiencies, but none are considered serious (clear mode of failure is not evident). Performance is affected in that maintenance has increased.	C
Transitioning	C -
POOR: Numerous or serious observed deficiencies (clear mode of failure is evident). Maintenance is greatly increased with recent or frequent service loss.	D
FAILING/FAILED: Components are completely or imminently failed; will not perform as constructed.	F/CF
Not Applicable	NA



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Part 6b: Water Systems

Included spigots, hydrants, tanks, lines, covers, caps and outflow. Combination of observed condition and testimony of reliability from project personnel

No damage or deterioration	A
Transitioning	A -
GOOD: Few observed deficiencies, but none are serious and performance and safety are not affected. Component exhibits normal wear and tear.	B
Transitioning	B -
FAIR: Several observed deficiencies, but none are considered serious (clear mode of failure is not evident). Performance is affected in that maintenance has increased.	C
Transitioning	C -
POOR: Numerous or serious observed deficiencies (clear mode of failure is evident). Maintenance is greatly increased with recent or frequent service loss.	D
FAILING/FAILED: Components are completely or imminently failed; will not perform as constructed.	F/CF
Not Applicable	NA



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Part 6c: Sewer Systems

Included panels, lift stations, pumps, lagoons, ponds and treatment areas. Combination of observed condition and testimony of reliability from project personnel

No damage or deterioration	A
Transitioning	A -
GOOD: Few observed deficiencies, but none are serious and performance and safety are not affected. Component exhibits normal wear and tear.	B
Transitioning	B -
FAIR: Several observed deficiencies, but none are considered serious (clear mode of failure is not evident). Performance is affected in that maintenance has increased.	C
Transitioning	C -
POOR: Numerous or serious observed deficiencies (clear mode of failure is evident). Maintenance is greatly increased with recent or frequent service loss.	D
FAILING/FAILED: Components are completely or imminently failed; will not perform as constructed.	F/CF
Not Applicable	NA



Part 6d:

Dump Station

Includes spigots, hydrants, tanks, lines, covers, caps and outflow. Combination of observed condition and testimony of reliability from project personnel

No damage or deterioration	A
Transitioning	A -
GOOD: Few observed deficiencies, but none are serious and performance and safety are not affected. Component exhibits normal wear and tear.	B
Transitioning	B -
FAIR: Several observed deficiencies, but none are considered serious (clear mode of failure is not evident). Performance is affected in that maintenance has increased.	C
Transitioning	C -
POOR: Numerous or serious observed deficiencies (clear mode of failure is evident). Maintenance is greatly increased with recent or frequent service loss.	D
FAILING/FAILED: Components are completely or imminently failed; will not perform as constructed.	F/CF
Not Applicable	NA



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EM 1110-1-400 – Recreation Facility Design Standards

	Description	Required Feature/Minimum-Maximum Requirement	Comments
Dump Station	General Considerations	Sanitary dump station provided for each park containing a campground (except primitive areas)	
	Hinged Cap	Each station equipped with a 4" minimum sewage pipe with hinged cap	
	Concrete Pad	Sewage pipe encased in a concrete pad extending to the discharging camping unit. The pad located for access from the driver side of the vehicle.	
	Slope	Sewage pipe pad extends a minimum of 2' on all sides of the sewage pipe and slopes 2-3% toward the sewage pipe from all directions.	
	Water	Provide two separate water supplies, each clearly marked: wash down and potable water. Wash-down faucet with anti-siphon valve located at the dump station	
	Parking Spaces - Number & Type	2 oversize each dump unit	
	Water Hydrant	UA	UA lever handles standard for all hydrants
Freeze Protection		In cold climate regions, protect hydrants and tubing against freeze with self-draining, frost-proof sill cock or other acceptable drain-back means and provide lo-pint gravity-flow drain lines with force air connections	
Back Flow		Back-flow prevention valves installed in accordance with applicable state and local laws	
Pressure		Feeder lines to individual campsites shall not exceed 45 psi since greater pressures may damage recreational vehicle water lines	
Surface material		A slip-resistant, firm and stable surface, sloped to drain away from the user and conforming to UA requirements, provided for access to hydrants at UA camp and picnic sites	
Splash		A bordered gravel splash block placed beneath the faucet of all community water hydrants	
Water		Individual water hydrants located on the driver side of the campsite to accommodate normal RV hookups	
Location/Placement		Sited at least 5' off the camp pad and protected to the extent practical to minimize risk from vehicles	



Operational Condition Assessment (OCA) – Part 7

Grounds

Definition: Assets that don't fit into other categories or viewed from a landscape perspective.

Types: retaining wall, seawalls, bulkheads, gabions, erosion control, trails, playgrounds

Facility Components:

- a) Traffic Counters
- b) Retaining Walls/Gabions/Erosion Control
- c) Trails
- d) Playgrounds/fields/areas



Part 7a: Traffic Counters

Note: operational condition should be tested if possible.
Drive over /engage the counter to ensure functionality

No damage or deterioration	A
Transitioning	A -
GOOD: Few observed physical deficiencies, but none are serious and performance and safety are not affected. Component exhibits normal wear and tear.	B
Transitioning	B -
FAIR: Several observed deficiencies, but none are considered serious (clear mode of failure is not evident). Performance is affected in that maintenance has increased.	C
Transitioning	C -
POOR: Numerous or serious observed deficiencies (clear mode of failure is evident). Maintenance is greatly increased with recent or frequent service loss.	D
FAILING/FAILED: Components are completely or imminently failed; will not perform as constructed.	F/CF
Not Applicable	NA



Part 7b: Retaining Walls & erosion control

No damage or deterioration	A
Transitioning	A -
GOOD: Few observed deficiencies, but none are serious and performance and safety are not affected. Component exhibits normal wear and tear.	B
Transitioning	B -
FAIR: Several observed deficiencies, but none are considered serious (clear mode of failure is not evident). Performance is affected in that maintenance has increased.	C
Transitioning	C -
POOR: Numerous or serious observed deficiencies (clear mode of failure is evident). Maintenance is greatly increased with recent or frequent service loss.	D
FAILING/FAILED: Components are completely or imminently failed; will not perform as constructed.	F/CF
Not Applicable	NA



Part 7c: Trails, paths, walkways

No damage or deterioration	A
Transitioning	A -
GOOD: Few observed deficiencies, but none are serious and performance and safety are not affected. Component exhibits normal wear and tear.	B
Transitioning	B -
FAIR: Several observed deficiencies, but none are considered serious (clear mode of failure is not evident). Performance is affected in that maintenance has increased.	C
Transitioning	C -
POOR: Numerous or serious observed deficiencies (clear mode of failure is evident). Maintenance is greatly increased with recent or frequent service loss.	D
FAILING/FAILED: Components are completely or imminently failed; will not perform as constructed.	F/CF
Not Applicable	NA



Part 7d: Playgrounds/fields/areas

Constructed Asset:
Defining features:

No damage or deterioration	A
Transitioning	A -
GOOD: Few observed deficiencies, but none are serious and performance and safety are not affected. Component exhibits normal wear and tear.	B
Transitioning	B -
FAIR: Several observed deficiencies, but none are considered serious (clear mode of failure is not evident). Performance is affected in that maintenance has increased.	C
Transitioning	C -
POOR: Numerous or serious observed deficiencies (clear mode of failure is evident). Maintenance is greatly increased with recent or frequent service loss.	D
FAILING/FAILED: Components are completely or imminently failed; will not perform as constructed.	F/C F
Not Applicable	NA



[BACK](#)

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EM 1110-1-400 – Recreation Facility Design Standards

Playgrounds	Standards	All play areas, surfaces, and facilities shall meet: - Consumer Product Safety commission guidelines for safety - American Society for Testing and Materials Standard consumer Safety Performance Specifications for Playground Equipment for Public Use - When in conflict, the stricter standard will prevail	
	Benches	Benches shall be provided at every playground, to encourage adult supervision of children. At least one to be located in the shade	
	Restroom	Restroom located within 500'	
	Water	Drinking fountain provided near the playground	
	Grade	Site graded for adequate drainage	
	Parking Spaces - Number & Type	# of standard spaces that will fit into area - parking area equal to length of playground impact area	

