

**Practice: 587 - Structure for Water Control**

**Scenario # 1 Commercial Inline WCS, 6"-10" Pipe**

Missouri

**Scenario Description:**

An Inline Water Control Structure (WCS) composed of plastic that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concern: Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at point along a pipe extending through an embankment, providing ease of access to the structure and provide better protection against beaver activity. There are commercially available models composed of plastic that are commonly used when the width of the is 24" or less. Cost estimate is based on a using a such a commercial product. The typical scenario is an inline structure with a width of 12", height of six feet, The pipe is 65' of 8" SCH 40 PVC (inlet and outlet combined).

**Before Practice Situation:**

The landowner wishes to provide for a way to control the water surface elevation in a wetland area. The landowner wishes to enhance and enlarge the area to provide habitat for fish and wildlife.

**After Practice Situation:**

A WCS is installed in a flow line allowing shallow water impoundments. A wetland area is enhanced and water levels can be varied to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Scenario Feature Measure:**

Feet of pipe

<b>Scenario Typical Size:</b>	65	Foot	Tot Unit Cost	\$37.22
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Water Control Structure, Stoplog, Inline,	48	Height x Diameter	\$11.74	\$563.52
Materials	Water Control Structure, Stoplog, Inline, fixed	1	Each	\$303.88	\$303.88
Materials	Steel, Plate, 1/8"	36	Square Foot	\$4.22	\$151.92
Materials	Trash Guard, metal	40	Pound	\$2.24	\$89.60
Materials	Pipe, PVC, 8", SCH 40	65	Foot	\$8.02	\$521.30
Equip./Install.	Hydraulic Excavator, .5 CY	2	Hour	\$48.02	\$96.04
Equip./Install.	Earthfill, Manually Compacted	55	Cubic yard	\$4.83	\$265.65
Labor	General Labor	8	Hour	\$21.56	\$172.48
Labor	Equipment Operators, Heavy	2	Hour	\$27.22	\$54.44
Mobilization	Mobilization, medium equipment	1	Each	\$200.43	\$200.43

Total Cost: \$2,419.26

**Payment types:**

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$27.91	EQIP-HU	\$33.50
WHIP	\$27.91	WHIP-HU	\$33.50
EQIP-NOI	\$27.91	EQIP-HUNOI	\$33.50
EQIP-MRBI	\$27.91	EQIP-HUMRBI	\$33.50
WHIP-MRBI	\$27.91	WHIP-HUMRBI	\$33.50

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**Scenario # 2 Commercial Inline WCS, 12"-18" Pipe**

Missouri

**Scenario Description:**

An Inline Water Control Structure (WCS) composed of plastic that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concern: Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at point along a pipe extending through an embankment, providing ease of access to the structure and provide better protection against beaver activity. There are commercially available models composed of plastic that are commonly used when the width of the is 24" or less. Cost estimate is based on a using a such a commercial product. The typical scenario is an inline structure with a width of 20", height of six feet, The pipe is 65' of 15" SDR35 PVC (inlet and outlet combined).

**Before Practice Situation:**

The landowner wishes to provide for a way to control the water surface elevation in a wetland area. The landowner wishes to enhance and enlarge the area to provide habitat for fish and wildlife.

**After Practice Situation:**

A WCS is installed in a flow line allowing shallow water impoundments. A wetland area is enhanced and water levels can be varied to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Scenario Feature Measure:**

Feet of Pipe

<b>Scenario Typical Size:</b>	65	Foot	Tot Unit Cost	\$54.02
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Steel, Plate, 3/8"	4	Square Foot	\$13.76	\$55.04
Materials	Water Control Structure, Stoplog, Inline,	1	Each	\$1,366.26	\$1,366.26
Materials	Steel, Plate, 1/8"	36	Square Foot	\$4.22	\$151.92
Materials	Pipe, PVC, 15", SDR 35	65	Foot	\$12.96	\$842.40
Materials	Trash Guard, metal	80	Pound	\$2.24	\$179.20
Equip./Install.	Hydraulic Excavator, .5 CY	2	Hour	\$48.02	\$96.04
Equip./Install.	Earthfill, Manually Compacted	55	Cubic yard	\$4.83	\$265.65
Labor	General Labor	8	Hour	\$21.56	\$172.48
Labor	Skilled Labor	4	Hour	\$31.91	\$127.64
Labor	Equipment Operators, Heavy	2	Hour	\$27.22	\$54.44
Mobilization	Mobilization, medium equipment	1	Each	\$200.43	\$200.43

Total Cost: \$3,511.50

**Payment types:**

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$40.52	EQIP-HU	\$48.62
WHIP	\$40.52	WHIP-HU	\$48.62
EQIP-NOI	\$40.52	EQIP-HUNOI	\$48.62
EQIP-MRBI	\$40.52	EQIP-HUMRBI	\$48.62
WHIP-MRBI	\$40.52	WHIP-HUMRBI	\$48.62

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**Scenario # 3 Commercial Inline WCS, >18" Pipe**

Missouri

**Scenario Description:**

An Inline Water Control Structure (WCS) composed of plastic that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concern: Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at point along a pipe extending through an embankment, providing ease of access to the structure and provide better protection against beaver activity. There are commercially available models composed of plastic that are commonly used when the width of the is 24" or less. Cost estimate is based on a using a such a commercial product. The typical scenario is an inline structure with a width of 31", height of six feet, The pipe is 65' of 24" used steel (inlet and outlet combined).

**Before Practice Situation:**

The landowner wishes to provide for a way to control the water surface elevation in a wetland area. The landowner wishes to enhance and enlarge the area to provide habitat for fish and wildlife.

**After Practice Situation:**

A WCS is installed in a flow line allowing shallow water impoundments. A wetland area is enhanced and water levels can be varied to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Scenario Feature Measure:**

Feet of Pipe

<b>Scenario Typical Size:</b>	65	Foot	Tot Unit Cost	\$113.05
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Steel, Plate, 3/8"	8	Square Foot	\$13.76	\$110.08
Materials	Pipe, Steel, 24", Std Wt, USED	65	Foot	\$55.10	\$3,581.50
Materials	Water Control Structure, Stoplog, Inline,	144	Height x Diameter	\$11.74	\$1,690.56
Materials	Water Control Structure, Stoplog, Inline, fixed	1	Each	\$303.88	\$303.88
Materials	Steel, Plate, 1/8"	49	Square Foot	\$4.22	\$206.78
Materials	Trash Guard, metal	155	Pound	\$2.24	\$347.20
Equip./Install.	Hydraulic Excavator, .5 CY	2	Hour	\$48.02	\$96.04
Equip./Install.	Earthfill, Manually Compacted	55	Cubic yard	\$4.83	\$265.65
Labor	General Labor	8	Hour	\$21.56	\$172.48
Labor	Skilled Labor	10	Hour	\$31.91	\$319.10
Labor	Equipment Operators, Heavy	2	Hour	\$27.22	\$54.44
Mobilization	Mobilization, medium equipment	1	Each	\$200.43	\$200.43

Total Cost: \$7,348.14

**Payment types:**

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$84.79	EQIP-HU	\$101.74
WHIP	\$84.79	WHIP-HU	\$101.74
EQIP-NOI	\$84.79	EQIP-HUNOI	\$101.74
EQIP-MRBI	\$84.79	EQIP-HUMRBI	\$101.74
WHIP-MRBI	\$84.79	WHIP-HUMRBI	\$101.74

**Practice: 587 - Structure for Water Control**

**Scenario # 4 Weir box with <=16" pipe**

Missouri

**Scenario Description:**

A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation or measures water. This practice applies wherever a permanent structure is needed as an integral part of a water-control system. A fabricated weir box structure with a pipe of 16" diameter or less is placed in a levee to manage water level elevation. Payment incorporates pipe, anti seep collar, trash guard, animal guard, flap gate and weir box structure.

**Before Practice Situation:**

The landowner wishes to provide for a way to control the water surface elevation in a wetland area. The landowner wishes to enhance and enlarge the area to provide habitat for fish and wildlife.

**After Practice Situation:**

A weir box structure is placed in a levee to manage water level elevation. A wetland area is enhanced and water levels can be varied to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Scenario Feature Measure:**

Number of structures

<b>Scenario Typical Size:</b>	1	Each	Tot Unit Cost	\$3,919.26
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Steel, Angle, 3" x 3" x 1/4"	30	Foot	\$3.26	\$97.80
Materials	Steel, Plate, 3/8"	4	Square Foot	\$13.76	\$55.04
Materials	Pipe, Steel, 16", Std Wt, USED	65	Foot	\$32.76	\$2,129.40
Materials	Steel, Plate, 1/8"	49	Square Foot	\$4.22	\$206.78
Materials	Steel, Plate, 3/16"	32	Square Foot	\$6.32	\$202.24
Materials	Trash Guard, metal	82	Pound	\$2.24	\$183.68
Equip./Install.	Hydraulic Excavator, .5 CY	2	Hour	\$48.02	\$96.04
Equip./Install.	Earthfill, Manually Compacted	55	Cubic yard	\$4.83	\$265.65
Labor	General Labor	8	Hour	\$21.56	\$172.48
Labor	Skilled Labor	8	Hour	\$31.91	\$255.28
Labor	Equipment Operators, Heavy	2	Hour	\$27.22	\$54.44
Mobilization	Mobilization, medium equipment	1	Each	\$200.43	\$200.43

Total Cost: \$3,919.26

**Payment types:**

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$2,939.45	EQIP-HU	\$3,527.33
WHIP	\$2,939.45	WHIP-HU	\$3,527.33
EQIP-NOI	\$2,939.45	EQIP-HUNOI	\$3,527.33
EQIP-MRBI	\$2,939.45	EQIP-HUMRBI	\$3,527.33
WHIP-MRBI	\$2,939.45	WHIP-HUMRBI	\$3,527.33

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**Scenario # 5 Weir Box with >16" pipe**

Missouri

**Scenario Description:**

A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation or measures water. This practice applies wherever a permanent structure is needed as an integral part of a water-control system. A fabricated weir box structure with a pipe of greater than 16" diameter is placed in a levee to manage water level elevation. Payment incorporates pipe, anti seep collar, trash guard, animal guard, flap gate and weir box structure.

**Before Practice Situation:**

The landowner wishes to provide for a way to control the water surface elevation in a wetland area. The landowner wishes to enhance and enlarge the area to provide habitat for fish and wildlife.

**After Practice Situation:**

A weir box structure is placed in a levee to manage water level elevation. A wetland area is enhanced and water levels can be varied to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Scenario Feature Measure:**

Number of structures

<b>Scenario Typical Size:</b>	1	Each	Tot Unit Cost	\$5,566.97
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Steel, Angle, 3" x 3" x 1/4"	30	Foot	\$3.26	\$97.80
Materials	Steel, Plate, 3/8"	8	Square Foot	\$13.76	\$110.08
Materials	Pipe, Steel, 24", Std Wt, USED	65	Foot	\$55.10	\$3,581.50
Materials	Steel, Plate, 1/8"	36	Square Foot	\$4.22	\$151.92
Materials	Steel, Plate, 3/16"	32	Square Foot	\$6.32	\$202.24
Materials	Trash Guard, metal	155	Pound	\$2.24	\$347.20
Equip./Install.	Hydraulic Excavator, .5 CY	2	Hour	\$48.02	\$96.04
Equip./Install.	Earthfill, Manually Compacted	55	Cubic yard	\$4.83	\$265.65
Labor	General Labor	8	Hour	\$21.56	\$172.48
Labor	Skilled Labor	9	Hour	\$31.91	\$287.19
Labor	Equipment Operators, Heavy	2	Hour	\$27.22	\$54.44
Mobilization	Mobilization, medium equipment	1	Each	\$200.43	\$200.43

Total Cost: \$5,566.97

**Payment types:**

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$4,175.23	EQIP-HU	\$5,010.27
WHIP	\$4,175.23	WHIP-HU	\$5,010.27
EQIP-NOI	\$4,175.23	EQIP-HUNOI	\$5,010.27
EQIP-MRBI	\$4,175.23	EQIP-HUMRBI	\$5,010.27
WHIP-MRBI	\$4,175.23	WHIP-HUMRBI	\$5,010.27

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**Scenario # 6 Weir Box Only**

**Missouri**

**Scenario Description:**

A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation or measures water. This practice applies wherever a permanent structure is needed as an integral part of a water-control system. A fabricated weir box structure is installed on existing piping.

**Before Practice Situation:**

The landowner wishes to provide for a way to control the water surface elevation in a wetland area. The landowner wishes to enhance and enlarge the area to provide habitat for fish and wildlife.

**After Practice Situation:**

A weir box structure is placed in a levee over an existing subsurface system to manage water level elevation. A wetland area is enhanced and water levels can be varied to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Scenario Feature Measure:**

Number of structures

<b>Scenario Typical Size:</b>	1	Each	Tot Unit Cost	\$568.98
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Steel, Angle, 3" x 3" x 1/4"	30	Foot	\$3.26	\$97.80
Materials	Steel, Plate, 3/16"	32	Square Foot	\$6.32	\$202.24
Equip./Install.	Truck, Pickup	2	Hour	\$27.28	\$54.56
Labor	General Labor	2	Hour	\$21.56	\$43.12
Labor	Skilled Labor	4	Hour	\$31.91	\$127.64
Mobilization	Mobilization, General labor	2	Hour	\$21.81	\$43.62

Total Cost: \$568.98

**Payment types:**

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$426.74	EQIP-HU	\$512.08
WHIP	\$426.74	WHIP-HU	\$512.08
EQIP-NOI	\$426.74	EQIP-HUNOI	\$512.08
EQIP-MRBI	\$426.74	EQIP-HUMRBI	\$512.08
WHIP-MRBI	\$426.74	WHIP-HUMRBI	\$512.08

**Practice: 587 - Structure for Water Control**

**Scenario # 7 Flap Gate, <=15"**

Missouri

**Scenario Description:**

A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation or measures water. This practice applies wherever a permanent structure is needed as an integral part of a water-control system. A Flap/Slide Gate with a pipe of 15" diameter or less is placed in a levee to manage water level elevation. Payment incorporates pipe, anti seep collar, trash guard, animal guard, and flap gate.

**Before Practice Situation:**

A wetland or other area is in need of a flap gate to control the flow of water through a pipe to provide habitat for fish and wildlife. The landowner wishes to provide a way for water to flow into a managed wetland pool yet automatically prevent flow from leaving the pool when the water source inflow head becomes less than the pool head.

**After Practice Situation:**

A WCS pipe with flap gate 15" or less in diameter is installed. The pipe is installed through a water management embankment allowing shallow water impoundments to take on water from a higher elevation such as floodwater. When the surface of the inflow water source drops to an elevation that is lower than the wetland pool water surface, the flap gate automatically closes, preventing the loss of water from the wetland area. A wetland area is enhanced by having the ability to automatically fill with water when the hydrologic opportunity presents itself to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Scenario Feature Measure:**

Number of structures

**Scenario Typical Size:**

1	Each	Tot Unit Cost	\$2,320.25
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Steel, Plate, 3/8"	4	Square Foot	\$13.76	\$55.04
Materials	Steel, Plate, 1/8"	49	Square Foot	\$4.22	\$206.78
Materials	Pipe, PVC, 15", SDR 35	65	Foot	\$12.96	\$842.40
Materials	Trash Guard, metal	82	Pound	\$2.24	\$183.68
Equip./Install.	Backhoe, 80 HP	6	Hour	\$47.04	\$282.24
Labor	General Labor	12	Hour	\$21.56	\$258.72
Labor	Skilled Labor	4	Hour	\$31.91	\$127.64
Labor	Equipment Operators, Heavy	6	Hour	\$27.22	\$163.32
Mobilization	Mobilization, medium equipment	1	Each	\$200.43	\$200.43

Total Cost: \$2,320.25

**Payment types:**

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$1,740.19	EQIP-HU	\$2,088.23
WHIP	\$1,740.19	WHIP-HU	\$2,088.23
EQIP-NOI	\$1,740.19	EQIP-HUNOI	\$2,088.23
EQIP-MRBI	\$1,740.19	EQIP-HUMRBI	\$2,088.23
WHIP-MRBI	\$1,740.19	WHIP-HUMRBI	\$2,088.23

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**Scenario # 8 Flapgate, >15"**

**Missouri**

**Scenario Description:**

A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation or measures water. This practice applies wherever a permanent structure is needed as an integral part of a water-control system. A Flap/Slide Gate with a pipe of greater than 15" diameter is placed in a levee to manage water level elevation. Payment incorporates pipe, anti seep collar, trash guard, animal guard, and flap gate.

**Before Practice Situation:**

A wetland or other area is in need of a flap gate to control the flow of water through a pipe to provide habitat for fish and wildlife. The landowner wishes to provide a way for water to flow into a managed wetland pool yet automatically prevent flow from leaving the pool when the water source inflow head becomes less than the pool head.

**After Practice Situation:**

A WCS pipe with flap gate greater than 15" in diameter is installed. The pipe is installed through a water management embankment allowing shallow water impoundments to take on water from a higher elevation such as floodwater. When the surface of the inflow water source drops to an elevation that is lower than the wetland pool water surface, the flap gate automatically closes, preventing the loss of water from the wetland area. A wetland area is enhanced by having the ability to automatically fill with water when the hydrologic opportunity presents itself to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

**Scenario Feature Measure:**

Number of structures

<b>Scenario Typical Size:</b>	1	Each	Tot Unit Cost	\$3,815.47
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Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Steel, Plate, 3/8"	8	Square Foot	\$13.76	\$110.08
Materials	Pipe, PVC, 24", PS 46	65	Each	\$32.11	\$2,087.15
Materials	Steel, Plate, 1/8"	49	Square Foot	\$4.22	\$206.78
Materials	Trash Guard, metal	155	Pound	\$2.24	\$347.20
Equip./Install.	Backhoe, 80 HP	6	Hour	\$47.04	\$282.24
Labor	General Labor	12	Hour	\$21.56	\$258.72
Labor	Skilled Labor	5	Hour	\$31.91	\$159.55
Labor	Equipment Operators, Heavy	6	Hour	\$27.22	\$163.32
Mobilization	Mobilization, medium equipment	1	Each	\$200.43	\$200.43

Total Cost: \$3,815.47

**Payment types:**

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$2,861.60	EQIP-HU	\$3,433.92
WHIP	\$2,861.60	WHIP-HU	\$3,433.92
EQIP-NOI	\$2,861.60	EQIP-HUNOI	\$3,433.92
EQIP-MRBI	\$2,861.60	EQIP-HUMRBI	\$3,433.92
WHIP-MRBI	\$2,861.60	WHIP-HUMRBI	\$3,433.92