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ISLAND COUNTY
MARINE RESOURCES
COMMITTEE

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CORNET BAY PIER RETROFIT

Oak Harbor, Washington

INTRODUCTION

- Project Overview
- Condition Assessment
- Proposed Habitat Restoration
- Segment 1: Abutment Options
- Segment 2: Superstructure Options
- Segment 2: Cost Comparison
- Segment 2: Recommendations
- Segment 3: Pier Support Concept
- Next Steps & Considerations

PROJECT OVERVIEW

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Three project elements:

1. New abutment and backwall
2. Pile-supported superstructure
3. Pier support piles
4. Repairs to existing pier
5. Regrade of shoreline to match adjacent slopes
6. Plantings.
7. Drift log erosion protection.

CONDITION ASSESSMENT

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Condition assessment performed by PNDFebruary 17th, 2015 :

1. **Deck-** (18) timber deck boards need to be replaced.
2. **Stringers-** Good Condition. Tar paper serves as a barrier to protect from water intrusion and debris build-up.
3. **Pile caps-** Generally appeared in good condition with the exception of the pile cap at Bent 16. The Bent 16 pile cap was found cracked / split at the north end above Pile D.
4. **Piles-** In good condition with the exception of five (5) piles which exhibited signs of significant section loss.
5. **Lateral bracing- G**enerally found in poor condition and requires corrective action.

HABITAT RESTORATION

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- Move abutment upland
- Span resulting distance
- Regrade beach
- Anchor drift logs
- Plantings
- Reinstall utilities

ABUTMENT OPTIONS

BULKHEAD OPTION 1

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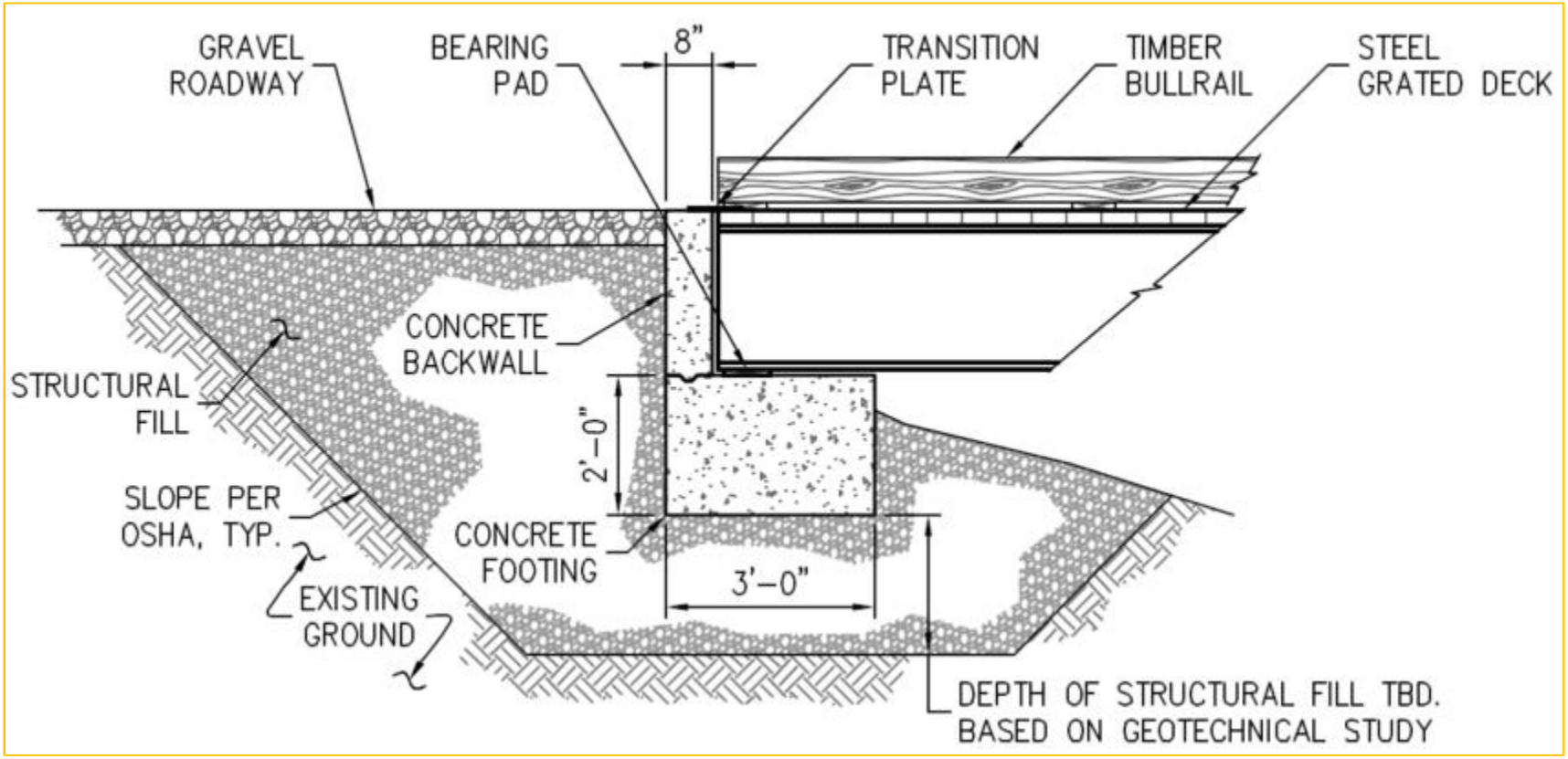

- Option 1- Standard spread footing type abutment. This option requires competent in-situ subgrade.
- Would be the simplest and most cost effective.

BULKHEAD OPTION 2

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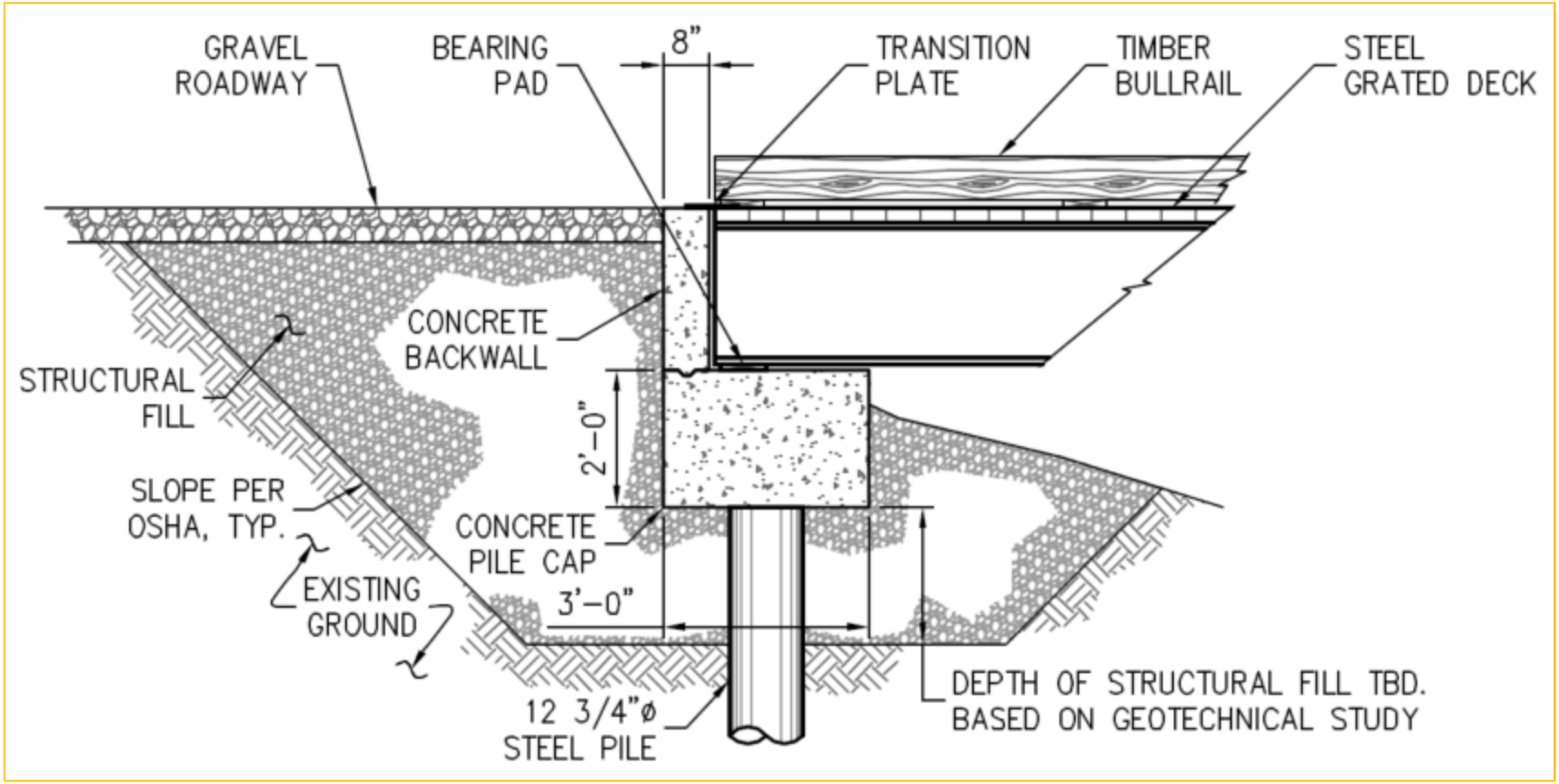

- Option 2 is similar to the standard spread footing with a pile-supported foundation. This more complex option will be required if soft soils are encountered.

BULKHEAD OPTION 3

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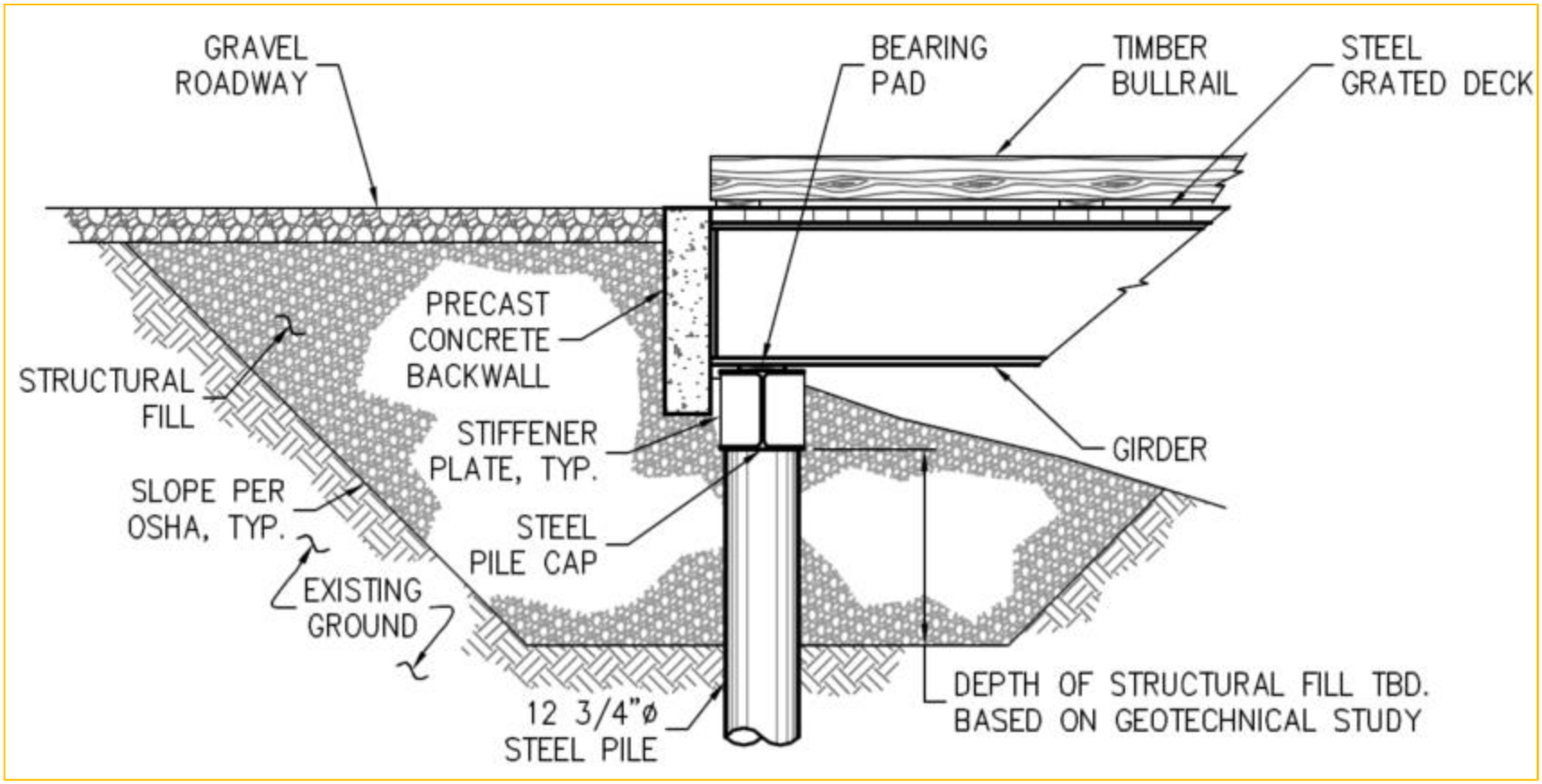

- Option 3 - A fully steel option which could be advantageous if concrete costs escalate or there is no other cast-in-place concrete utilized on the project.

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SUPERSTRUCTURE OPTIONS

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SUPERSTRUCTURE OPTIONS

Island County Marine Resources Committee

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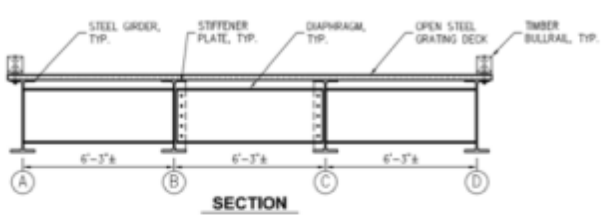

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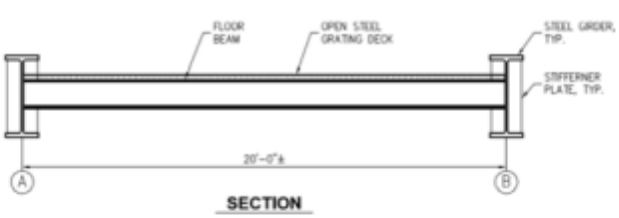

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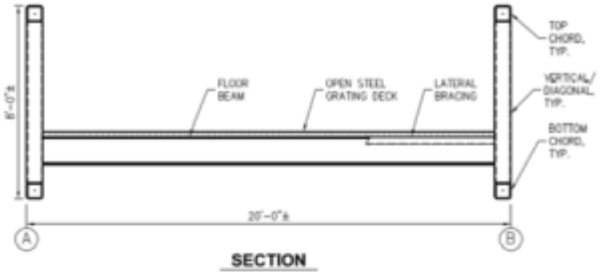

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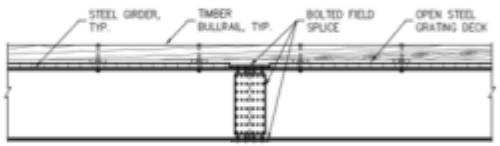
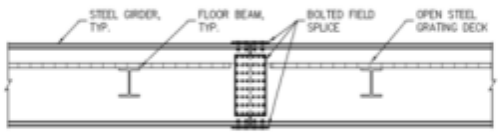


ELEVATION



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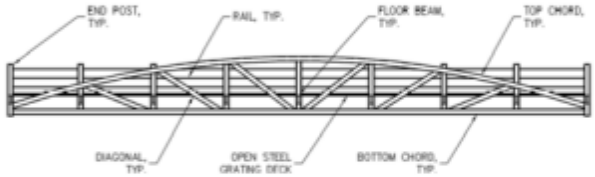

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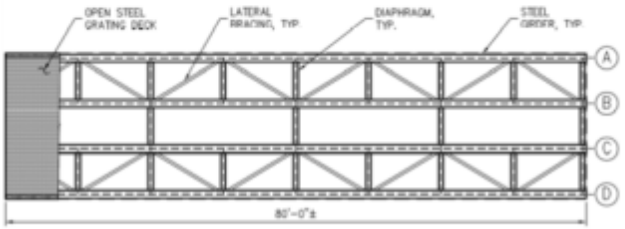
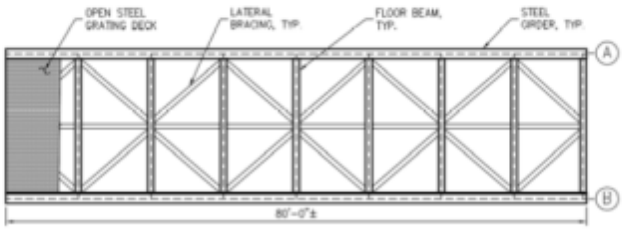


PLAN

STEEL GIRDER (OPTION 1)

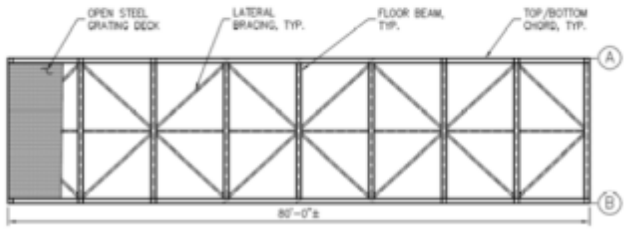
42% open area



PLAN

STEEL THRU-GIRDER (OPTION 2)

42% open area



PLAN

STEEL TRUSS (OPTION 3)

49% open area

OPTION 1: STEEL TRUSS

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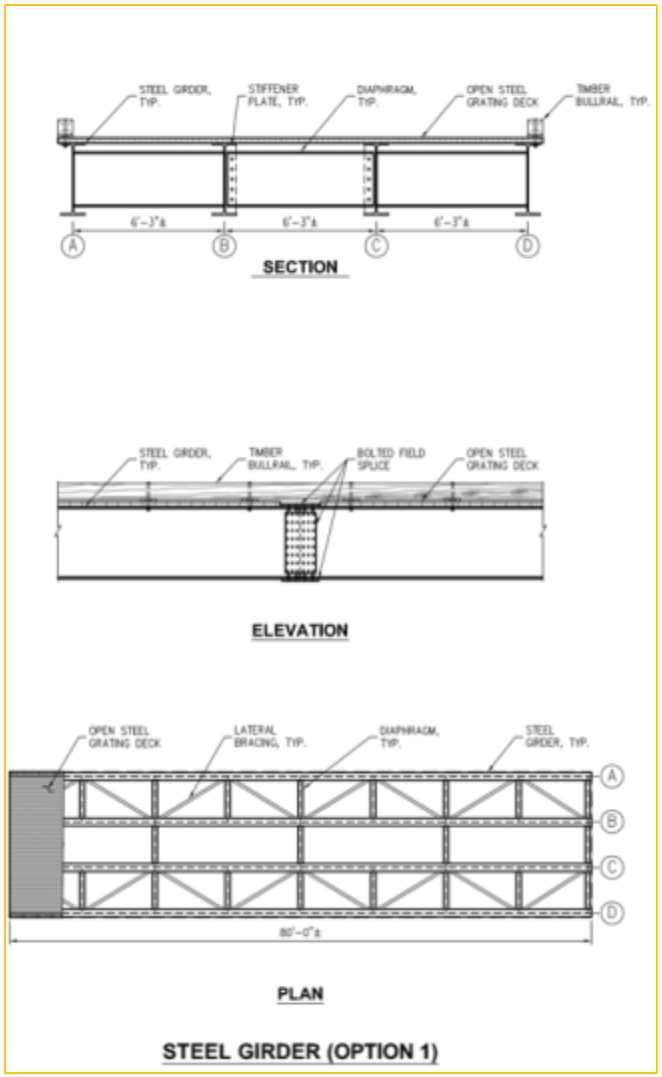

STEEL TRUSS ESTIMATE (2017$)			
1	Site Mobilization and Demobilization	$	75,000
2	Demolition and Site Work	$	178,000
3	Utilities	$	30,000
4	Steel Truss Superstructure	$	293,000
5	Abutment	$	28,000
6	Pier	$	48,000
7	Landscaping/Planting	$	60,000
	Construction Subtotal	**$**	**712,000**
8	Cost Escalation for Year 2017	$	58,000
9	Construction Contingency (Assume 20%)	$	154,000
10	Washington State Sales Tax (8.7%)	$	80,000
11	Final Design and Construction Admin. (Assume 10%)	$	77,000
	Steel Truss Superstructure Construction Total	**$**	**1,081,000**

- Superstructure load rating: 25,000 lbs.

OPTION 2: TWO-GIRDER

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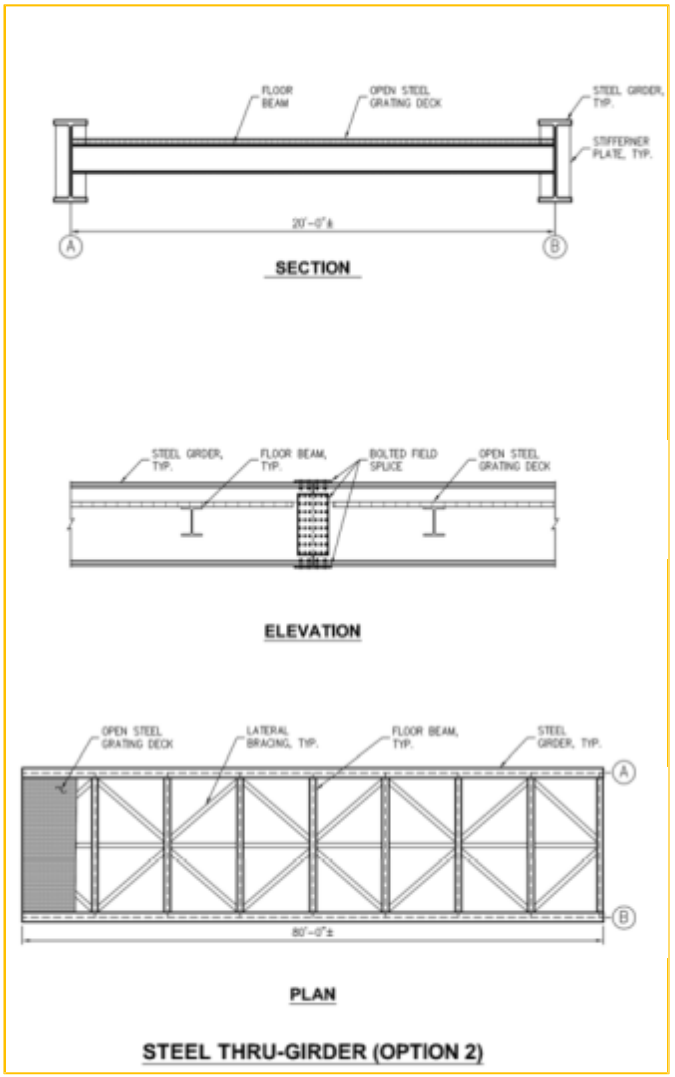

TWO-GIRDER ESTIMATE			
1	Site Mobilization and Demobilization	$	40,000
2	Demolition and Site Work	$	89,000
3	Utilities	$	30,000
4	2 Girder Superstructure	$	71,000
5	Abutment	$	28,000
6	Pier	$	28,000
7	Landscaping/Planting	$	60,000
	Construction Subtotal	**$**	**346,000**
8	Geotechnical Exploration and Report	$	30,000
9	Cost Escalation for Year 2017	$	31,000
10	Construction Contingency (Assume 20%)	$	75,000
11	Washington State Sales Tax (8.7%)	$	39,000
12	Final Design and Construction Admin. (Assume 10%)	$	38,000
	Steel Thru-Girder Construction Total	**$**	**559,000**

- Superstructure load rating: 25,000 lbs.

OPTION 3: FOUR-GIRDER

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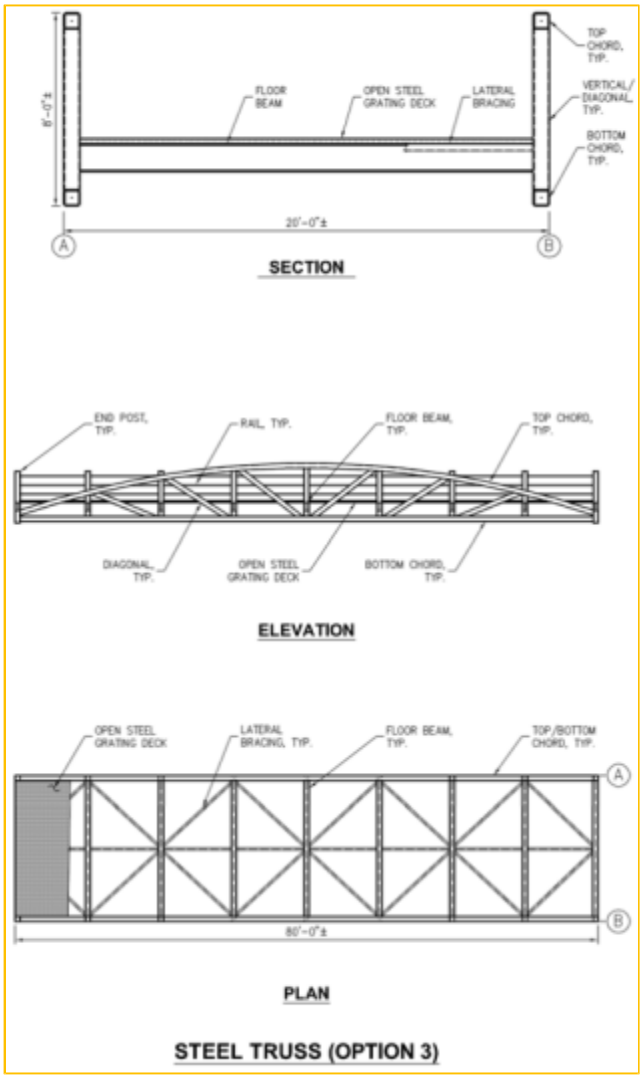

4-GIRDER ESTIMATE			
1	Site Mobilization and Demobilization	$	50,000
2	Demolition and Site Work	$	93,000
3	Utilities	$	30,000
4	2 Girder Superstructure	$	141,000
5	Abutment	$	28,000
6	Pier	$	48,000
7	Landscaping/Planting	$	60,000
	Construction Subtotal	**$**	**450,000**
8	Geotechnical Exploration and Report	$	30,000
9	Cost Escalation for Year 2017	$	39,000
10	Construction Contingency (Assume 20%)	$	98,000
11	Washington State Sales Tax (8.7%)	$	51,000
12	Final Design and Construction Admin. (Assume 10%)	$	49,000
	Steel Thru-Girder Construction Total	**$**	**717,000**

- Superstructure load rating: 25,000 lbs.

ENGINEER'S RECOMMENDATION

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Island County Marine Resources Committee

- PND's preferred option is the two-girder superstructure option

PROS OF OPTION 2

- Lowest cost option
- 42% open, casting lower amount of shade on nearshore habitat than the existing structure
- Low impact to shallow water habitat
- Pairs well with pultruded grating
- Offers a traditional architectural look

CONS OF OPTION 2

- Is 7% less open than option 3.
- Offers less modern architectural choices

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ENGINEER'S RECOMMENDATION

Island County Marine Resources Committee

- PND's preferred option is the two-girder superstructure

DeKalb Pier Repair, Replacement & Renovation
City of Port Orchard

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ENGINEER'S RECOMMENDATION

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- PND's preferred option is the two-girder superstructure option

Huntzinger Road Fishing Pier
Grant County PUD

PIER SUPPORT CONCEPT

PIER SUPPORT CONCEPT

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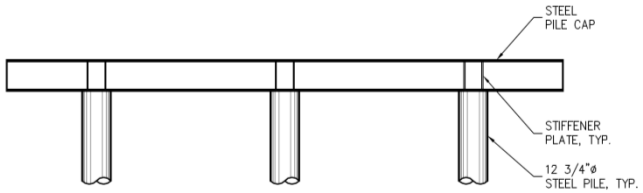

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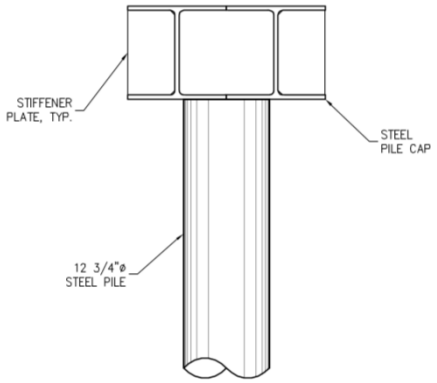

SECTION

STEEL PILE (OPTION 1)

- The pier support option replaces the nearshore pile bent and could be comprised of steel or timber materials.

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NEXT STEPS & CONSIDERATIONS

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- Funding
- Benefits to Habitat
  - Sediment dam removed
  - Potential for debris lodging reduced
  - More light penetration
  - Opportunity for plantings
  - Permitability
- Scheduling
  - 30% design 11/2015
  - Permits submitted 1/2016
  - 90% Design 6/2016
  - Final Design 10/2016
  - Begin construction 11/2016

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