

ss. 13, 15, 17, 19



ss. 13, 15, 17, 19

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AEQ Demand Analysis - Route 21

Percentile AEQ Analysis, F20

Percentile	All Sailings YR			Peak Season			Peak Season Combined		
	Buckley Bay	Denman West	Route	Buckley Bay	Denman West	Route	Buckley Bay	Denman West	Route
0.85	46	48	47	51	51	51	53	53	53
0.9	50	50	50	52	52	52	56	56	57
0.95	52	52	52	53	54	54	96	90	94
0.98	54	54	54	55	55	55	103	102	102
Total Sailings	5838	5838	11676	1300	1300	2600	1152	1155	2307

N.B. a big jump in capacity from 0.9 to 0.95 percentile

Route 21 estimated average AEQ capacity utilization of a 70 AEQ Vessel, based on F20 with zero growth

Route	Vessel	Off Peak							Shoulder							Peak						
		Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Buckley Bay	1	96	118	128	138	148	158	168	178	188	198	208	218	228	238	248	258	268	278	288	298	308
	2	26	108	118	128	138	148	158	168	178	188	198	208	218	228	238	248	258	268	278	288	298
	3	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326
	4	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336
	5	86	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296
	6	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306
	7	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316
	8	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326
	9	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336
	10	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346
	11	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356
	12	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366
	13	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376
	14	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386
	15	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396
	16	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406
	17	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406	416
Denman West	1	86	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	
	2	96	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	
	3	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	
	4	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	
	5	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	
	6	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	
	7	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	
	8	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	
	9	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	
	10	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	
	11	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	
	12	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	
	13	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	
	14	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406	
	15	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406	416	
	16	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406	416	426	
	17	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406	416	426	436	

Route 21 estimated average AEQ capacity utilization of a 80 AEQ Vessel, based on F20 with zero growth

Route	Vessel	Off Peak							Shoulder							Peak						
		Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Buckley Bay	1	96	118	128	138	148	158	168	178	188	198	208	218	228	238	248	258	268	278	288	298	308
	2	26	108	118	128	138	148	158	168	178	188	198	208	218	228	238	248	258	268	278	288	298
	3	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326
	4	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336
	5	86	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296
	6	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306
	7	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316
	8	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326
	9	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336
	10	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346
	11	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356
	12	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366
	13	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376
	14	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386
	15	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396
	16	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406
	17	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406	416
Denman West	1	86	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	
	2	96	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	
	3	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	
	4	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	
	5	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	
	6	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	
	7	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	
	8	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	
	9	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	
	10	176	186	196	206	216	226</															

Baynes Sound Connector

Present Lightship = 637.13t

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Length = 78.5 m

Existing Breadth (moulded) = 17.0m

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Depth (moulded) = 2.1m

Existing maximum displacement = 896.36t

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Equipment Number

Existing LR Equipment Number (calculated) = 652

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Existing anchor weight = 550kgs

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Bilge System

LR Bilge Main

Existing bilge main required diameter = 90.1mm

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Existing bilge main pipe = 3½" Sched 40 pipe (ID 90.1mm)

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Bilge branches

All bilge branches are currently 3" Sched 40 (88.9mm ID).

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Bilge Pump

Existing bilge pumps are rated at 46.6m³/hr.

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Estimate for Engineering Services

Title	Dynamic analysis of widened Baynes Sound Connector cable ferry
Prepared for	James Adams, P.Eng - BC Ferries Services (BCFS)
Date	April 7, 2022
Prepared by	Colin Wilson, P.Eng – DSA Ocean
Revision	B
Proposal / Estimate No.	22-015

Item	Description	Cost
1	<p>Dynamic analysis of widened Baynes Sound Connector cable ferry</p> <p>Requirements: BCFS is completing a feasibility study of modifying the Baynes Sound Connector to accommodate ss. 13, 17 . The current concept involves widening the hull by ss. 13, 17 . BCFS is reviewing the capacity of the berths, cables, and cable anchors based on the increased displacement of the vessel.</p> <p>The proposed modifications to the vessel are:</p> <ul style="list-style-type: none"> • ss. 13, 17 <p>Guide cables shall remain the same distance from centerline of the vessel and re-located to bow and stern such that they are in-line and at the same elevation as the drive cable sheave.</p> <p>BC Ferries requires a dynamic analysis to assist with the feasibility assessment. The analysis is required to: ss. 13, 17</p> <p>Environmental conditions for load cases based on previous EYE report representing 1 in 100 year and extreme conditions.</p>	<p>Colin Wilson, P.Eng. – ss. 17, 21</p> <p>Dean Steinke, P.Eng. – ss. 17, 21</p> <p>Meysam Karimi, PhD, ss. 17, 21</p> <p><input checked="" type="checkbox"/> Time & Materials</p>

	<p>Method: An updated vessel model will be generated using ShipMo3D and modeled in the time domain software ProteusDS.</p> <p>Deliverables: A digital engineering analysis report summarizing the system inputs and results of the analysis will be created. The final revision of the report will be sealed by a EGBC licensed Professional Engineer (P.Eng).</p> <p>Schedule: The analysis will be completed 4 weeks after issuance of PO.</p>
	Total: ss. 17, 21

Bespoke engineering services rates (All rates in CDN dollars)

Name	Level	Years Experience	Education	Expertise / Experience	Rate (CDN)
Colin Wilson, P.Eng.	Senior Engineer	11	B.Eng.	Mooring design, hydrodynamics, aquaculture inspection	ss. 17, 21
Dr. Meysam Karimi	Intermediate Engineer	5	PhD., MSc., BSc. (Naval Arch)	Coastal engineering, hydrodynamics, ocean engineering, numerical modeling	
Dr. Thomas Kinsey, P.Eng.	Senior Engineer	12	PhD, MSc, BSc (Engineering physics)	Computational fluid dynamics, mooring design, fluid mechanics, model testing	
Dean Steinke, P.Eng.	Senior Engineer	18	MASc, B.Eng.	Ocean engineering, mooring analysis, hydrodynamics	
Elodie Forest, EIT	Junior Engineer	3	B.Eng. (Civil)	Structural engineering, mooring analysis	
Brett Wagner, EIT	Junior Engineer	3	B.Eng. (Mechanical)	Mechanical design, mooring analysis and design	
Chris Beck	Technologist	5	B.A., Ocean Tech	GIS, Marine technician	

Item	Costs included in financial proposal?	Item required for project?	Comments
Travel fares, mileage, per diems	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> No	
Materials / supplies	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> Unknown <input checked="" type="checkbox"/> No	
DSA personnel day-rate for	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> No	

requested site visits			
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Payment terms

Lump sum services agreement payment terms:

- DSA will issue initial invoice for **ss. 17, 21** on confirmation of order and prior to commencing services/project.
- A final invoice will be sent on project completion.

Acceptance of quotation

This proposal, and the terms and conditions, may be accepted by submitting a signed Purchase Order (Option 1) or signing this proposal in the area below (Option 2).

Option 1 – Purchase Order

Acceptance of this proposal and its terms and conditions may be indicated by submission of a signed or fully authorized Purchase Order (PO) in PDF format to info@dsaocean.com, with the following address:

DSA
201 – 754 Broughton Street
Victoria, BC
V8W 1E1
+1 250 483 7207

The PO should reference this proposal and its revision. The services are subject to the terms and conditions found starting on page 6.

DSA will sign the PO and return the signed PO to acknowledge acceptance of the order.

Option 2 – Signature

To accept this proposal, complete and sign the statement below.

I, _____ (Name), accept the Terms and Conditions and financial proposal as described within this document as an authorized representative of _____ (Company).

Signature of Company authorized agent:	
Date:	

DSA acknowledgement of order:

Signature of DSA authorized agent:	
Date:	

Authorization, Terms & Conditions, Payment, Travel/Supplies, & Notes

Acceptance of this quote and the terms and conditions will be indicated by submission of a PO authorization in PDF format to info@dsaocean.com, with the following address:

Attn: DSA Engineering Manager
DSA
201 – 754 Broughton Street
Victoria, BC
V8W 1E1
+1 250 483 7207

The PO should reference this proposal and its revision. The services are subject to the terms and conditions listed in the terms and conditions below.

DSA will sign the PO and return the signed PO to acknowledge acceptance of the order.

Invoicing instructions will be provided on the invoice; payments by cheque should be sent to the address provided above. Bank information for direct deposit and wire transfer is also provided below.

Payment terms are “Net 30”. Outstanding balances are subject 1.87% interest rate, compounded monthly.

Invoices will be in \$CAD or \$USD.

DSA carries **ss. 17, 21** in annual aggregate professional liability insurance (E&O) and **ss. 17, 21** commercial general liability insurance.

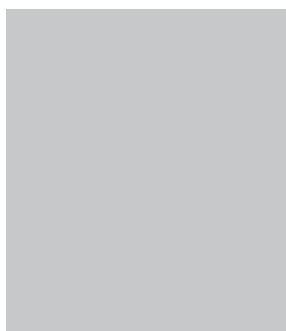
As outlined in the terms and conditions, any modifications or developments regarding DSA's engineering analysis software, ProteusDS, and related tools remains the intellectual property of DSA. Conversely, any general design information, results, recommendations, or other products of the proposed services remain property of the organization receiving the deliverables outlined in this proposal, or otherwise arranged.

Quality Policy

DSA's mission is to provide the highest quality of ocean engineering services that meets or exceeds our client's expectations, reducing their financial and environmental risks. To achieve this policy, DSA has implemented the requirements of the ISO 9001 standard. DSA's quality system provides the framework required to consistently monitor, evaluate, and improve the organization's performance. DSA and its leadership is fully committed to complying with all interested parties' relevant regulations and requirements and to the continuous improvement of the organization's overall quality management system.

Quality Management System

DSA has been certified by NSF-ISR to ISO 9001:2015.



<p>Dynamic Systems Analysis Ltd. Terms & Conditions</p> <p>Together with the purchase order (the “PO”) signed by Dynamic Systems Analysis Ltd. (“DSA OCEAN”) and a customer (“Customer”), these terms of service (the “Terms”) will govern the relationship between DSA Ocean and the Customer with respect to the product design and/or engineering services (the “Services”), described in the PO and in the underlying proposal or quotation prepared by DSA Ocean (the “Proposal”), to be performed by DSA Ocean. As it relates specifically to those Services, the PO and these Term constitute the entire agreement (the “Agreement”) between DSA Ocean and the Customer, and replaces any previous or contemporaneous representations, negotiations, understandings, and agreements, oral or written. No modification to an Agreement will bind DSA Ocean or the Customer unless it is in writing and signed by both parties.</p>
<p>1. Scope of services</p> <p><i>1.1 Services</i></p> <p>DSA Ocean agrees to render the Services described in the PO and the Proposal. DSA Ocean may engage contractors to complete part or all of the Services, on the condition that (a) those contractors will abide by, and (b) DSA Ocean will at all times remain liable under, this Agreement, as if it had performed the Services directly and not with the assistance of a contractor.</p>
<p>2. Confidentiality</p> <p><i>2.1 Confidential Information</i></p> <p>The Customer agrees that provision of the Services will require disclosure to DSA Ocean of the Customer’s Confidential Information. The Customer also acknowledges that it may receive DSA Ocean’s Confidential Information. As used in this Section 2, “Confidential Information” includes information or data that is confidential or proprietary to the disclosing party which is not generally available to or used by persons other than those expressly authorized by the disclosing party.</p> <p><i>2.2 Restrictions on Use</i></p> <p>Neither party to the Agreement (the “Recipient”) will disclose, transfer, use, copy, or allow access to the Confidential Information of any other party to the Agreement (the “Owner”) in the absence of the Owner’s prior written consent. Each Recipient agrees that will not use the Owner’s Confidential Information except as is expressly authorized by the Agreement or by the Owner. DSA Ocean specifically agrees that it will not use the Customer’s Confidential Information to manufacture software, parts, or components for the account of DSA Ocean unless expressly authorized in advance by Customer in writing.</p> <p><i>2.3 Ownership</i></p> <p>The Owner retains all right, title, and interest in and to the Owner’s Confidential Information. On demand, the Recipient will, within 10 days after receiving written demand, return the Owner’s Confidential Information, uncopied and undistributed (together with any notes, memoranda, or summaries of the Confidential Information made by or on behalf of the Recipient) to the Owner. Despite the foregoing, it is agreed that DSA Ocean may keep an archival copy of the Customer’s Confidential Information where necessary to comply with ISO 9001 certification requirements.</p> <p><i>2.4 Breach</i></p> <p>Each party to an Agreement acknowledges that a Recipient’s a breach of this Section 2, actual or threatened, may cause irreparable harm to the Owner. Accordingly, and in addition to those other remedies available at law, the Owner will have the right to seek equitable relief, including an injunction, without posting a bond.</p>
<p>3. Termination</p> <p><i>3.1 Termination</i></p> <p>Unless otherwise noted in the PO, DSA Ocean will promptly cease work on or before the fourteenth day (the “Termination Date”) after it receives written notice from the Customer of the termination (the “Termination Notice”) of an Agreement according to its terms. Within thirty days following receipt of a Termination Notice, DSA Ocean will provide the Customer with an invoice for all outstanding fees, disbursements, and taxes payable to and including the Termination Date, not to exceed the total amount payable according to the PO. On receipt of payment, DSA Ocean will deliver all Work Product (as that term is defined in Section 6 below) created to the Termination Date, in whatever form it exists.</p>
<p>4. Fees, Expenses and Payment</p> <p><i>4.1 Fees</i></p> <p>For Services rendered, the Customer agrees to pay fees to DSA Ocean (“Fees”) on a “net 30’ basis following issuance of invoices by DSA Ocean. Specific payment terms are included in each Proposal.</p> <p><i>4.2 Taxes</i></p> <p>Fees are exclusive of applicable taxes.</p>
<p>5. Relationship of the parties</p>

5.1 Independent Contractor

DSA Ocean is an independent contractor, and not the Customer's agent or partner.

5.2 Insurance

DSA Ocean will maintain in full force and effect for the term of these Terms, all insurance required by law or otherwise set out in a Proposal.

6. Work product and ownership rights

6.1 Work Product

"**Work Product**" means any designs, data, documentation, parts, materials, drawings, or information of any kind, in whatever form, first created in the performance of Services that DSA Ocean has expressly agreed to deliver to Customer and which is detailed as a deliverable in a Proposal. Work Product does not include (a) original work developed by DSA Ocean for internal use or for others even if that work is used or delivered by DSA Ocean in performance of the Services; (b) work that is subject to third-party license agreements; (c) information in the public domain; (d) DSA Ocean's ideas, concepts, know-how, and techniques; (e) the DSA Ocean Materials (as defined in paragraph 6.4).

6.2 Ownership of Work Product

On receipt of payment in full for the Services, DSA Ocean will transfer all right and title in and to the Work Product to the Customer, including all intellectual property rights relating directly to the Work Product, subject to the exclusions in 6.4. DSA Ocean and Customer hereby agree that any copyrightable portion of the Work Product will be deemed a "Work for Hire" under the United States copyright laws.

6.3 Incidents and Further Assurances

DSA Ocean will perform any acts that may be deemed necessary or desirable by Customer to evidence more fully the transfer of ownership of all materials designated under this Section to Customer, including, but not limited to, the making of further written assignments in a form determined by Customer, and other assistance as necessary to file for and to secure patent rights in the U.S. and any foreign countries. In the event this assistance requires time and effort beyond completing the forms for assignment, Customer will compensate DSA Ocean for its expenses as pre-approved by Customer.

6.4 Supplier's Materials

Pre-existing materials, design documents, presentations, techniques, know-how, procedures and software owned by DSA Ocean or developed by DSA Ocean that DSA Ocean may use in creating deliverables described in a Proposal will remain the property of DSA Ocean ("**DSA Ocean Materials**"). Unless otherwise indicated in a Proposal, DSA Ocean grants to the Customer a perpetual, worldwide, royalty-free license to use such DSA Ocean Materials to the extent that they are needed for the Customer's intended use of the Work Product.

7. Customer responsibilities

7.1 Responsibility

Customer is solely responsible to test the Work Product that DSA Ocean delivers. Customer is solely responsible to ensure that any resulting products including, in whole or in part, the Work Product, are tested, manufactured, packaged, labelled (including adequate warnings), sold, and used in a safe and careful manner and in compliance with all applicable laws, regulations, and appropriate industry standards. Unless otherwise specifically stated in a Proposal, Customer is solely responsible for obtaining any applicable or necessary approvals. Customer assumes all responsibility for any information and/or specifications it provides to DSA Ocean and agrees that, unless specifically stated in the Proposal, DSA Ocean may rely on such information and/or specifications without independent verification.

8. Customer property

8.1 Property

All supplies, materials and other items furnished by Customer, either directly or indirectly, to DSA Ocean to perform the Services, or for which DSA Ocean has been reimbursed by Customer, will be and remain the property of Customer ("**Customer's Property**").

8.2 Return of Customer Property

Upon the request of Customer, Customer's Property will be immediately released to Customer or delivered to Customer by DSA Ocean, to any location designated by Customer, in which event Customer will pay to DSA Ocean the reasonable costs of delivering such property.

9. Warranty and limitation of liability

9.1 Supplier Warranty.

DSA Ocean warrants that all Services will be performed in a workmanlike and professional manner. DSA Ocean EXCLUDES AND DISCLAIMS ALL EXPRESS AND IMPLIED WARRANTIES NOT STATED HEREIN, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT AND FITNESS FOR A PARTICULAR PURPOSE.

9.2 Limited Liability.

DSA Ocean's liability hereunder will not exceed the fees paid to DSA Ocean by Customer for the Services pursuant to the Proposal under which a Claim is made. NEITHER CUSTOMER NOR DSA Ocean WILL BE LIABLE TO EACH OTHER OR TO ANY THIRD PARTY FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH THESE TERMS, EVEN IF THE PARTIES HAD KNOWLEDGE OF THE POSSIBILITY OF SUCH DAMAGES.

10. Indemnification

10.1 Supplier Indemnification

DSA Ocean will defend, indemnify and hold harmless Customer and all of its respective officers, directors, employees, agents, joint ventures, affiliates, successors and assigns from and against any and all third party claims, actions, suits demands arising out of or based upon tangible property damage or bodily injury (including death at any time resulting therefrom) to any person, including employees of Customer or any affiliate, subcontractor or agent, to the extent caused by DSA Ocean's violation of any laws or any negligent act or omission by DSA Ocean or its agents or employees under these Terms.

10.2 Customer Indemnification

Customer will defend, indemnify and hold harmless DSA Ocean and all of its respective officers, directors, employees, agents, joint ventures, affiliates, successors and assigns from and against any and all third party claims, actions, suits demands arising out of or based upon tangible property damage or bodily injury (including death at any time resulting therefrom) to any person, including employees of DSA Ocean or any affiliate, subcontractor or agent, to the extent caused by Customer's violation of any laws or any negligent act or omission by Customer or its agents or employees.

10.3 Indemnity Exclusions

Notwithstanding the foregoing, DSA Ocean will have no obligation to indemnify Customer for any claim arising from:(a) DSA Ocean's compliance with Customer's or third-party designs, specifications, instructions, requests, requirements or technical information; or (b) any Claim arising from the negligence or intentional misconduct of Customer.

10.4 Joint Responsibility

Where personal injury or death or loss of, damage to or destruction of property is the result of the joint negligence or intentional misconduct of Customer and DSA Ocean, the amount of the Claim for which Customer will be entitled to indemnification will be limited to that portion attributable to the negligence or intentional misconduct of DSA Ocean. The indemnified party will give the indemnifying party reasonable evidentiary assistance and complete control of the defense thereof; provided, however, that the failure to give such notice will not limit the indemnifying party's obligations hereunder except to the extent indemnified party is prejudiced thereby. Notwithstanding the foregoing, the indemnified party may participate in such defense with counsel of its choosing at its sole expense.

11. Miscellaneous

11.1 Third Parties

These Terms are solely for the benefit of DSA Ocean and the Customer, and no provision of these Terms will be deemed to confer upon any third parties any remedy, claim, liability, reimbursement, cause of action or other right.

11.2 Force Majeure

Neither party will be responsible for any failure to fulfill its non-monetary obligations under these Terms due to causes beyond its reasonable control, including fire, flood, war, labor disputes, shortages, riots, insurrections, explosions, earthquakes, acts of God, provided it (i) notifies the other party of the force majeure event, (ii) exercises reasonable efforts to fulfill its obligations as soon as possible, and (iii) proceeds to perform with diligence once the cause(s) of such non-performance are removed or cease.

11.3 Governing Law

Each Agreement, in all respects, will be interpreted, construed and enforced according to the laws of the Province of British Columbia, without regard to that province's conflict of laws principles. The United Nations Convention on Contracts for the International Sale of Goods will not apply to an Agreement.

11.4 Injunctions

The Customer agrees that the covenants set out in sections * (the "Covenants") are both reasonable and commensurate with the protection of the legitimate interests of DSA Ocean and that a breach by any party of any of Covenants would result in damages to DSA Ocean for which a monetary award would not be adequate compensation. The Customer acknowledges that in the event of any such breach, in addition to all other remedies available to DSA Ocean at law or in equity, the DSA Ocean will be entitled to relief by way of restraining order, injunction, decree, declaration or otherwise as may be appropriate to ensure compliance with the Covenants as may be granted by a court of competent jurisdiction and each of the parties acknowledges that the granting of such relief is fair and reasonable in the circumstances. It is also agreed that the Covenants will continue in force even if the remainder of an Agreement is terminated for any reason whatsoever, other than the agreement in writing of all the parties and is severable for such purpose.

11.4 Marketing

The Customer agrees that (a) DSA Ocean may list the Customer's name in DSA Ocean's marketing and promotional materials; (b) subject to Section 2, DSA Ocean may submit Work Product for recognition in professional award programs; and (c) the Customer will co-operate with DSA Ocean to promote DSA Ocean as a provider of services similar to the Services.

11.5 Notices

Any notice or other communication ("Notice") permitted or required in an Agreement must be in writing, and given by personal delivery or transmitted by facsimile or electronic mail to the recipient's primary place of business. Any such Notice will be deemed to have been received on the date on it was delivered, or on the third (3rd) business day following the date upon which it was sent by facsimile or electronic mail.

11.6 Assignment

Except as provided in these Terms, no party to an Agreement may assign that Agreement, in whole or in part, without the prior written permission of the other party, such consent not to be unreasonably withheld.

11.7 Waiver

No right or obligation arising under an Agreement may be waived, and no breach excused, unless waived or excused by the written acknowledgement of both DSA Ocean and the Customer.

11.8 Severability

At DSA Ocean's option, the remainder of an Agreement will continue in full force and effect if any part is declared unenforceable by a court having jurisdiction.

11.9 Order of Precedence

These Terms govern, and are incorporated by reference, in every PO. In order to resolve discrepancies, documents will take priority in the following order:

- PO
- Terms
- Proposal

11.10 Agreement

Every Agreement will enure to the benefit of and be binding upon the respective successors, heirs and assigns of DSA Ocean and the Customer party to the Agreement.

Bank information for direct deposit or wire-transfer

Direct deposit or wire-transfer is preferred. DSA Ocean's banking details are:

Account Number **s. 21**

Account number **s. 21**

Branch No: **s. 21**

Transit No: **s. 21**

Institution No: **s. 21**

Bank Name: **s. 21**

Routing / Swift #: **s. 21**

Recipient Name: Dynamic Systems Analysis Ltd

Recipient Telephone: +1 (250) 483-7207

Branch bank address: 3675 Shelbourne Street, Victoria, BC, V8P 4H1

Recipient address: 201 - 754 Broughton St, Victoria, BC, V8W 1E1

From: [Kearney, Bob](#)
To: [Paterson, Bruce](#)
Subject: BSC - Preliminary stability, structure and systems
Date: March 10, 2022 4:00:04 PM

Bruce,

I have placed the following:

- BSC Widening - Estimated Intact & Damage Stability Conditions.pdf
- BC-202104-1310-BCF-01-Rev A.pdf (Structural modification)
- Baynes Sound Connector_Systems.docx

in the folder:

s. 15

In general, the intact and damage stability are very good and everything passes. I may need to tweak the AEQs, ss. 13, 17

The structural drawing may need a little more detail, but are well developed. I still have not come up with a good plan for cable tunnels.

Baynes Sound Connector_Systems contains notes about the Equipment number and bilge system.

I am off on vacation tomorrow and Monday. Returning Tuesday.

Bob Kearney, ASCT
Naval Architect
Engineering – Fleet Technical
British Columbia Ferry Services Inc.
501-1321 Blanshard St., Victoria, BC, V8W 0B7
T: 250-978-2358 **C:** ss. 15, 19
bob.kearney@bcferries.com
[bcferries.com](#) | [Facebook](#) | [Twitter](#)

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From: [Kearney, Bob](#)
 To: [Paterson, Bruce](#)
 Subject: BSC - Widening - Steel Weight Estimate
 Date: March 19, 2021 2:56:29 PM

Bruce,

Here is the weight estimate for two 2.6m w de longitudinal inserts.

Item	Description	Unit Weight	Amount	Unit	Weight			Surface Area (Paint)
Baynes Sound Connector								
Project: 2 X 2.6m Widening								
Weight - Each Side								
ss. 13, 17								
Deck Plate - 12.7mm								
Bottom Plate - 9.5mm								
Deck Long tudinals - 5X								
Bottom Long tudinals - 5X								
Transverse Bulkhead plt - 8X								
Transverse Bulkhead Stfrs- 8X								
Transverse Deck Beam - 21X								
Web Frames Bottom - 21X								
Frame Diagonal Struts - 21X								
Frame Pillars								
BHD Stifr BKTS - Top								
BHD Stifr BKTS - Bottom								
Fore/Aft longl end bkts								
NWT BHS FR 1 & 31								
6" Fire Main								
Gu de cable tunnel								
Bottom Shell Stiffers								
Welding & Misc pieces								
				Each Side:	72307	kgs		1674 m2
				Total - Both Sides:	144615	kgs		3348 m2
					144.6	tonnes		

As a check:
 Current Lightship = 637t
 Existing breadth = 17m

ss. 13, 17

Bob Kearney, ASCT
 Naval Architect
 Engineering – Fleet Technical
British Columbia Ferry Services Inc.
 501-1321 Blanshard St., Victoria, BC, V8W 0B7
 T: 250-978-2358 C: [ss. 15, 19](#)
bob.kearney@bcferries.com
bcferries.com | [Facebook](#) | [Twitter](#)

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From: [Adams, James W](#)
To: [Paterson, Bruce](#)
Cc: [Amusan, Sam](#); [Kearney, Bob](#); [Tataryn, Noel](#)
Subject: BSC AFU Increase Project - Berth Interface
Date: February 18, 2022 12:06:47 PM
Attachments: [BUCK-266-SK008.pdf](#)
[BUCK-266-SK009.pdf](#)
[BUCK-266-SK010.pdf](#)
[BUCK-266-SK011.pdf](#)

Hi Bruce,

See attached for updated sketches showing the interface between the pontoon and BSC with two additional lanes.

See below for a summary of the sketches. **ss. 13, 17**

[Redacted content]

Is this information sufficient for preparing the displacement and freeboard calculations (lightship and full load)? It would be great to receive this information in order to engage DSA for the docking analysis. Please note that the Auto-turn study will be prepared next week.

Summary of Sketches:

ss. 13, 17

[Redacted content]

[Redacted content]

[Redacted content]

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922

james.adams@bcferries.com

bcferries.com

From: Tataryn, Noel <Noel.Tataryn@bcferries.com>

Sent: February 18, 2022 8:51 AM

To: Adams, James W <James.Adams@bcferries.com>

Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi James,

Here are the plans with the revisions asked for. I am just waiting for fleet to send me the BCS CAD file and then I will start looking at the AutoTURN sketches, I should have those ready early next week once I receive the file.

Thanks,

Noel Tataryn

Draughtsperson

Terminal Construction

British Columbia Ferry Services Inc.

Suite 500 – 1321 Blanshard Street Victoria, B.C. V8W 0B7

T: 250-978-1696

Noel.tataryn@bcferries.com

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From: Adams, James W <James.Adams@bcferries.com>

Sent: February 15,2022 11:14 AM

To: Tataryn, Noel <Noel.Tataryn@bcferries.com>

Subject: FW: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi Noel,

Hope you had a good time **s. 22**

I reviewed the sketches with Bruce and have several comments noted in blue: please redraw the

ss. 13, 17

ss. 13, 17

Please confirm this as well.

Feel free to call when you've reviewed my notes.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 2:14 PM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

James,

I'm attaching a mark up of the proposed GA with some loss of AEQ spaces presumed because of access problems. This should be verified by your vehicle turning model. **ss. 13, 15, 17, 19**

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
Tel: (250) 978-1385
Cell: **ss. 15, 19**
Fax: (250) 978-1166
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 1:55 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Thanks Bruce, I just sent you an invite for 3.

James Adams, P.Eng.

Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 1:00 PM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

I am clear this afternoon after 1:30

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 12:26 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Are you available for a brief webex this afternoon or Monday to discuss the drawings? There are number of constraints we should consider first before I can answer your questions.

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 10:46 AM

To: Adams, James W <James.Adams@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>
Subject: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

James,

I am hoping for a bit of interpretation of the attached drawings. At first blush, it appears that the proposed layout is viable, particularly if:

ss. 13, 17

What are your thoughts?

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 8:29 AM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Kearney, Bob <Bob.Kearney@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Further to my last email, see attached for additional sketches prepared by Noel showing the updated GA of the BSC/berth interface. I've added a couple comments in blue. ss. 13, 17

This will require further review.

Let me know if you have any additional comments.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Adams, James W
Sent: February 09, 2022 11:31 AM
To: Bruce Paterson (Bruce.Paterson@bcferries.com) <Bruce.Paterson@bcferries.com>
Cc: Tataryn, Noel (Noel.Tataryn@bcferries.com) <Noel.Tataryn@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Sam Amusan (Sam.Amusan@bcferries.com) <Sam.Amusan@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Attached are the draft sketches from Noel showing the updated GA of the BSC/berth interface.

Can you please review and let me know if you have any suggested changes? **ss. 13, 17**

[Redacted]

Summary of Sketches:

ss. 13, 17

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

Please let us know if you have any suggested changes besides updating the location of the guide

cables/sheaves.

Thanks again,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
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james.adams@bcferries.com
bcferries.com

From: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Sent: February 09, 2022 10:03 AM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi James,

Here are the sketches for the proposed widened BSC. **ss. 13, 17**



Please let me know if you want any revisions made.

Thanks,

Noel Tataryn
Draughtsperson
Terminal Construction
British Columbia Ferry Services Inc.
Suite 500 – 1321 Blanshard Street Victoria, B.C. V8W 0B7
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 07, 2022 9:41 AM
To: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Noel,

Thanks for working on the drawings this week. As discussed, I suggest you **ss. 13, 17**

Also sorry I can't recall but is it **s. 22** ?

Thanks again,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Adams, James W
Sent: February 07, 2022 9:18 AM
To: Tataryn, Noel (Noel.Tataryn@bcferries.com) <Noel.Tataryn@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Morning Noel,

Further to my last email, see attached for the updated preliminary GA with additional lanes and wider vehicle gate.

Please review Bruce's comments below regarding **ss. 13, 17**

Keep the previous set as a separate sketch since those are considered current state.

Can you also include a sketch looking at vehicle auto turns?

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 06, 2022 10:30 PM
To: Adams, James W <James.Adams@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>

Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

James,

Attached is a preliminary GA **ss. 13, 17**

Can I ask that you/Noel check the fit of the deck plan as shown on the berth? Let us know any conflicts that arise, particularly in light of the work we have just done looking at lateral movement and angles of approach?

With that feed back ,we will revert with the data on the weights and freeboards.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 04,2022 3:58 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Thanks Bruce, when ready can Fleet Technical confirm the following details:

ss. 15, 19

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 04, 2022 3:54 PM
To: Adams, James W <James.Adams@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>;
Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony
<Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

James – I have a couple edits for Bob to do. Stand-by

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 04, 2022 3:20 PM
To: Kearney, Bob <Bob.Kearney@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>;
Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony
<Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bob,

I don't have access to the Fleet Tech J-drive – could you please send me a copy of the GA?

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922
james.adams@bcferries.com

bcferrys.com

From: Kearney, Bob <Bob.Kearney@bcferries.com>
Sent: February 04, 2022 3:12 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>; Adams, James W <James.Adams@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Bruce,

I've placed "BSC General Arrangement - Widening RevA" into **s. 15**

Please note that **ss. 13, 17** It could probably be rejigged to give another capacity, but that's what I derived.

Bob Kearney, ASCT
Naval Architect
Engineering – Fleet Technical
British Columbia Ferry Services Inc.
T: 250-978-2358 **C:** **ss. 15, 19**
bob.kearney@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: Thursday, February 03, 2022 11:24 AM
To: Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>; Adams, James W <James.Adams@bcferries.com>
Subject: Reference Directory for Baynes Sound Connector Asset Betterment Project

I've dumped a number of reference files for the BSC Asset Betterment project to the following directory:

s. 15

There are main sub-directories with information on the capacity increase:

s. 15

@Bob – can you drop your work into the this sub-directory?

There is a another main subdirectory for the Electrification project.

@Babak – the reference trials information is located at:

s. 15

Note there is trials data from the 2015 acceptance trials. This is what the BSC was contracted to meet. The more recent data (2021) shows the effect of a fouled hull, with the new bullwheel configuration, new cables, and reduced cable tensions.

I've included a file that provides the details on the hydraulic motors, and there is a separate directory on the hydraulic system specs.

Bruce Paterson, P.Eng, M.Eng

Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

Tel: (250) 978-1385

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ss. 13, 15, 17, 19

ss. 13, 17

ss. 13, 17



ss. 13, 17

ss. 13, 17

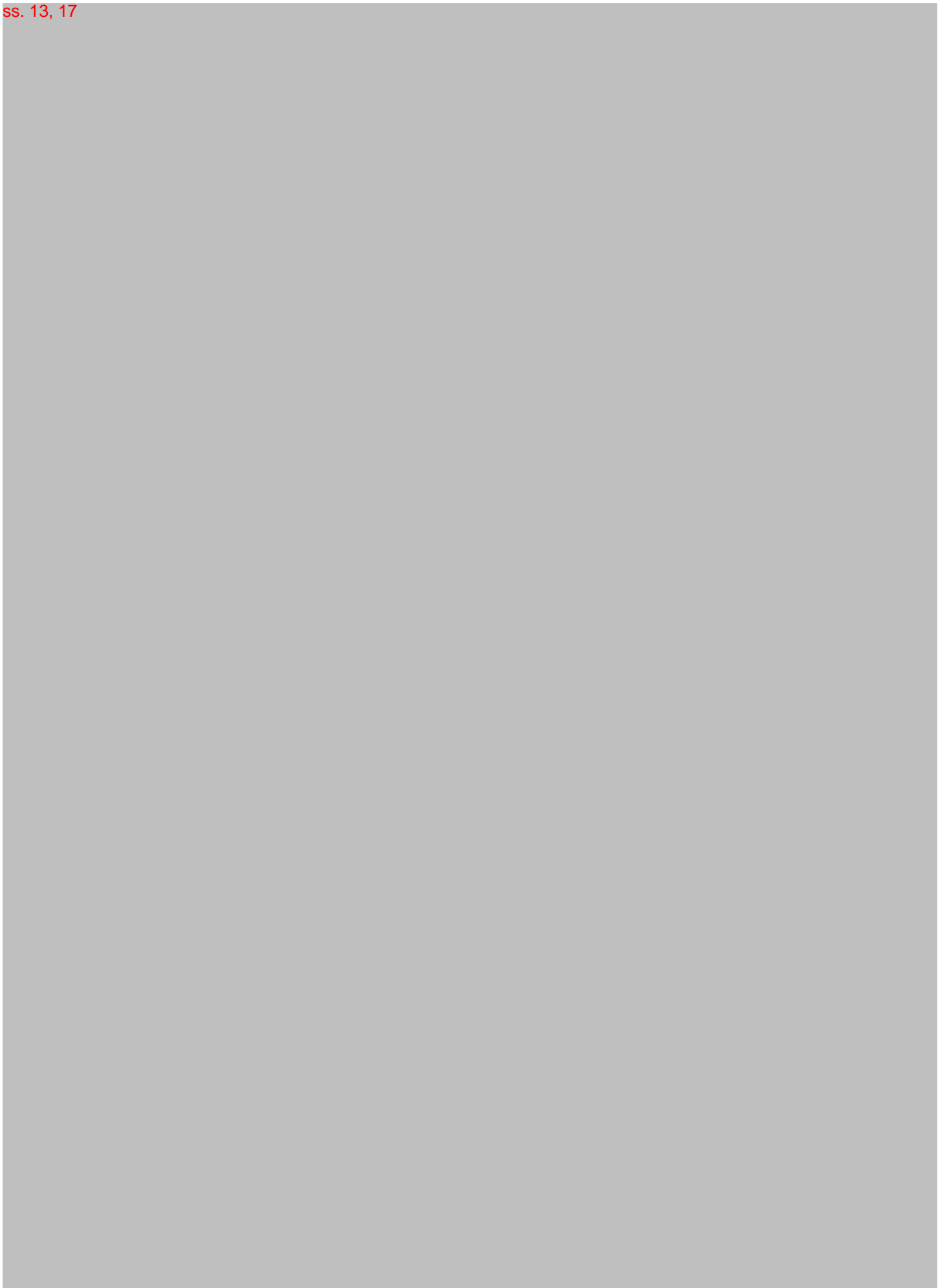
ss. 13, 15, 17, 19

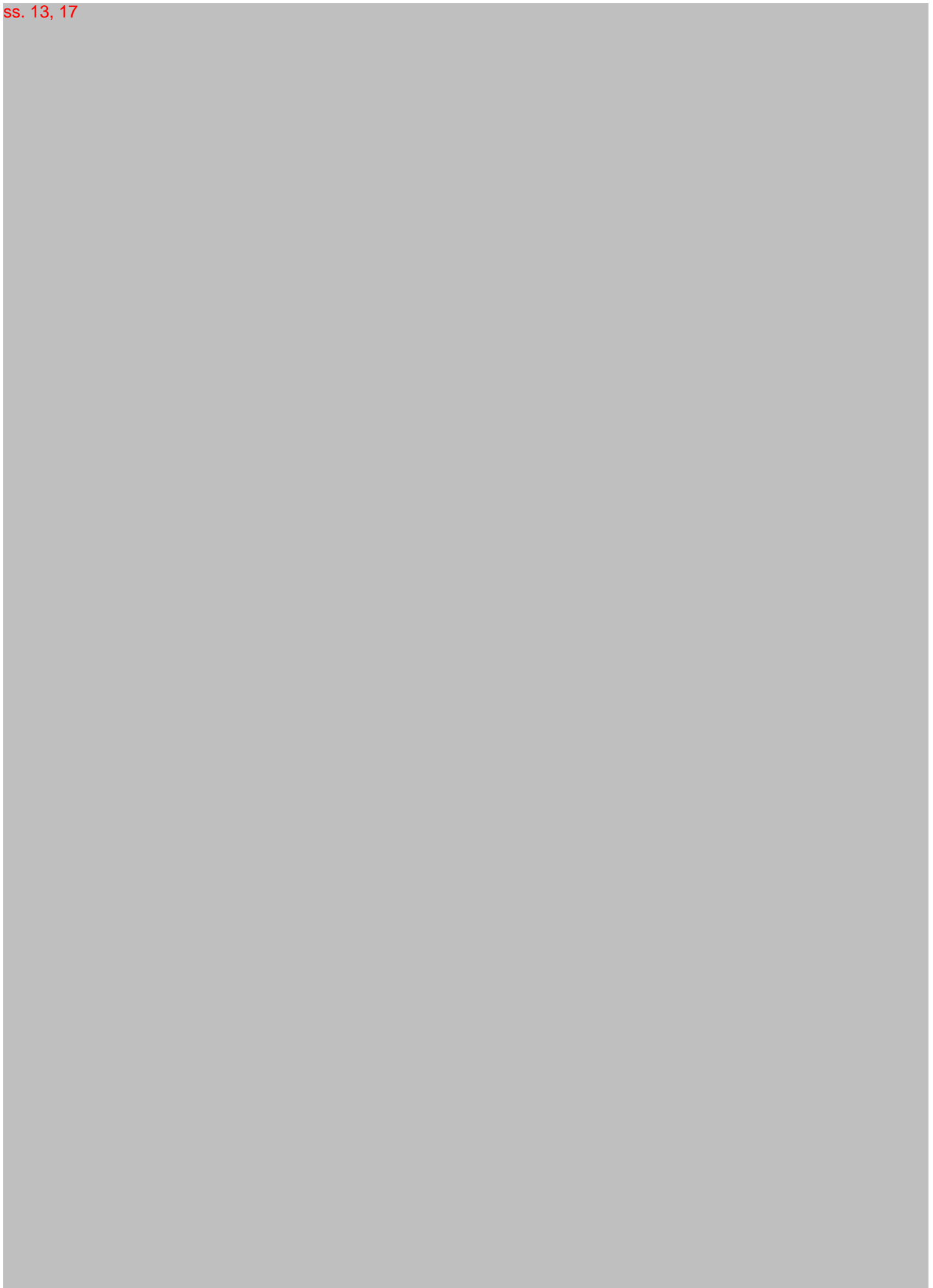
ss. 13, 17

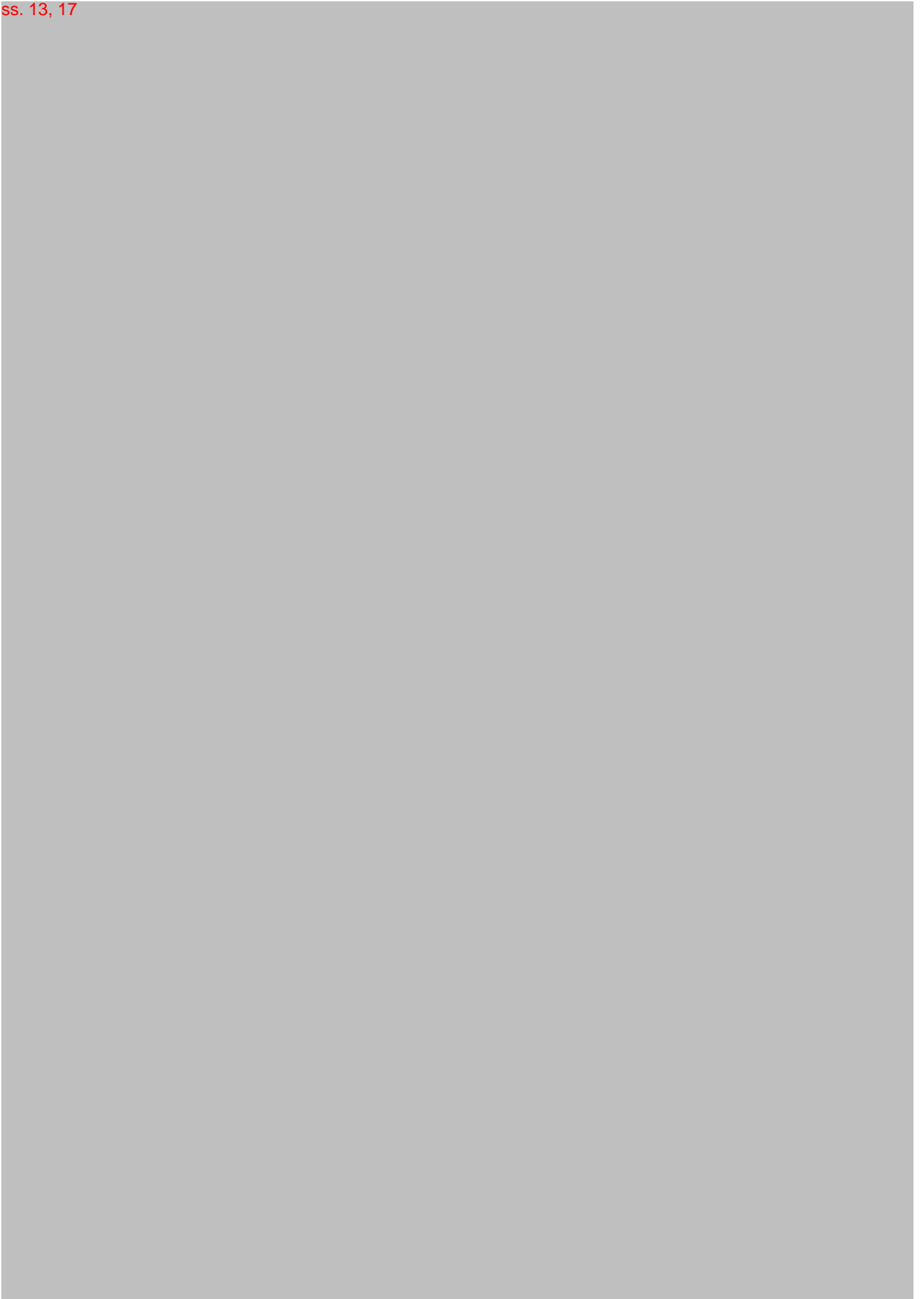


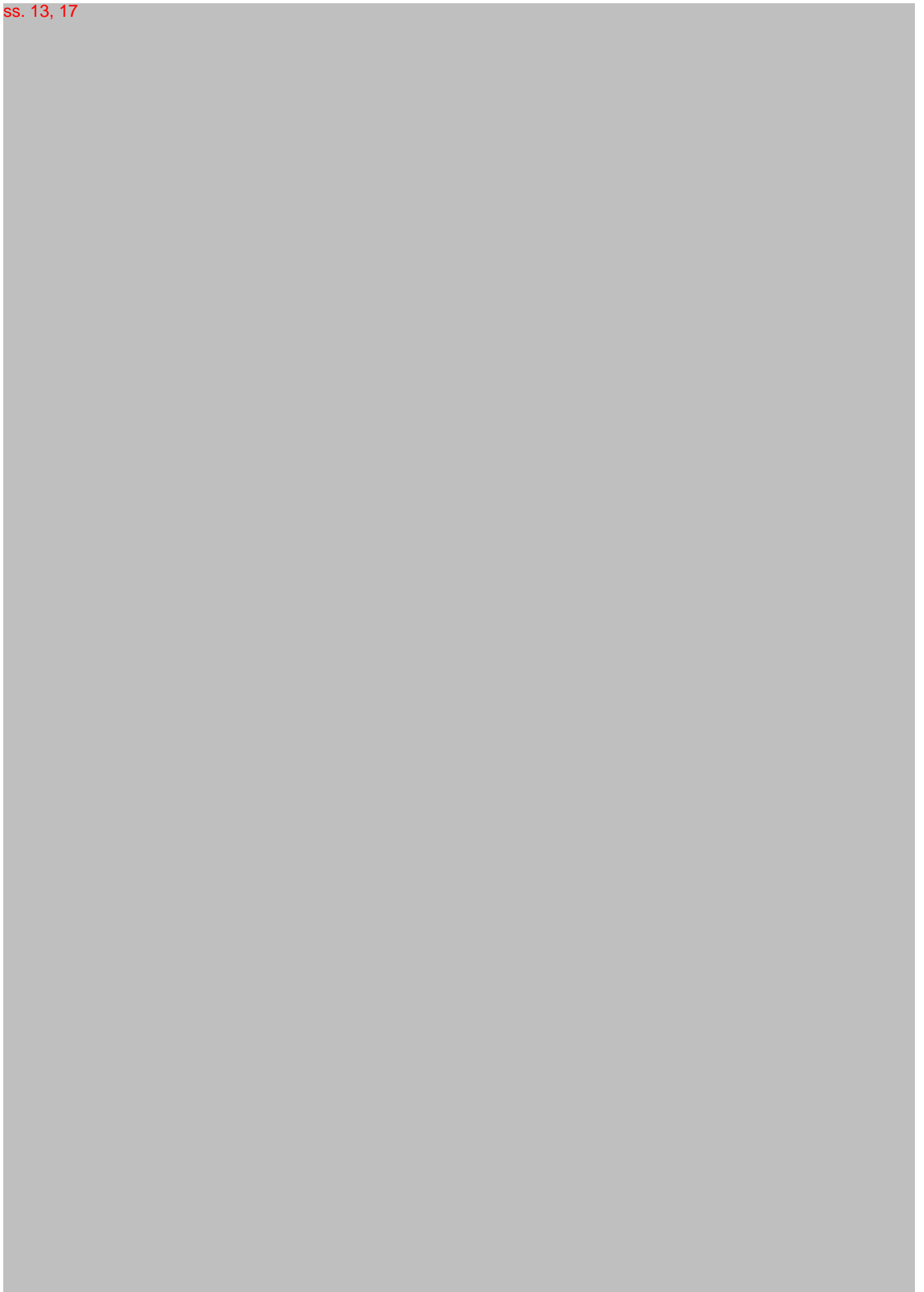
ss. 13, 17

ss. 13, 17

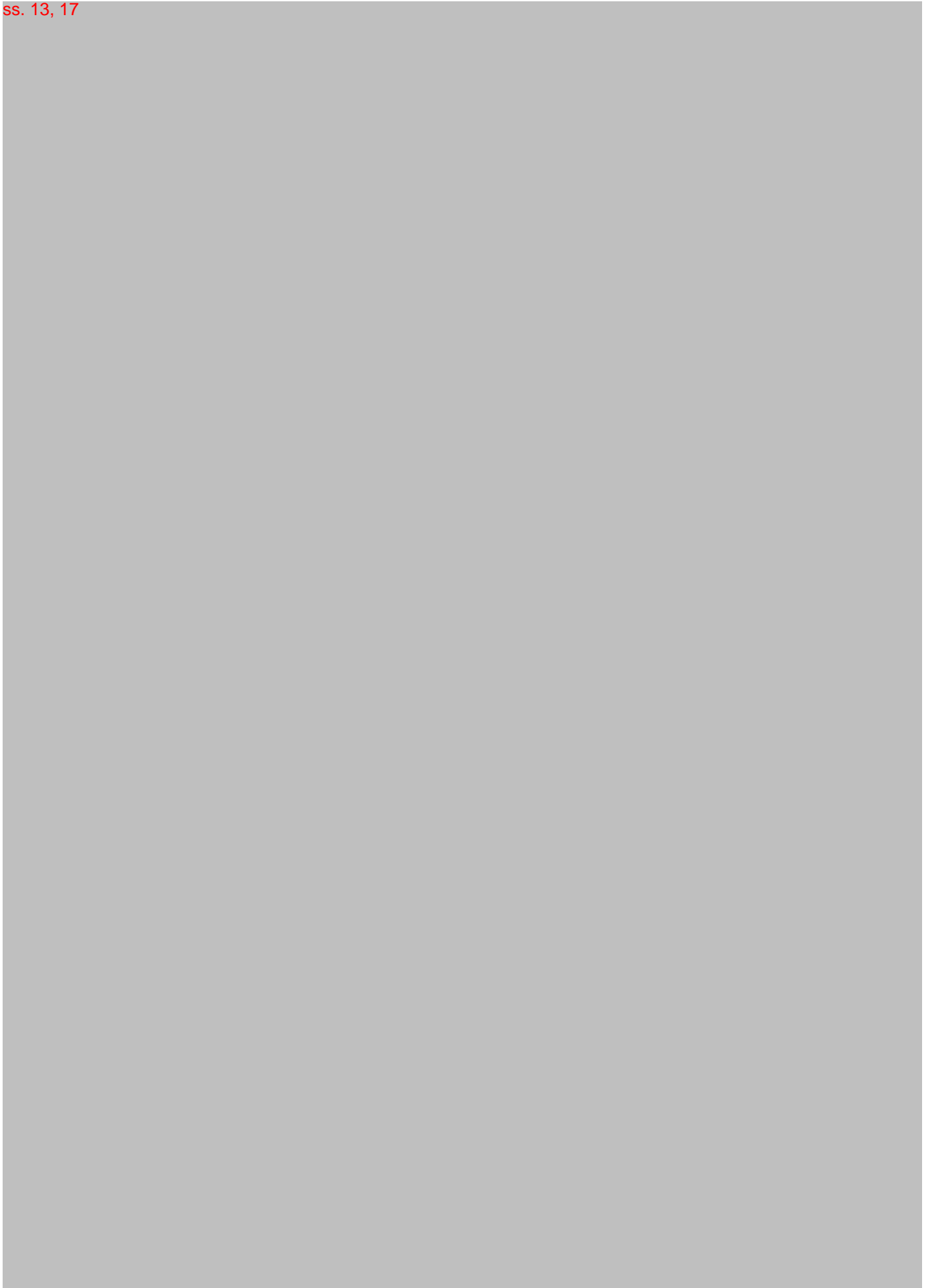


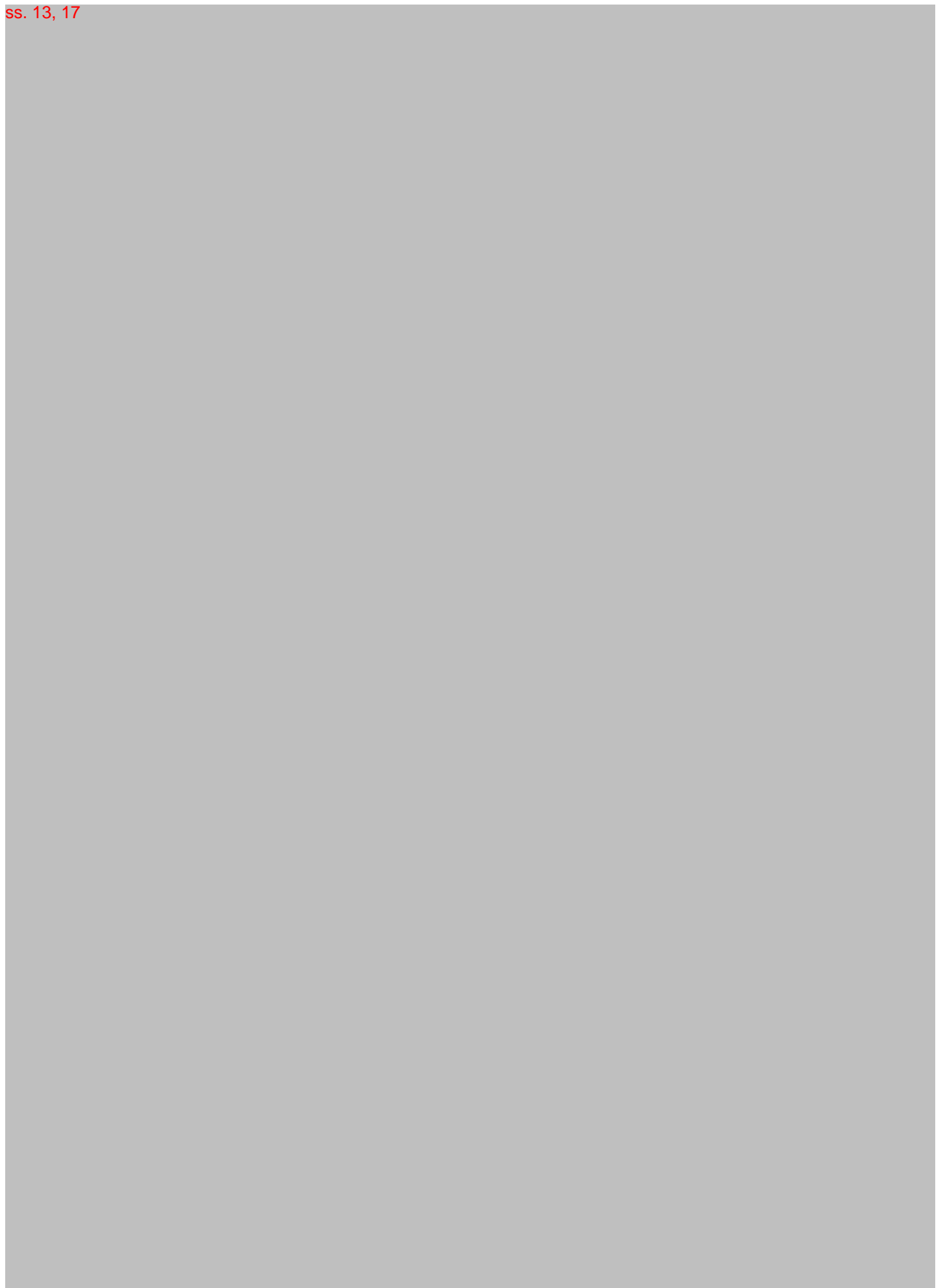


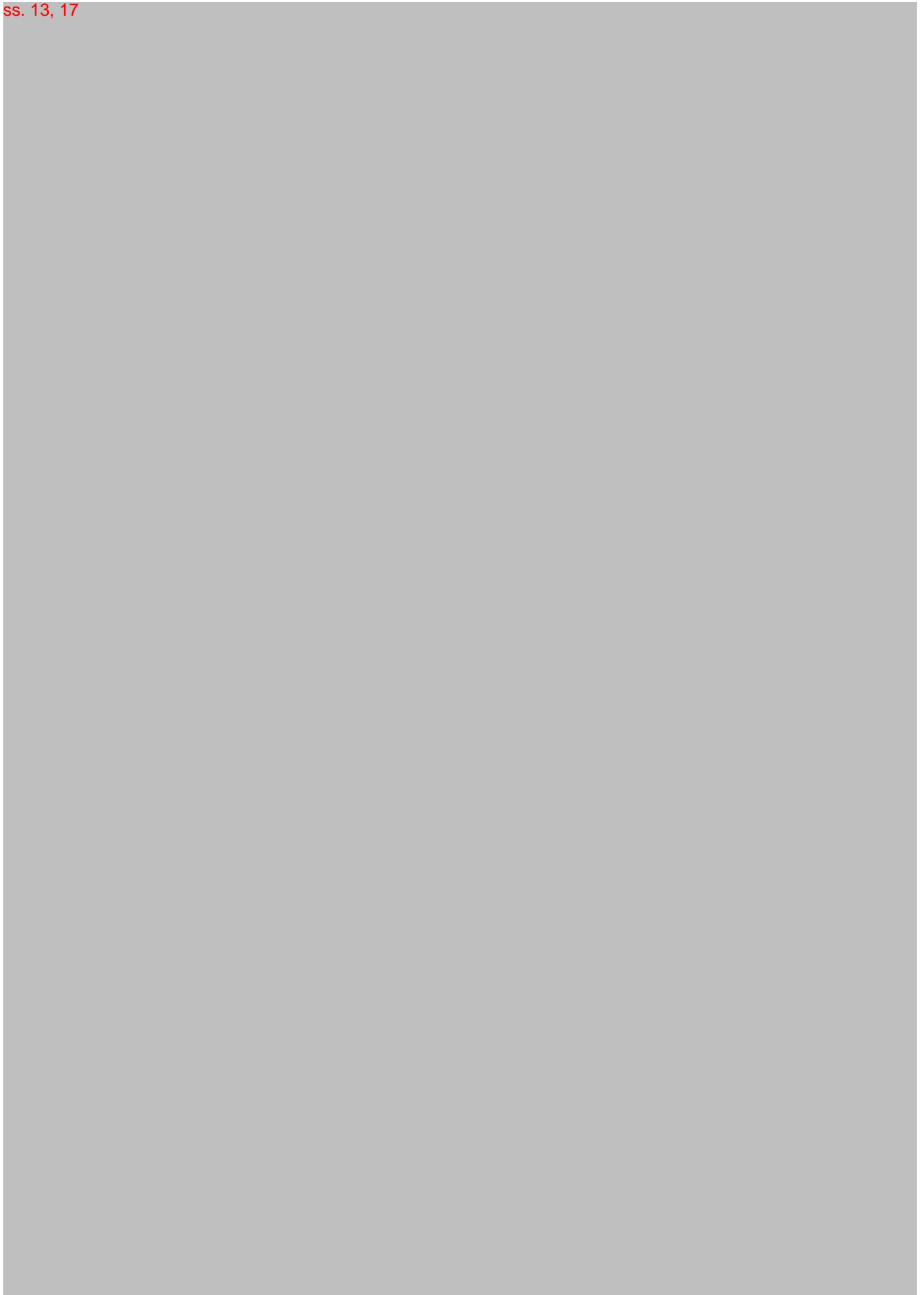


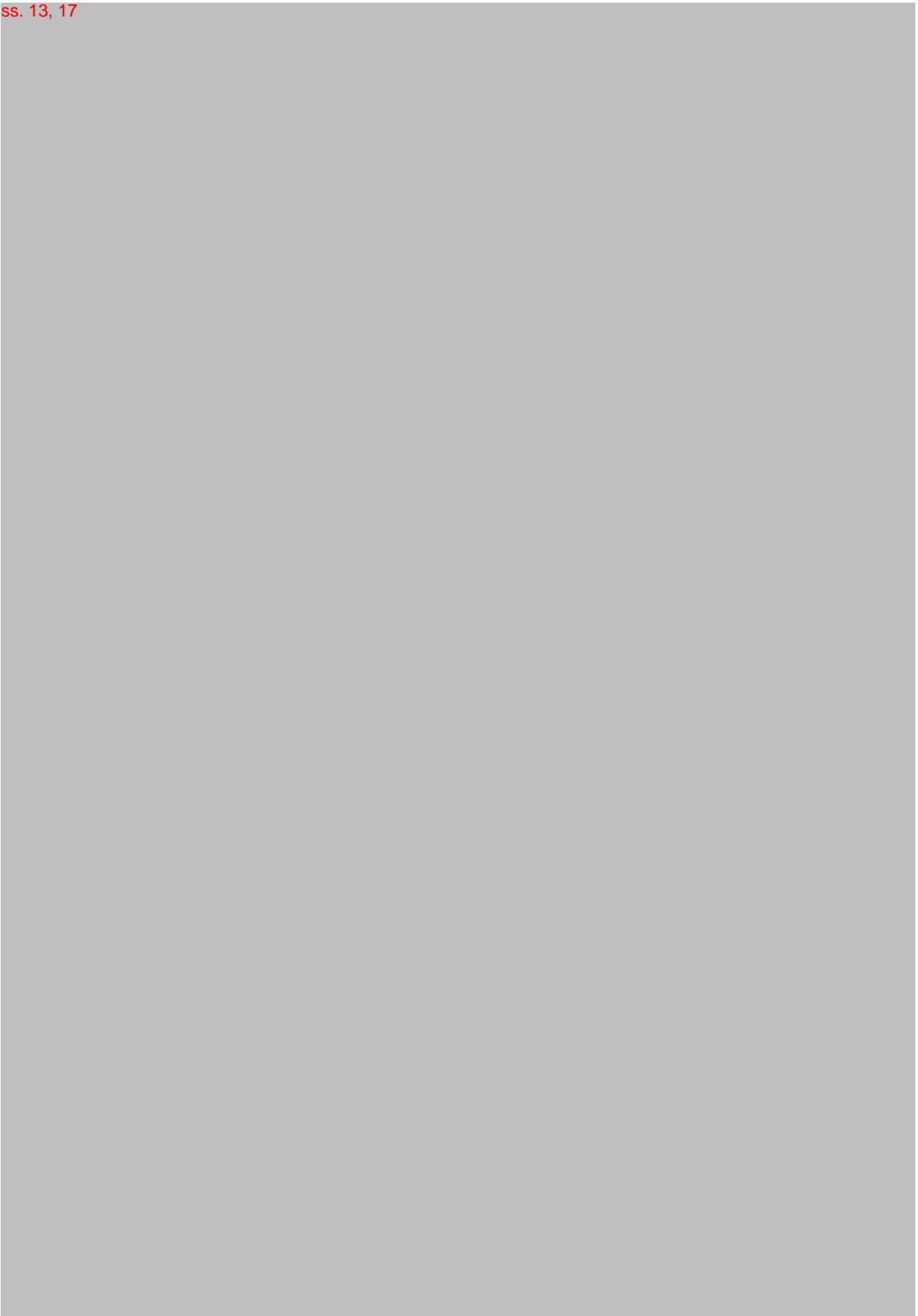


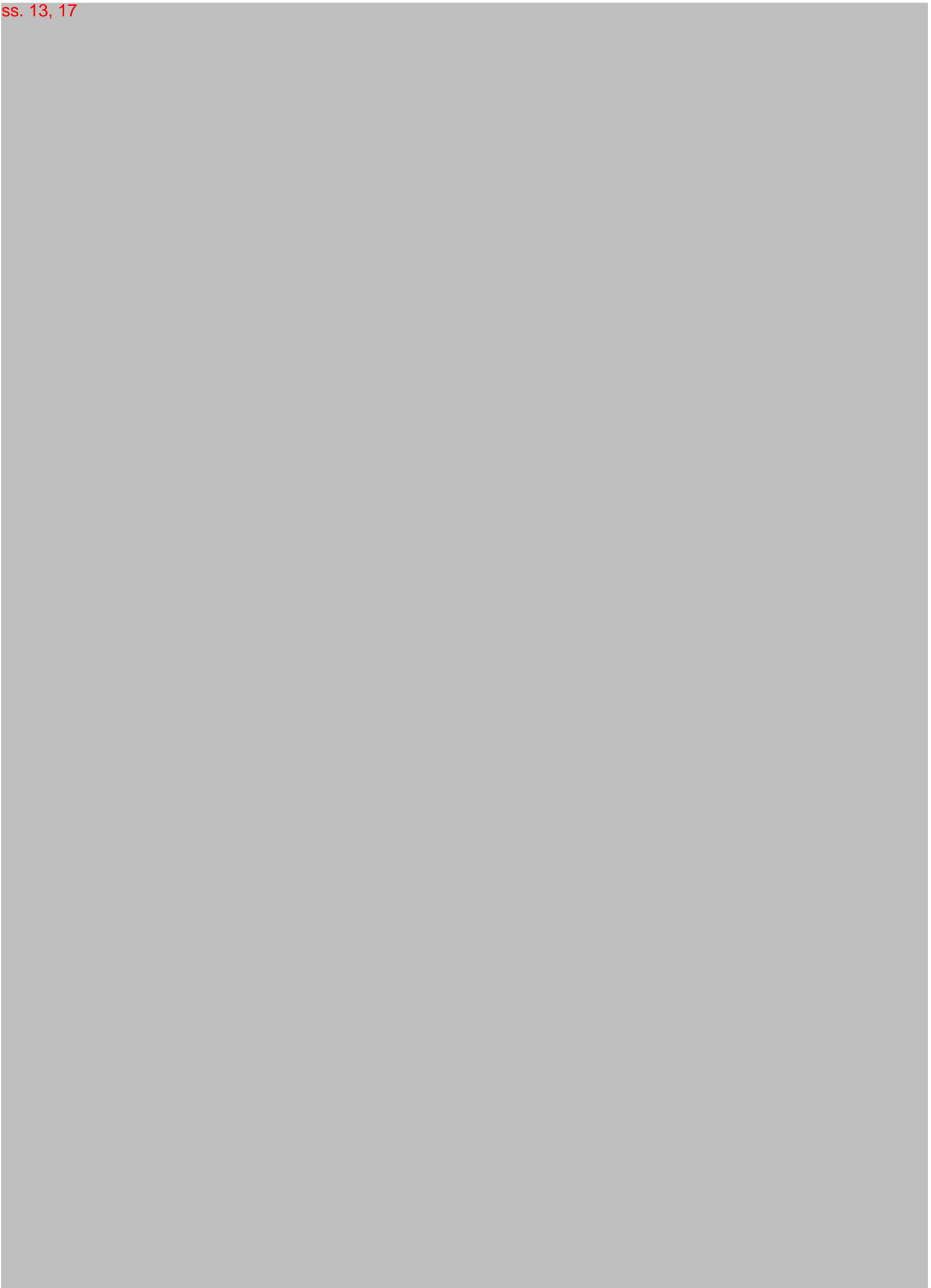


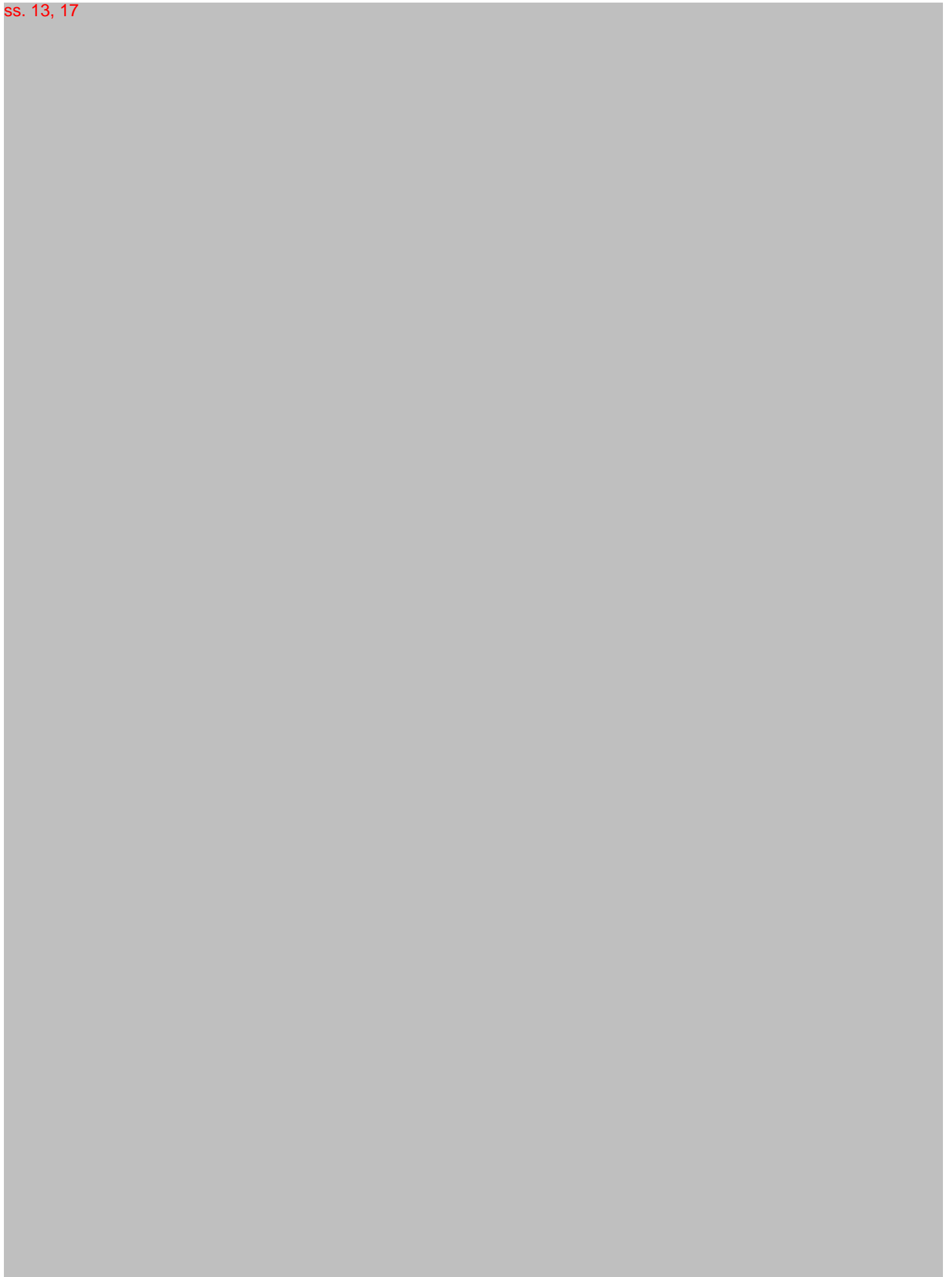


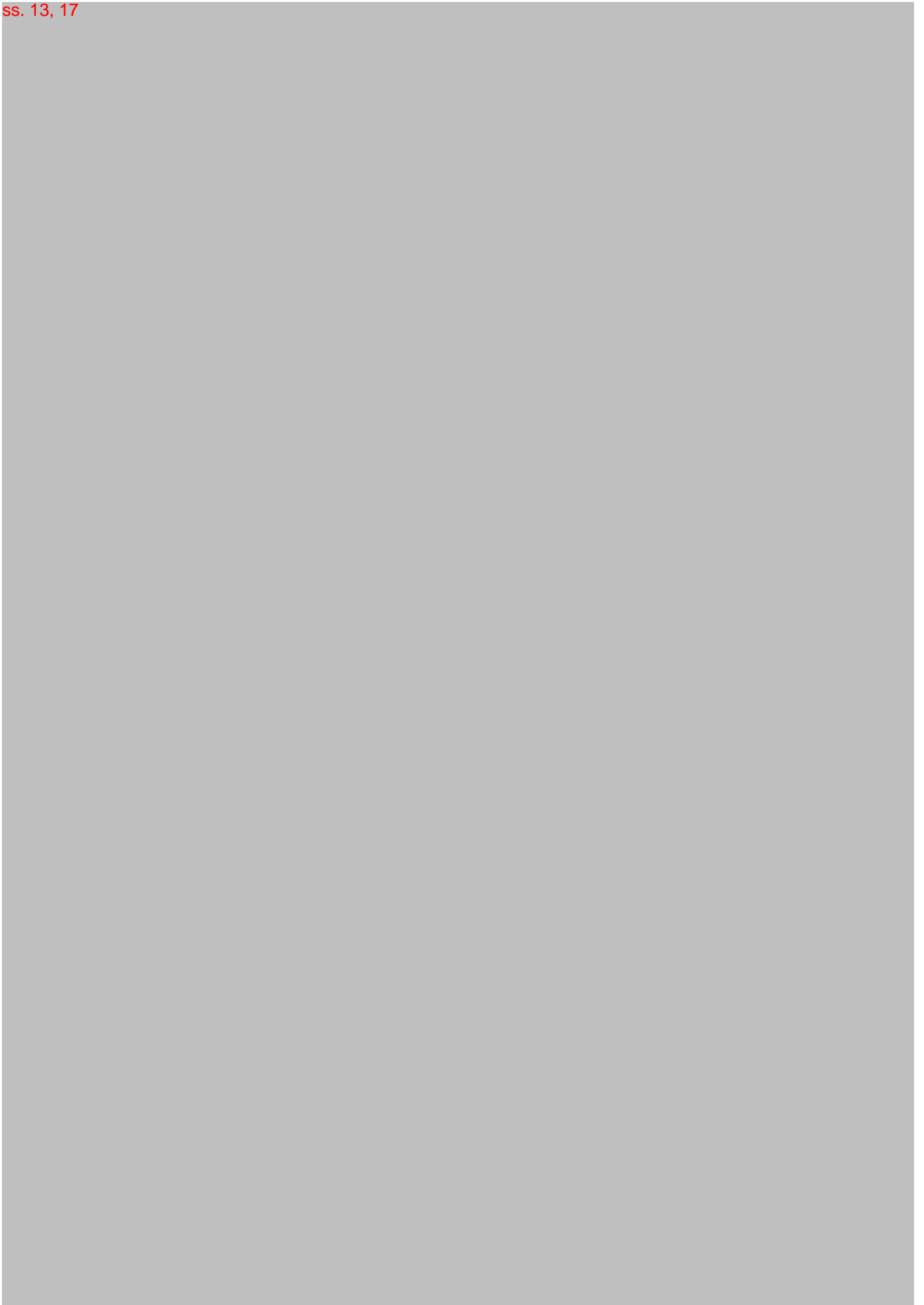


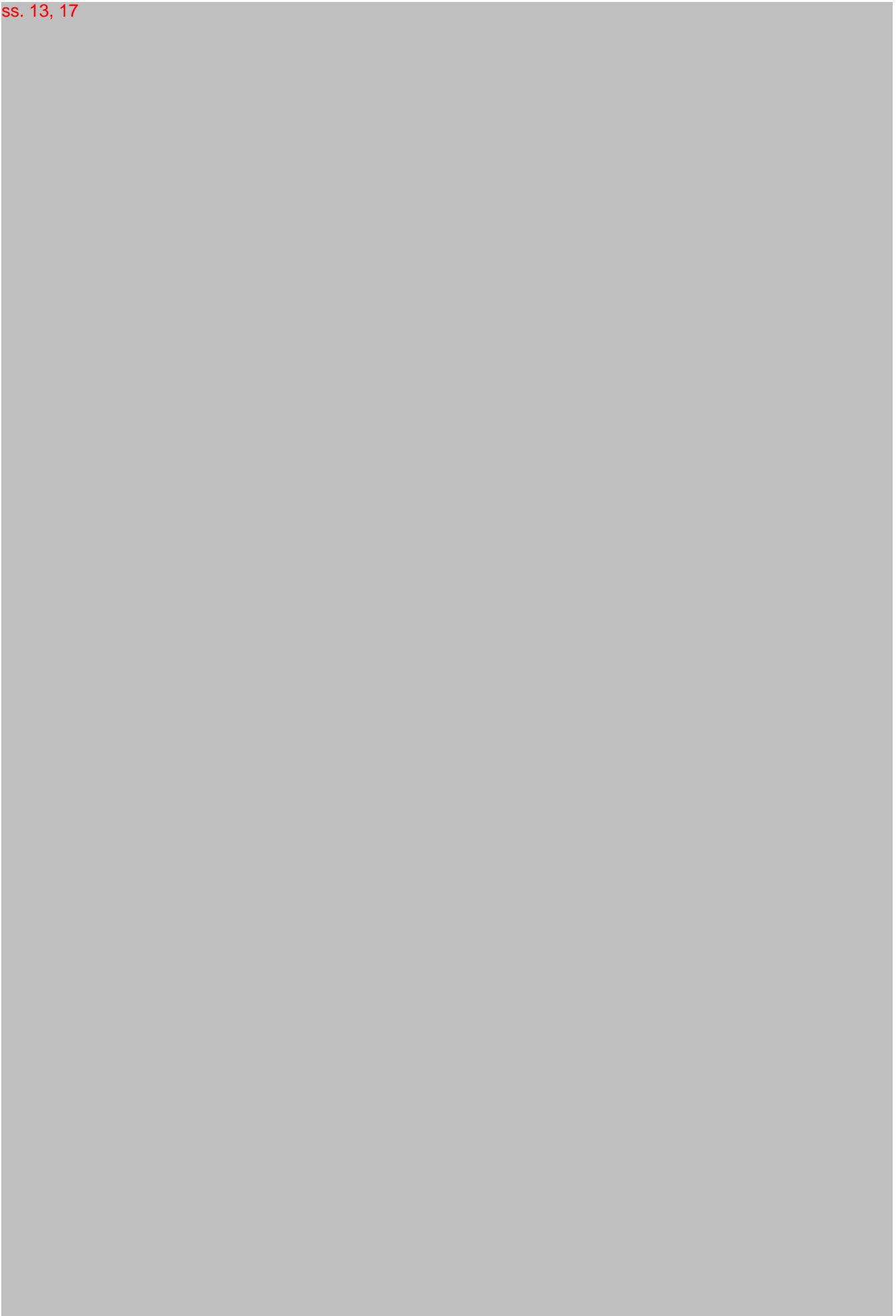


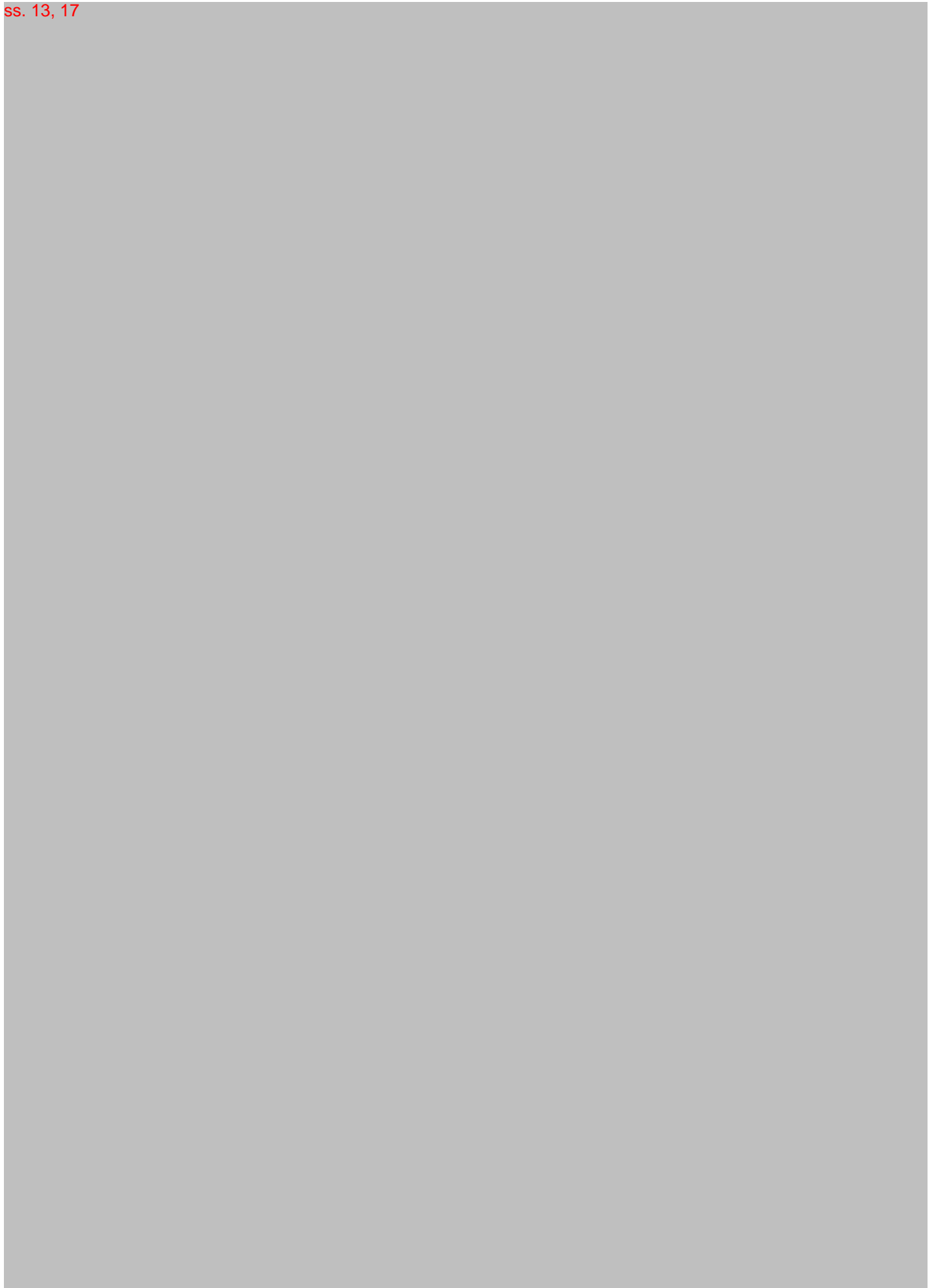


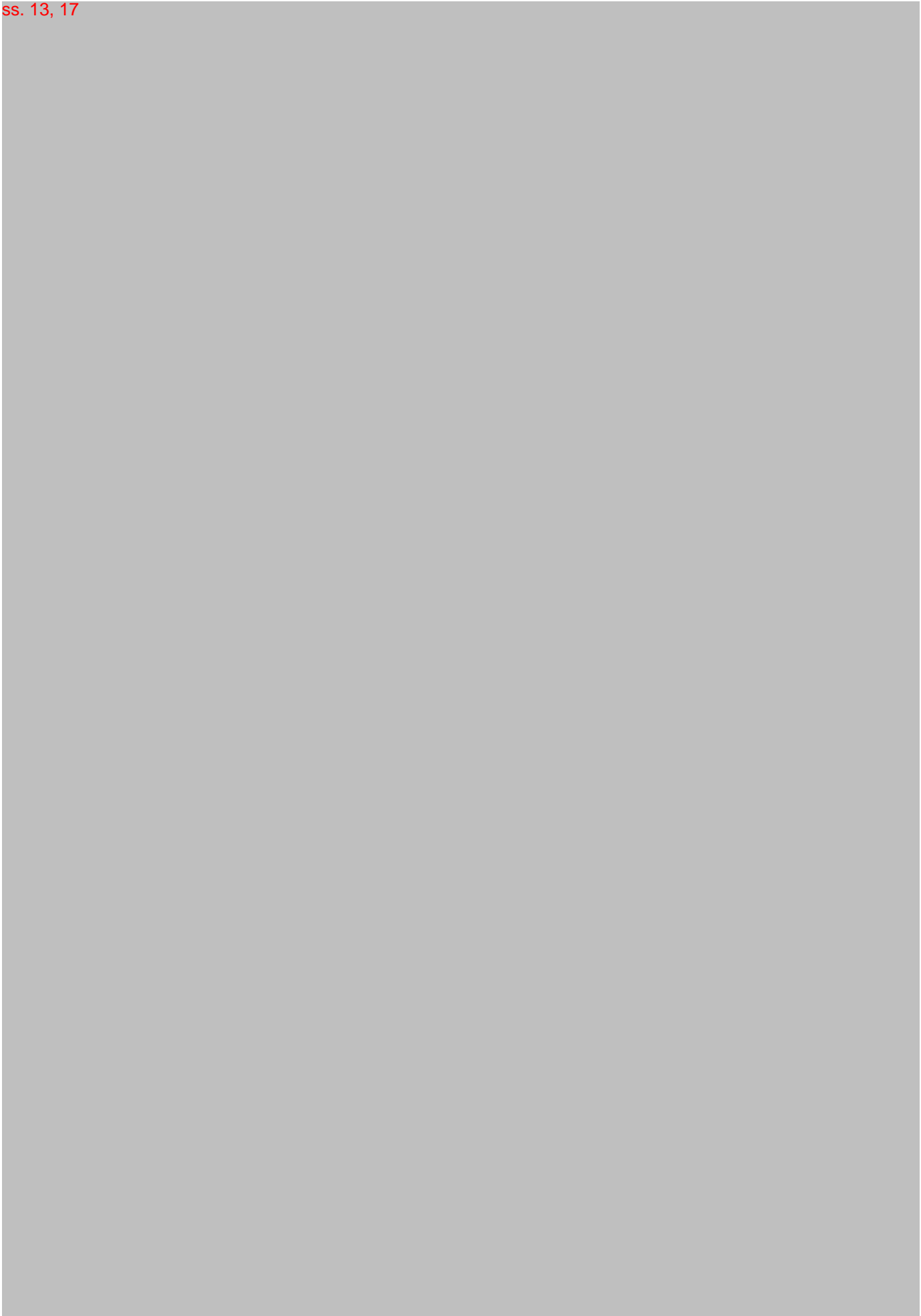






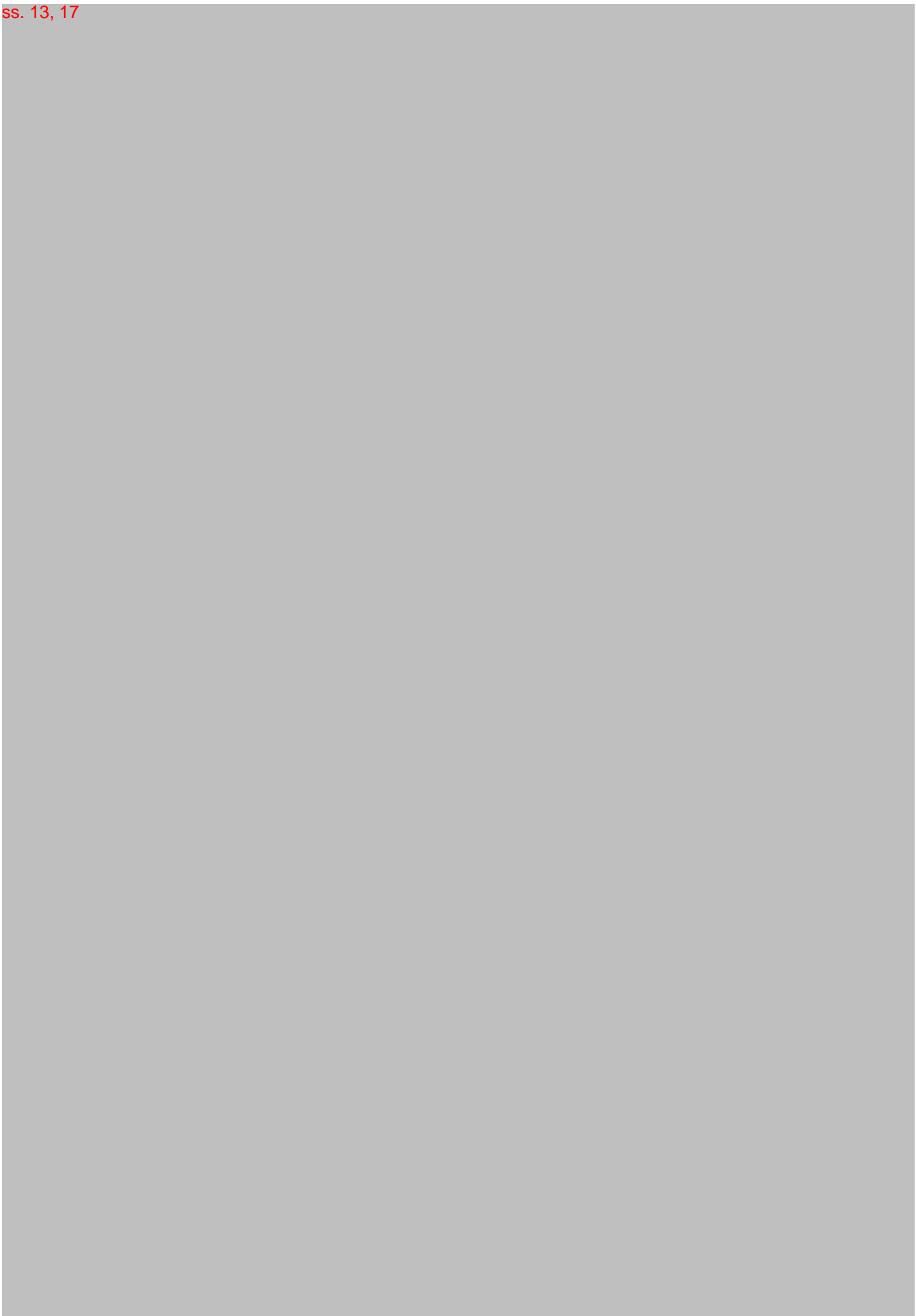




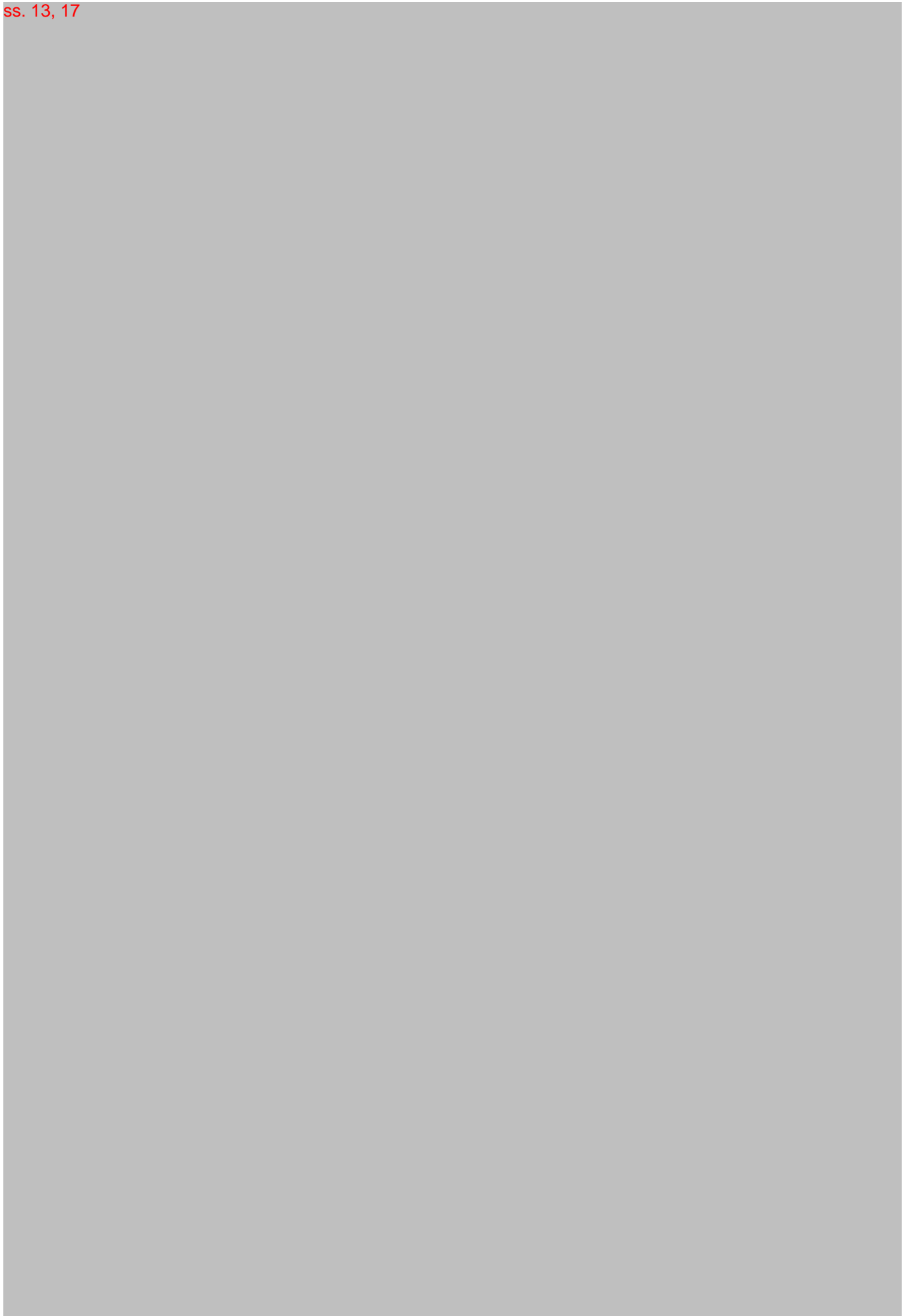


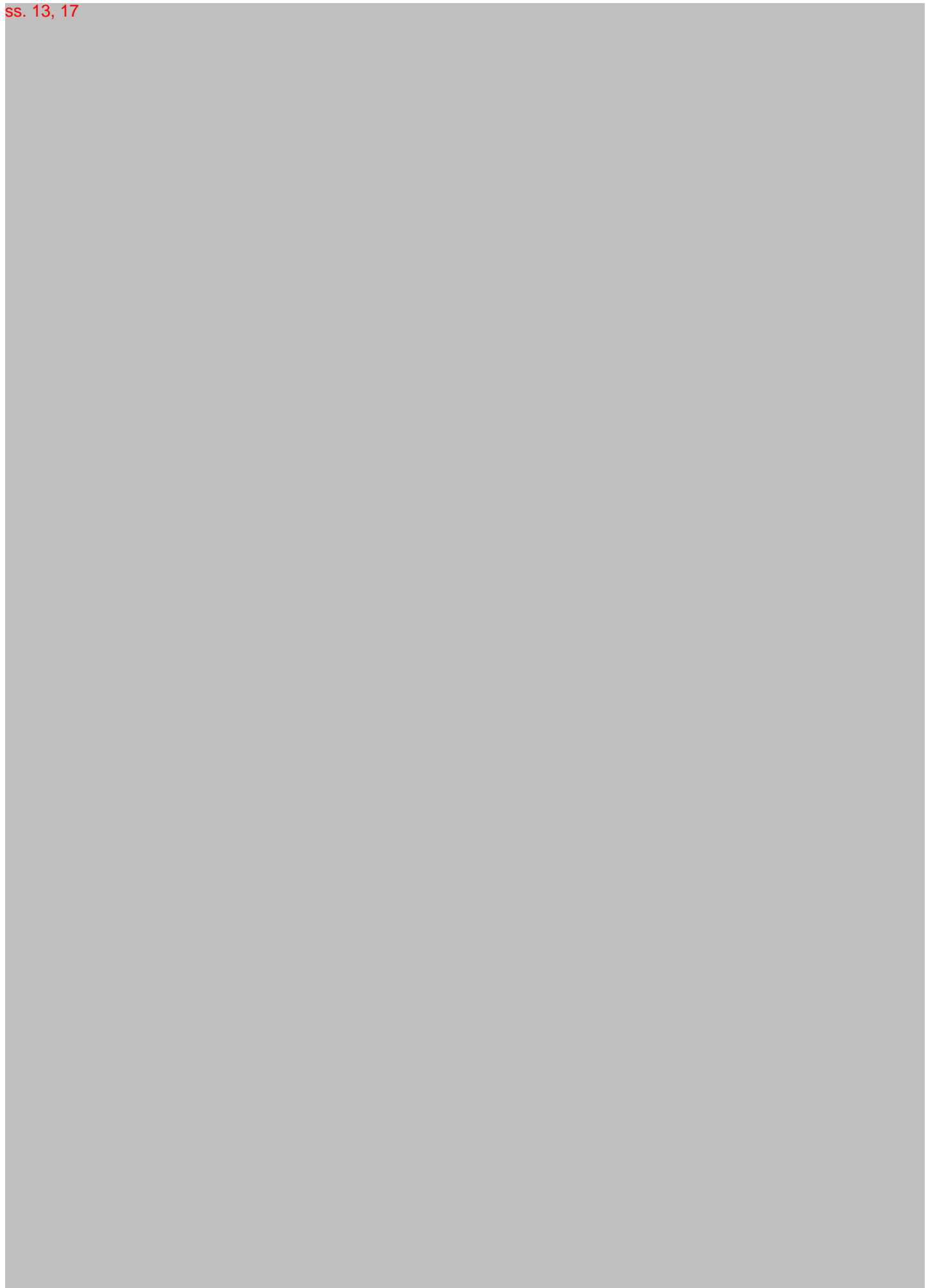


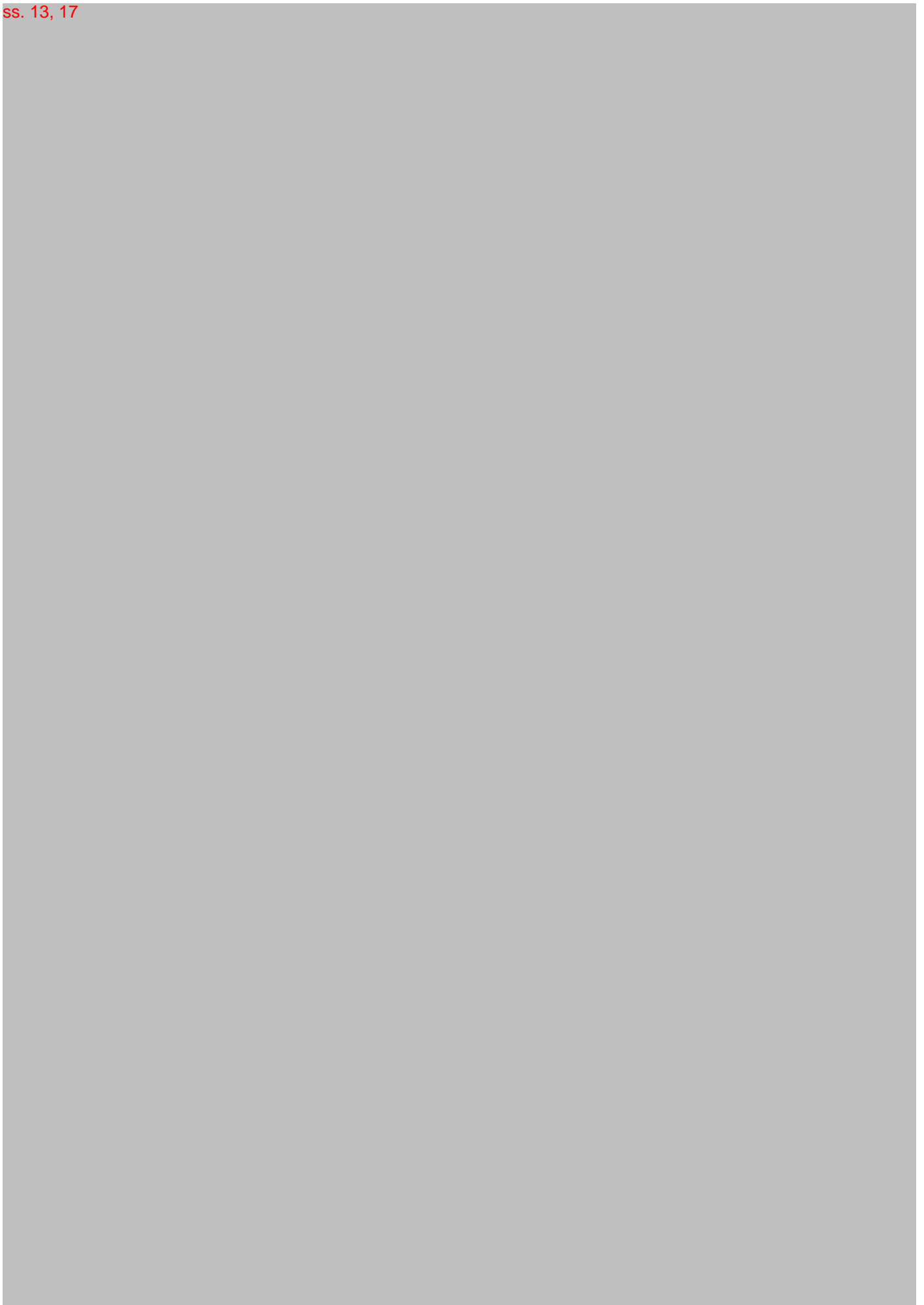


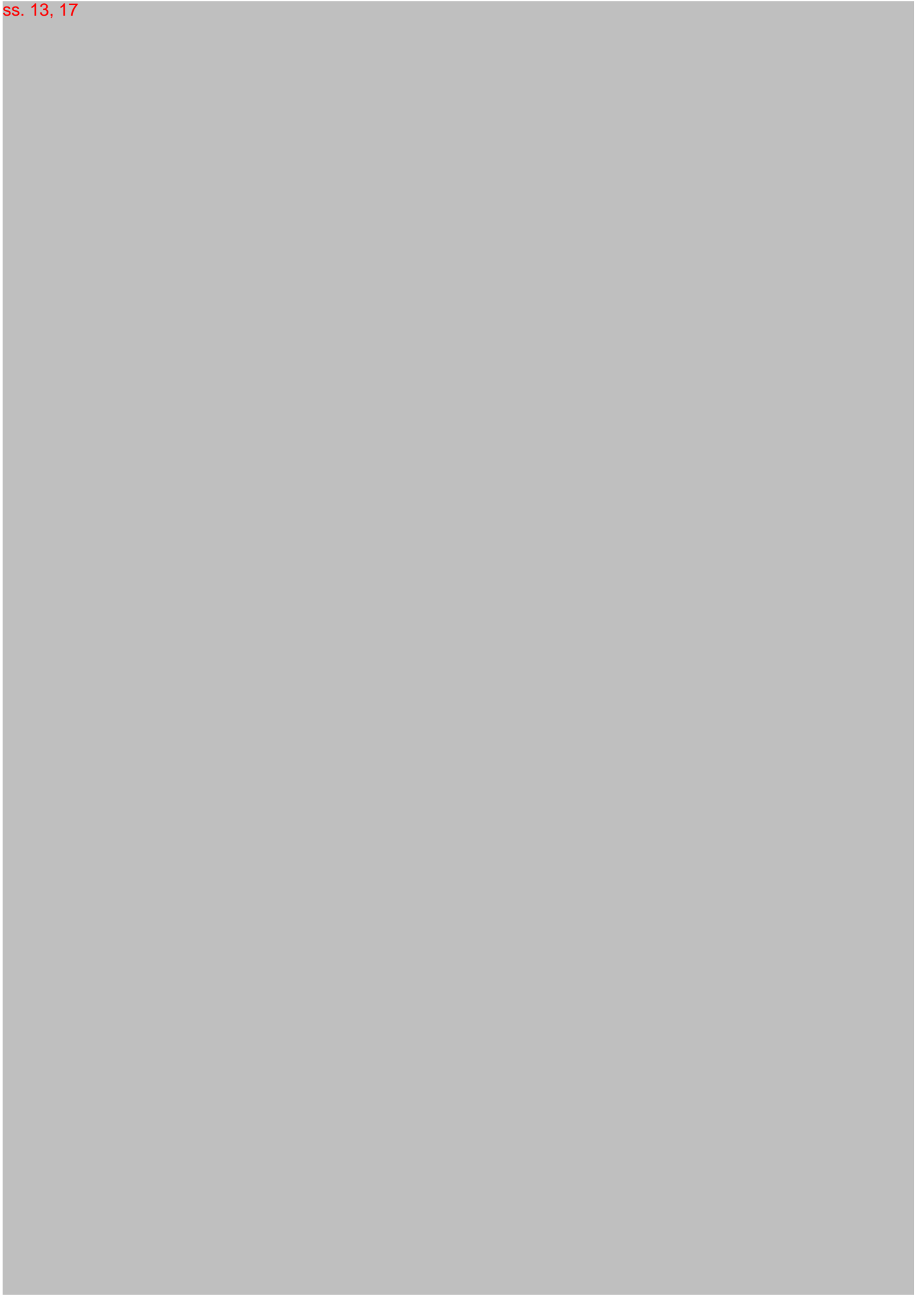


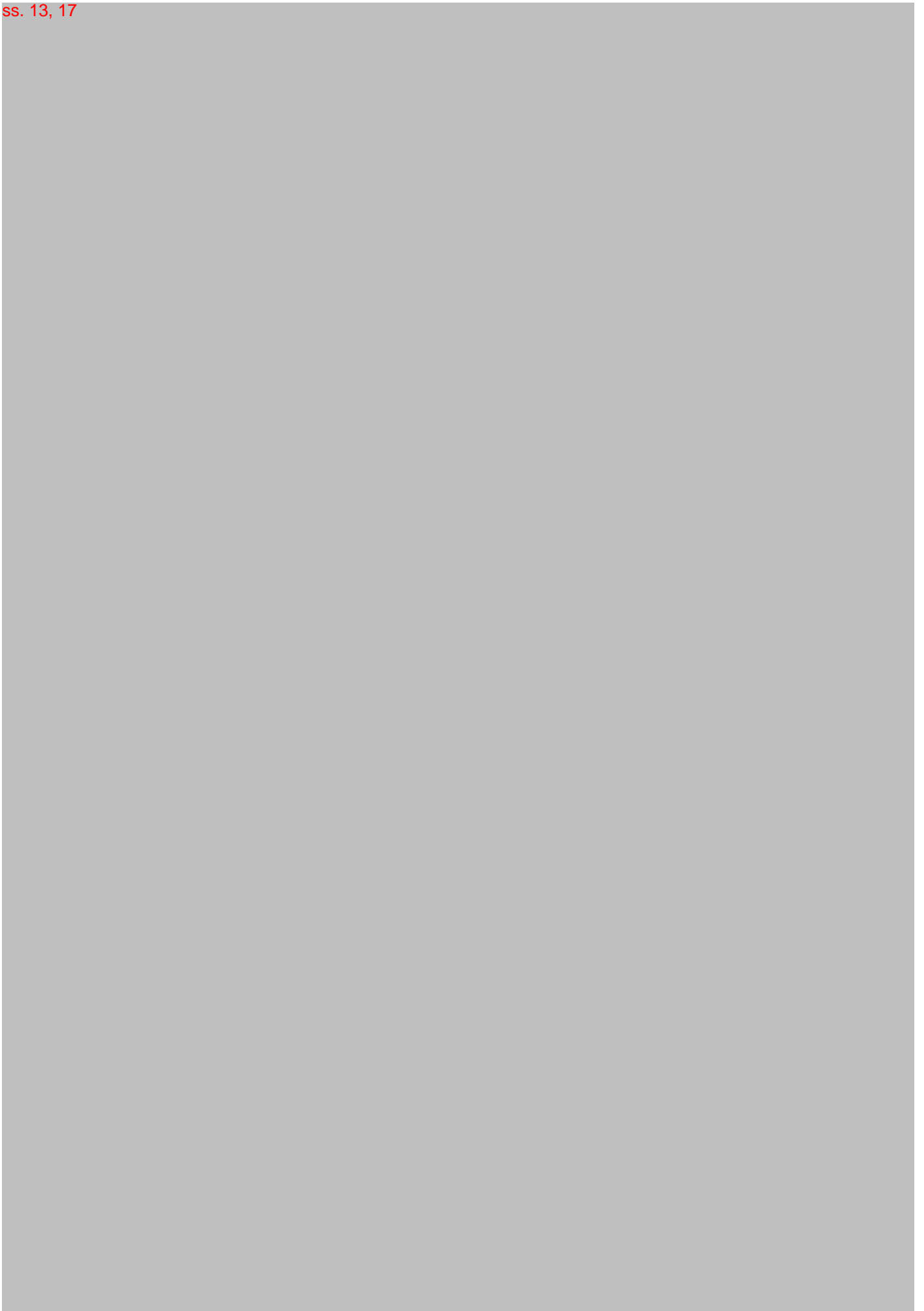


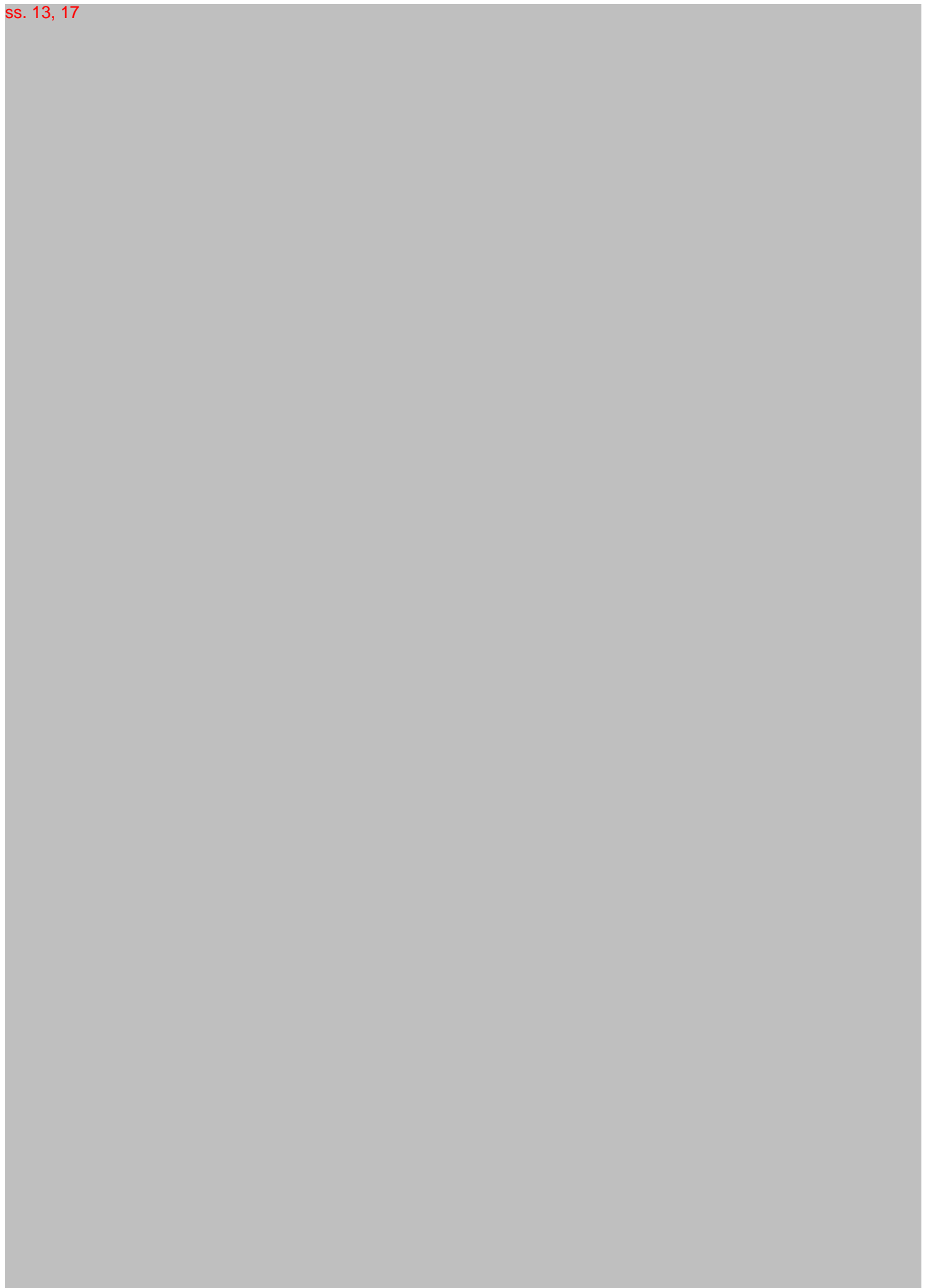


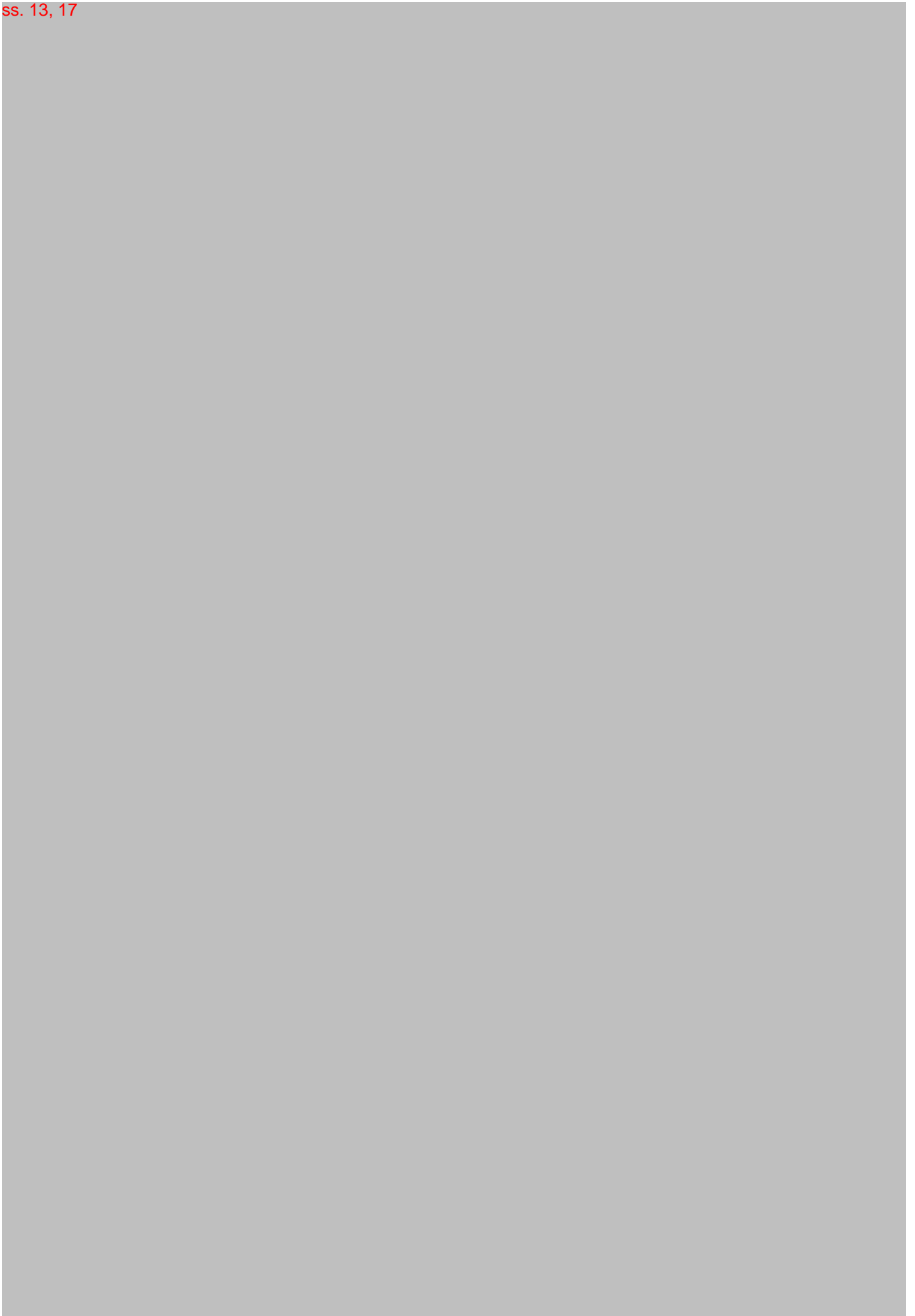












From: [Paterson, Bruce](#)
To: [James W Adams \(James.Adams@bcferries.com\)](#); [Tataryn, Noel](#); [Kearney, Bob](#)
Cc: [Manouchehrinia, Babak](#)
Subject: BSC expansion - Lightship and Deadweight increases.
Date: March 15, 2022 3:54:00 PM
Attachments: [BSC 2 Commercial Count.pdf](#)

Based on a load of nine (semis), I worked out the various weights and changes using the existing BSC stability booklet. From the response I provided to Joanne:

ss. 13, 17



Let me know if any of these numbers seem low.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
Tel: (250) 978-1385
Cell: ss. 15, 19
Fax: (250) 978-1166
bruce.paterson@bcferries.com
www.bcferries.com
Safety and Operational Readiness

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ss. 13, 15, 17, 19

ss. 13, 15, 17, 19



BSC Expansion Project

Strategic Planning Action Items from meeting Feb 10, 2022

From the February 10th BSC Project meeting there were a number of action items for Strategic Planning. The summary response for these to support discussion at next meeting March 3.

Action Items for Strategic Planning:

ss. 13, 17



BSC Expansion Project

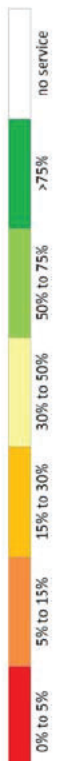
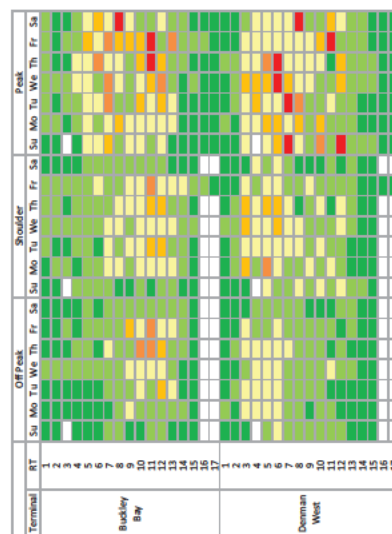
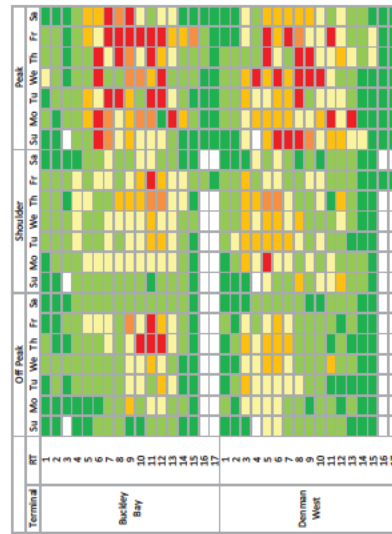
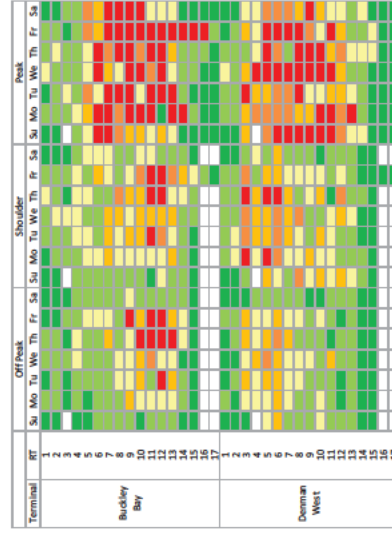
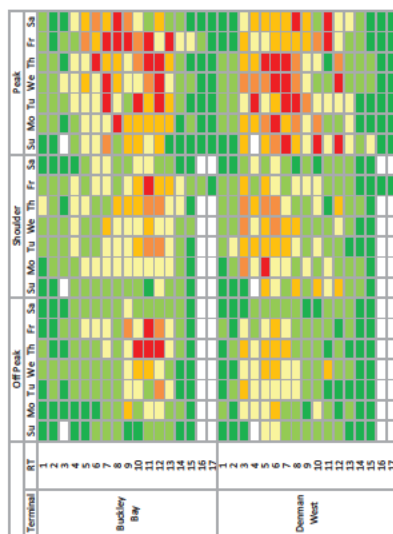
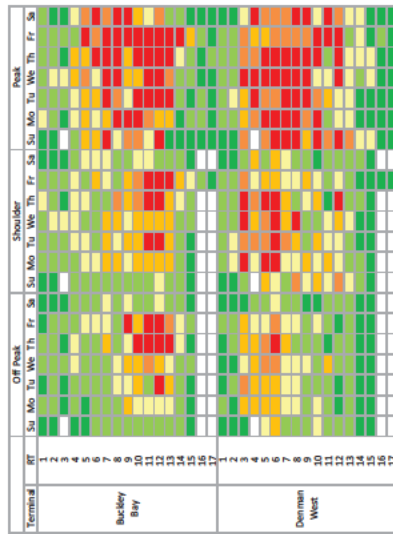
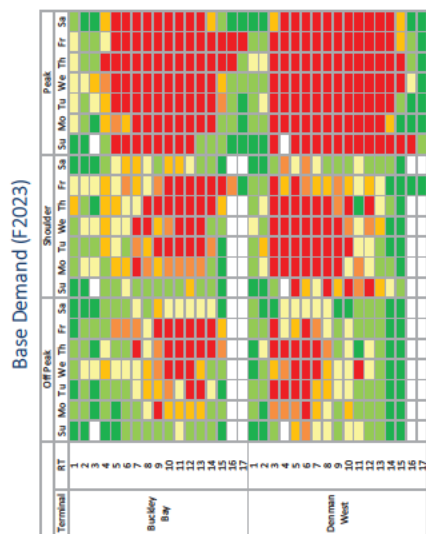
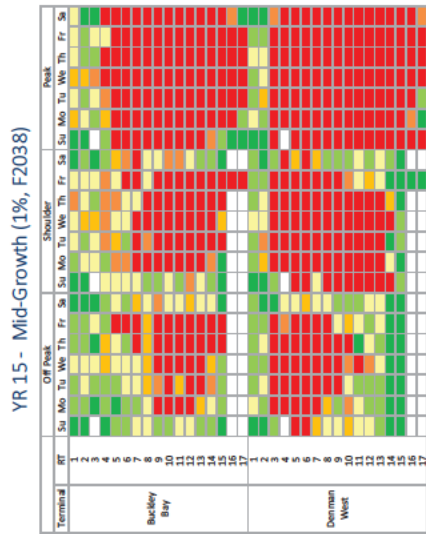
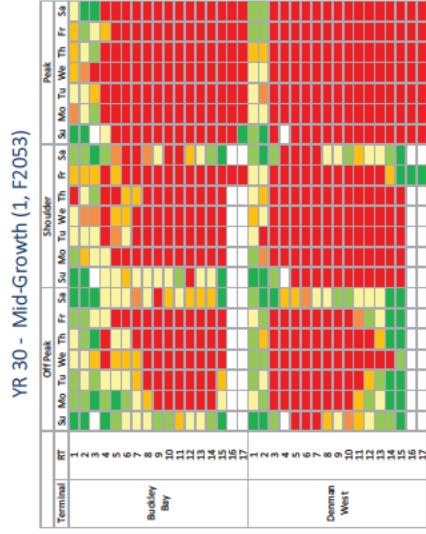
Strategic Planning Action Items from meeting Feb 10, 2022

ss. 13, 17



APPENDIX 1 - HEAT MAPS

Sample Week Analysis - Mid Growth, No Shuttling

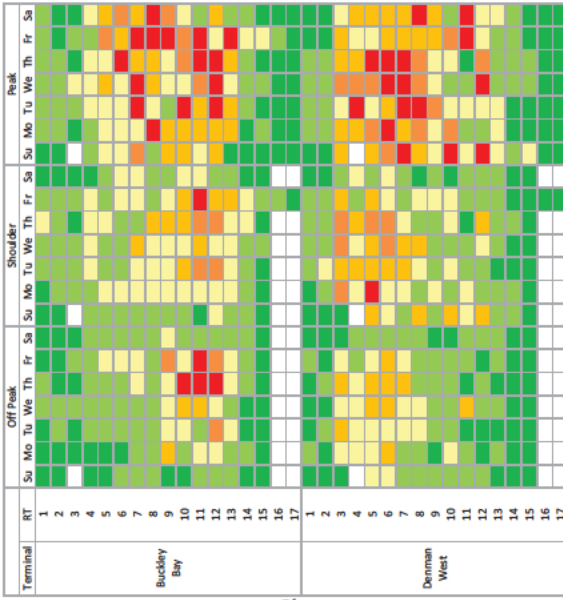


APPENDIX 1 - HEAT MAPS

Sample Week Analysis - Mid Growth, Includes Shuttling as practical

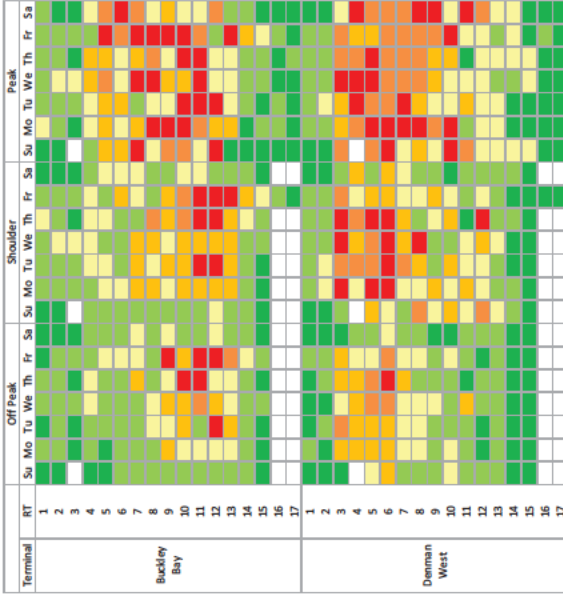
Vessel Capacity

Base Demand (F2023)

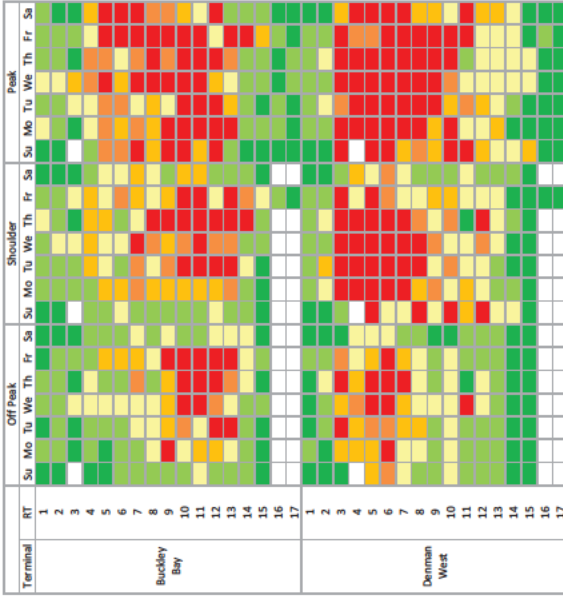


65 AEQ

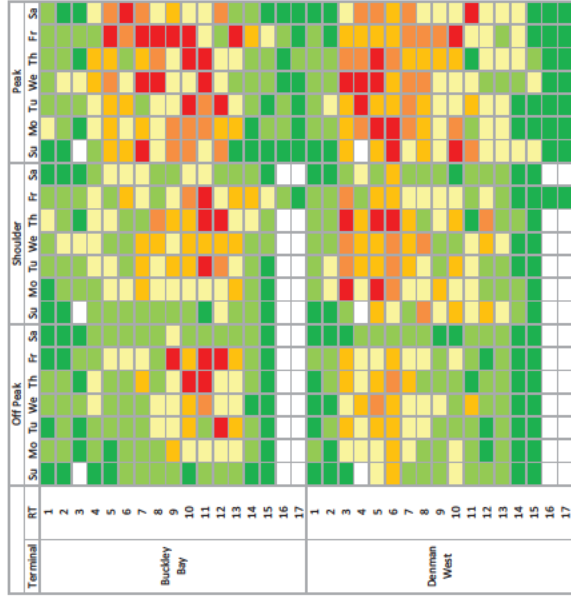
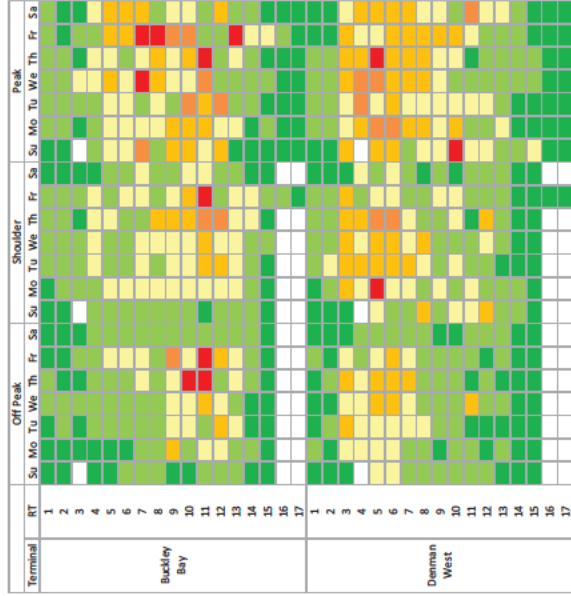
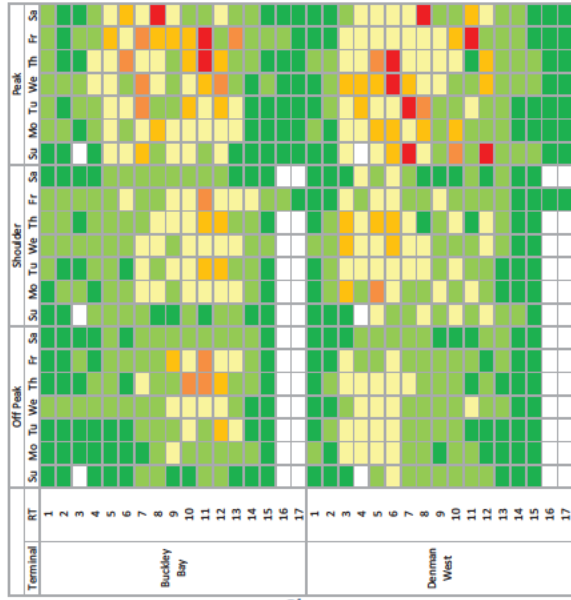
YR 15 - Mid-Growth (1%, F2038)



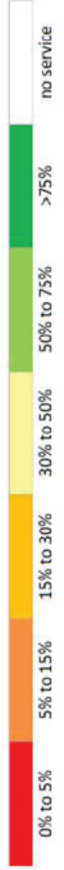
YR 30 - Mid-Growth (1%, F2053)



78 AEQ



118

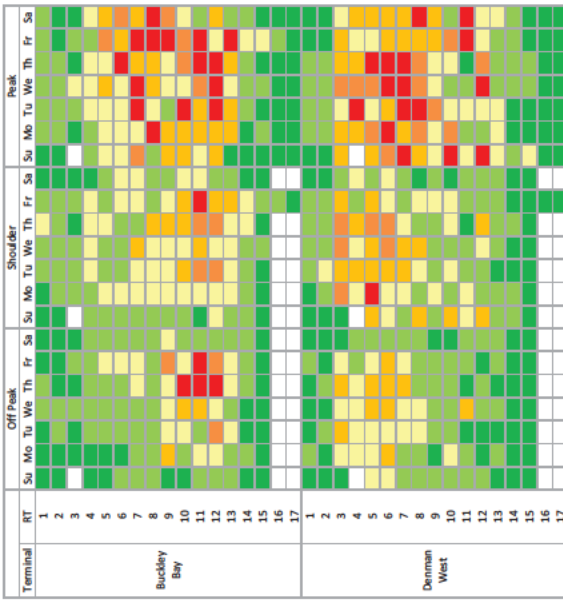


APPENDIX 1 - HEAT MAPS

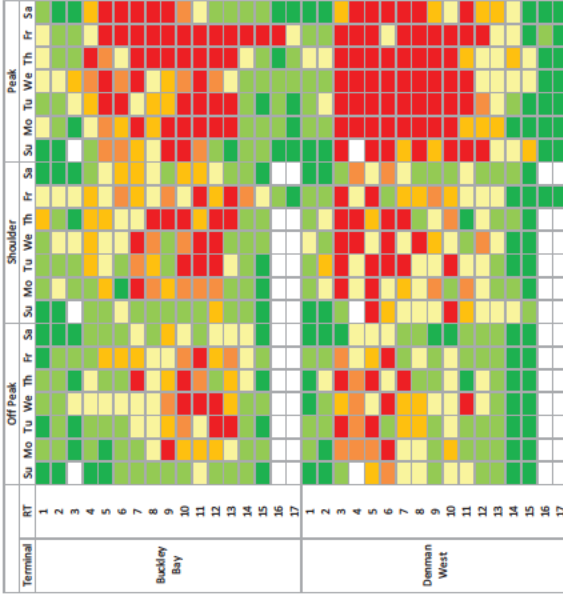
Sample Week Analysis - High Growth, Includes Shuttling as practical

Vessel Capacity

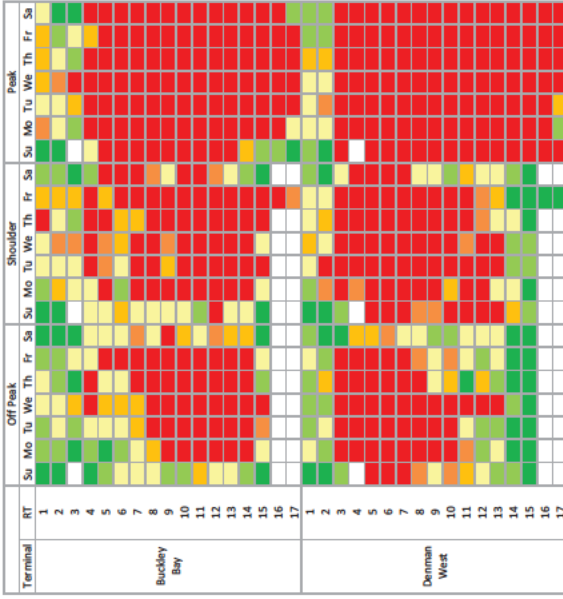
Base Demand (F2023)



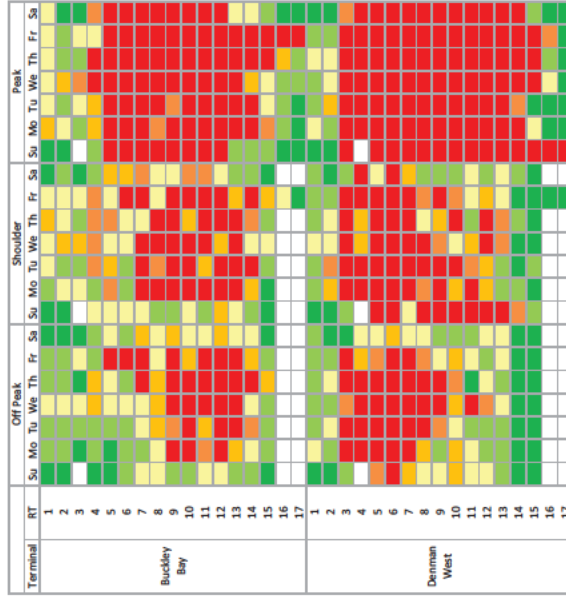
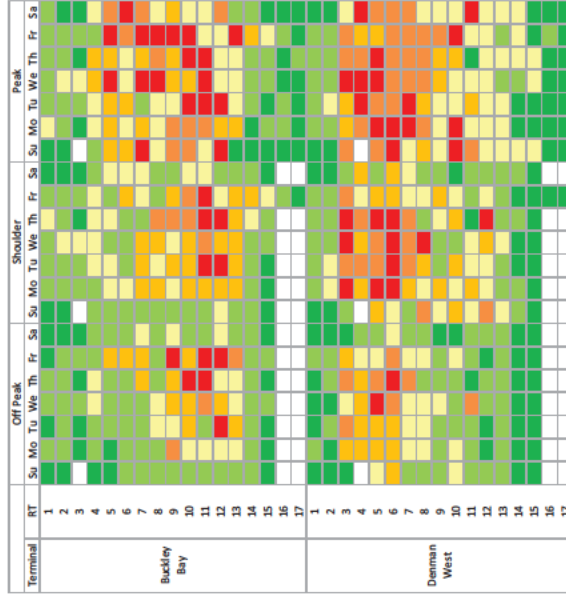
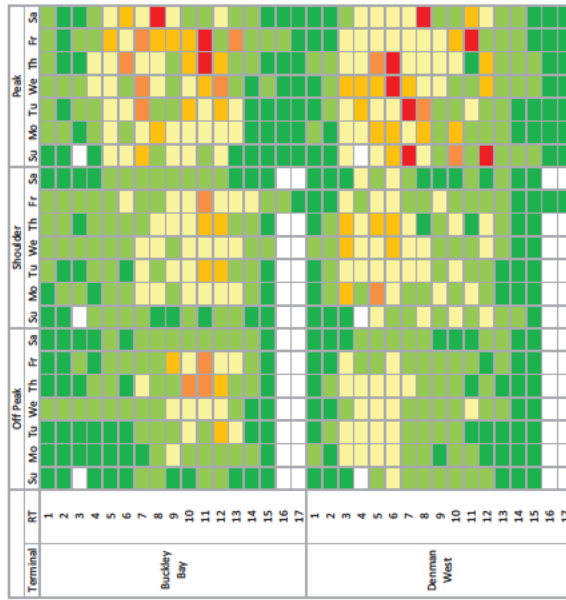
YR 15 - High-Growth (2.3%, F2038)



YR 30 - High-Growth (2.3%, F2053)



78 AEQ



119



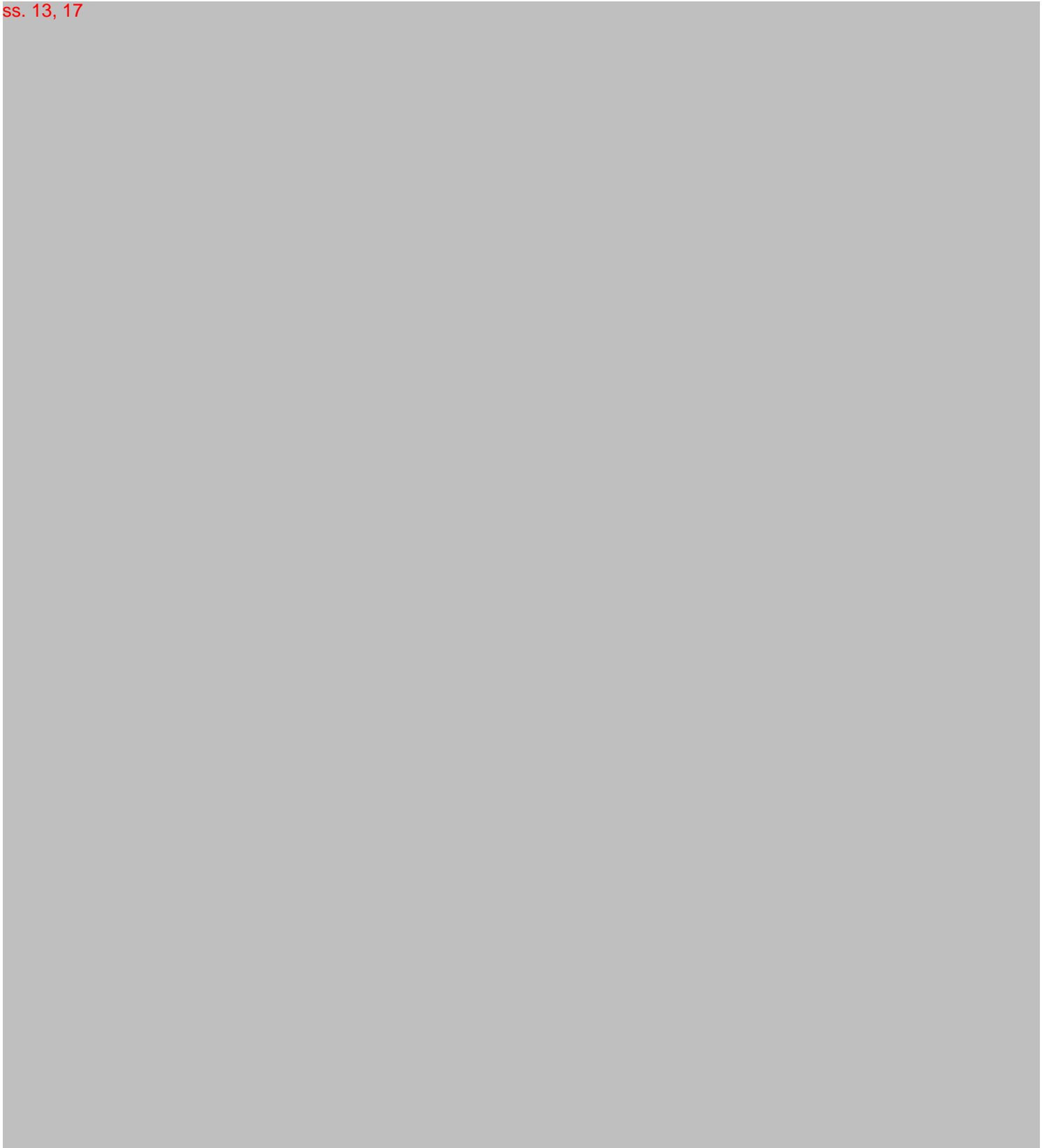
BSC Expansion Project

Strategic Planning Action Items from meeting Feb 10, 2022

From the February 10th BSC Project meeting there were a number of action items for Strategic Planning. The summary response for these to support discussion at next meeting March 3.

Action Items for Strategic Planning:

ss. 13, 17



BSC Expansion Project

Strategic Planning Action Items from meeting Feb 10, 2022

ss. 13, 17



APPENDIX 1 - HEAT MAPS

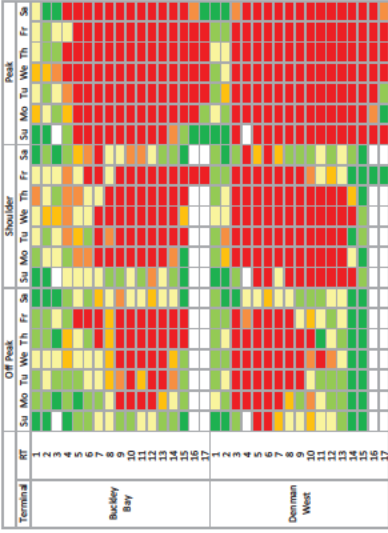
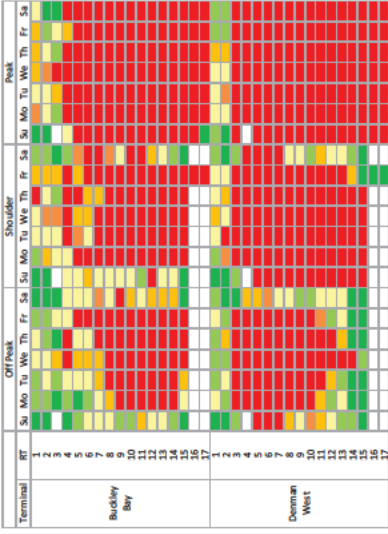
Sample Week Analysis - Mid Growth, No Shuttling

Base Demand (F2023)

YR 30 - Mid-Growth (1, F2053)

YR 15 - Mid-Growth (1%, F2038)

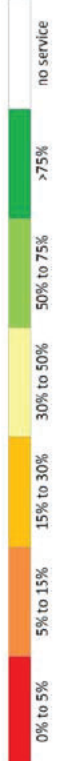
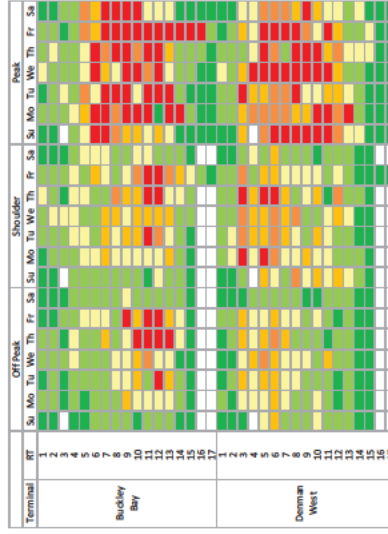
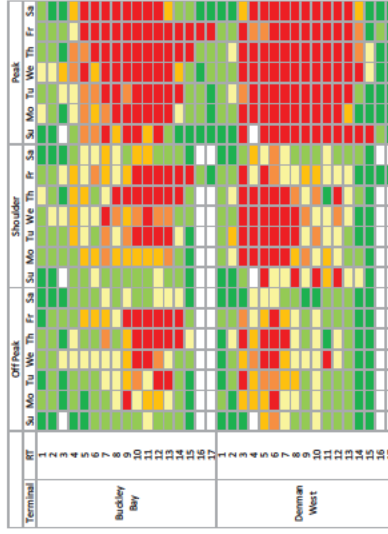
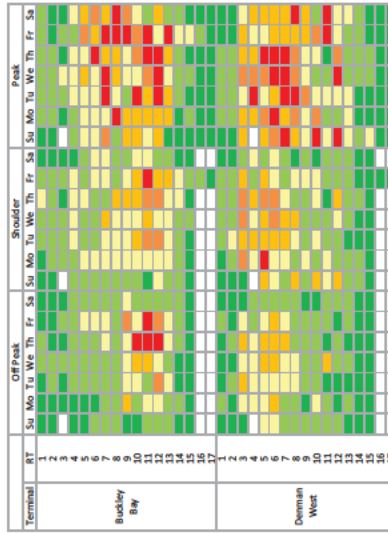
Vessel Capacity



45
AEQ

65
AEQ

78
AEQ



APPENDIX 1 - HEAT MAPS

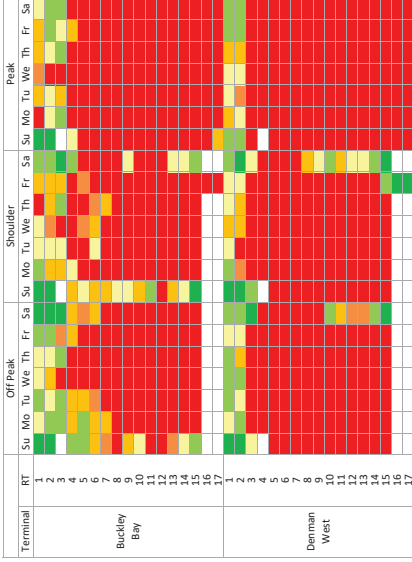
Sample Week Analysis - High Growth, No Shutting

Base Demand (F2023)

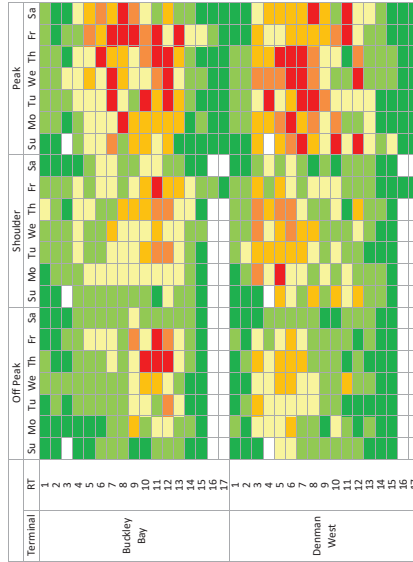
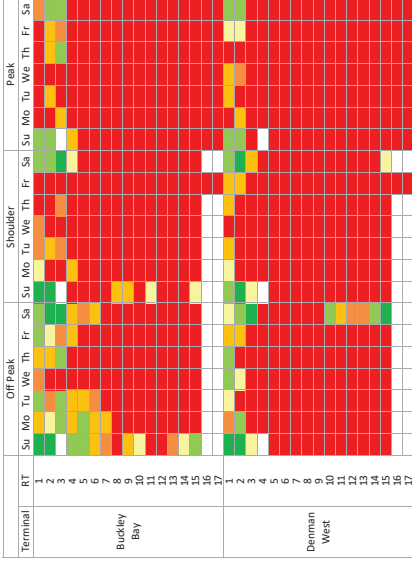


45
AEQ

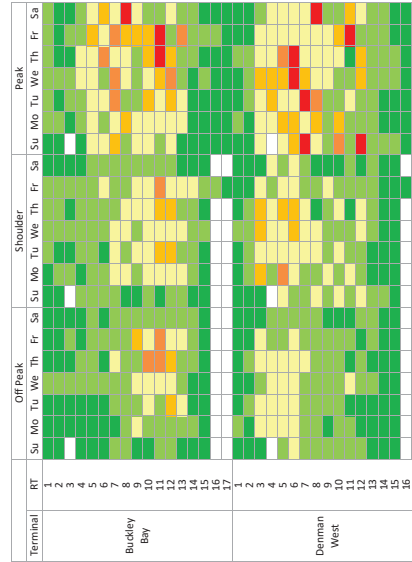
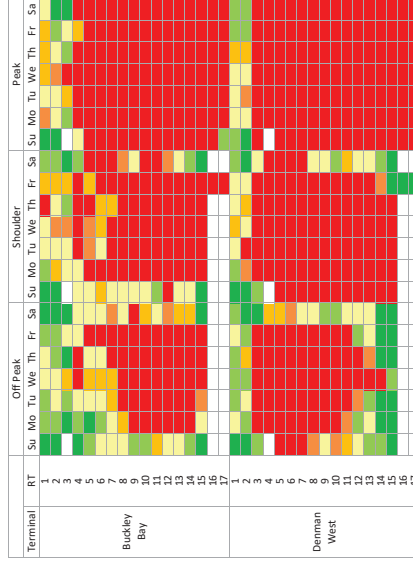
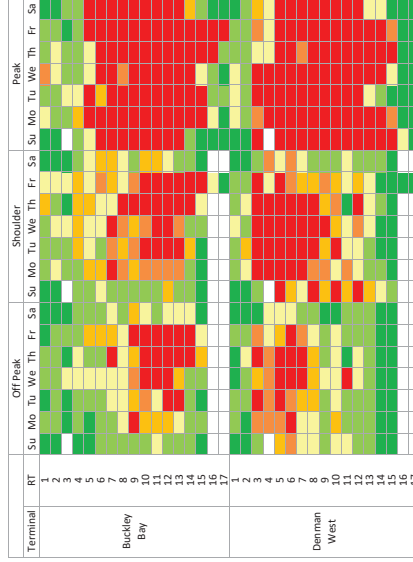
YR 15 - High-Growth (2.3%, F2038)



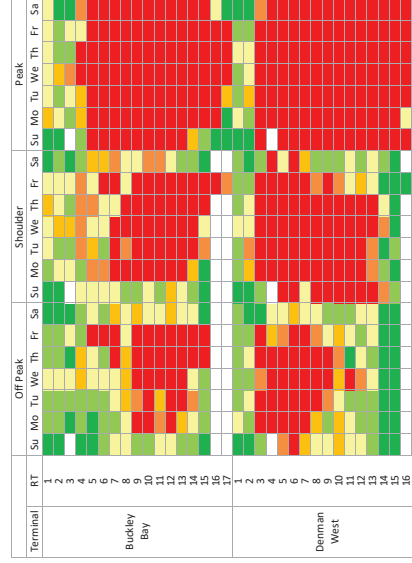
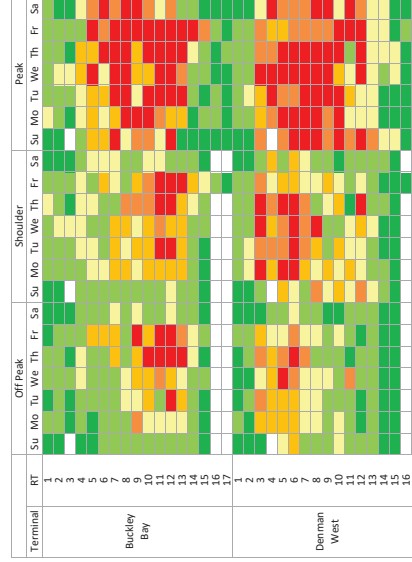
YR 30 - High-Growth (2.3%, F2053)



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AEQ



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AEQ

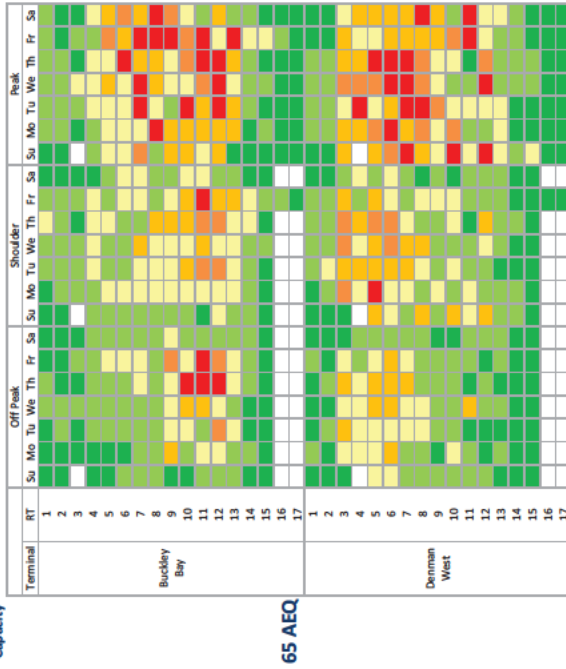


APPENDIX 1 - HEAT MAPS

Sample Week Analysis - Mid Growth, Includes Shuttling as practical

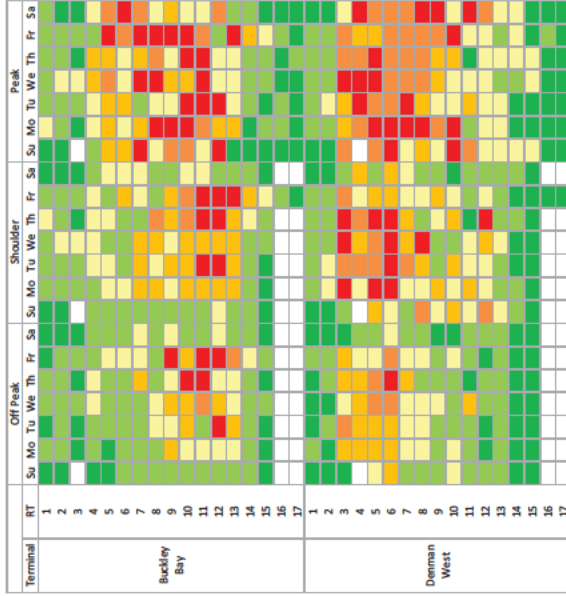
Vessel Capacity

Base Demand (F2023)



65 AEQ

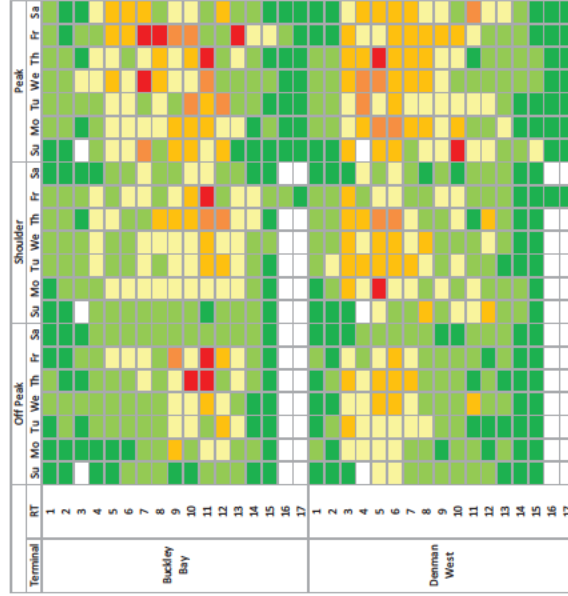
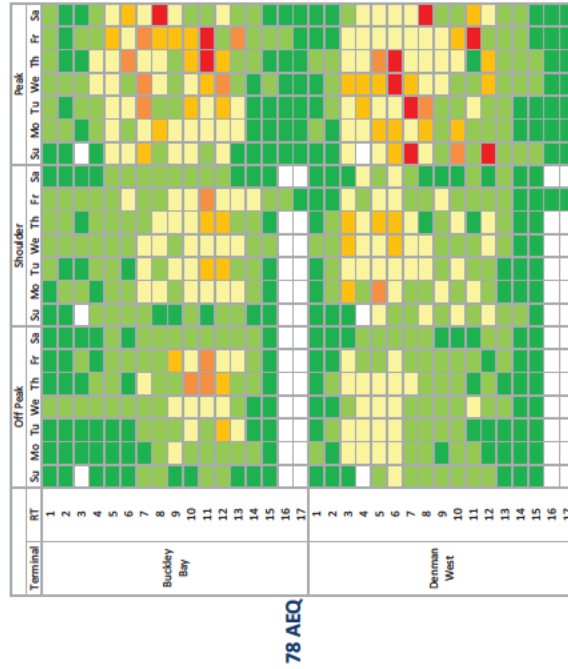
YR 15 - Mid-Growth (1%, F2038)



YR 30 - Mid-Growth (1%, F2053)



78 AEQ

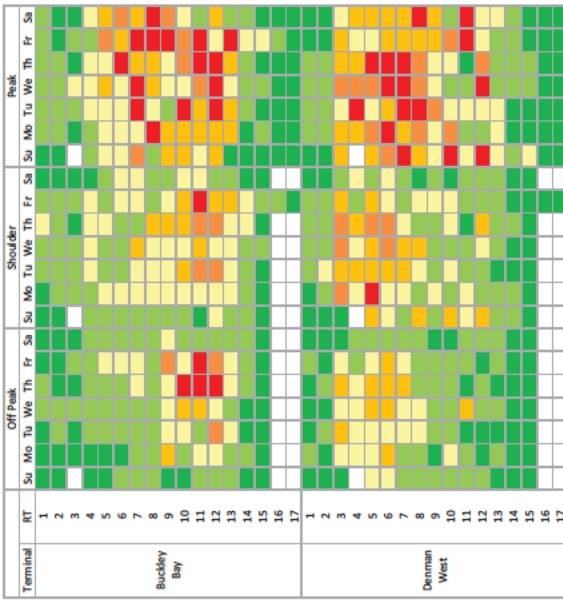


APPENDIX 1 - HEAT MAPS

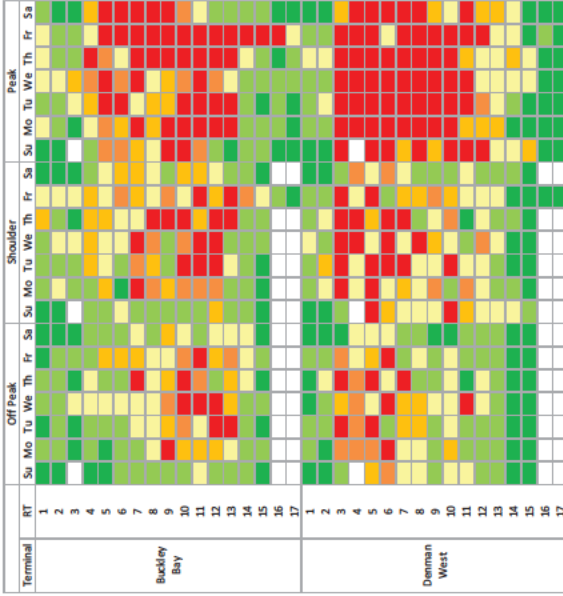
Sample Week Analysis - High Growth, Includes Shuttling as practical

Vessel Capacity

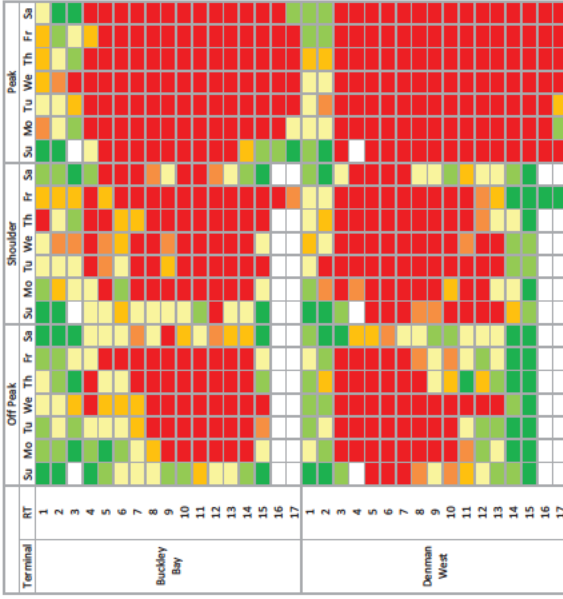
Base Demand (F2023)



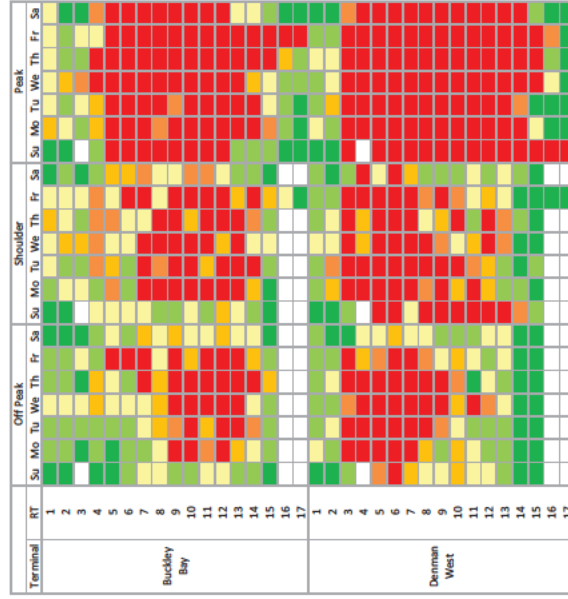
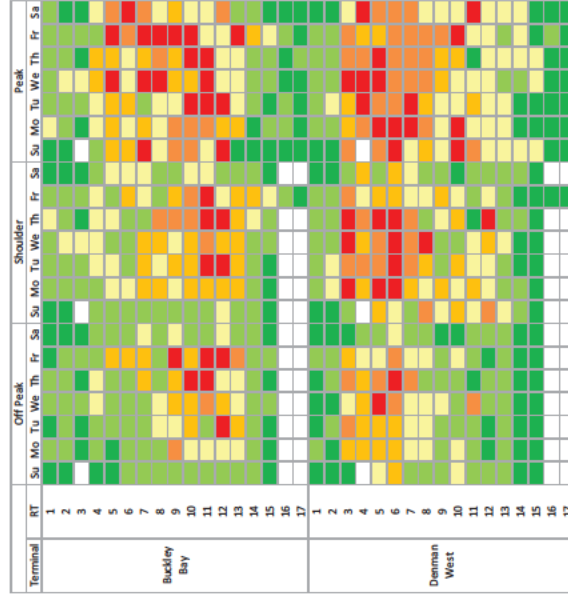
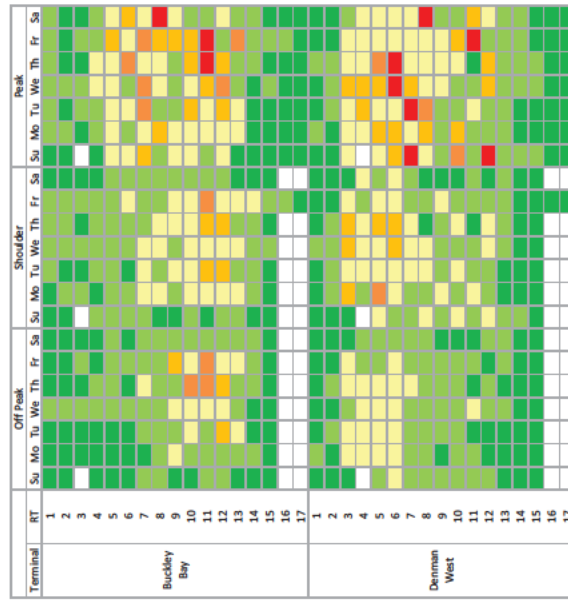
YR 15 - High-Growth (2.3%, F2038)



YR 30 - High-Growth (2.3%, F2053)



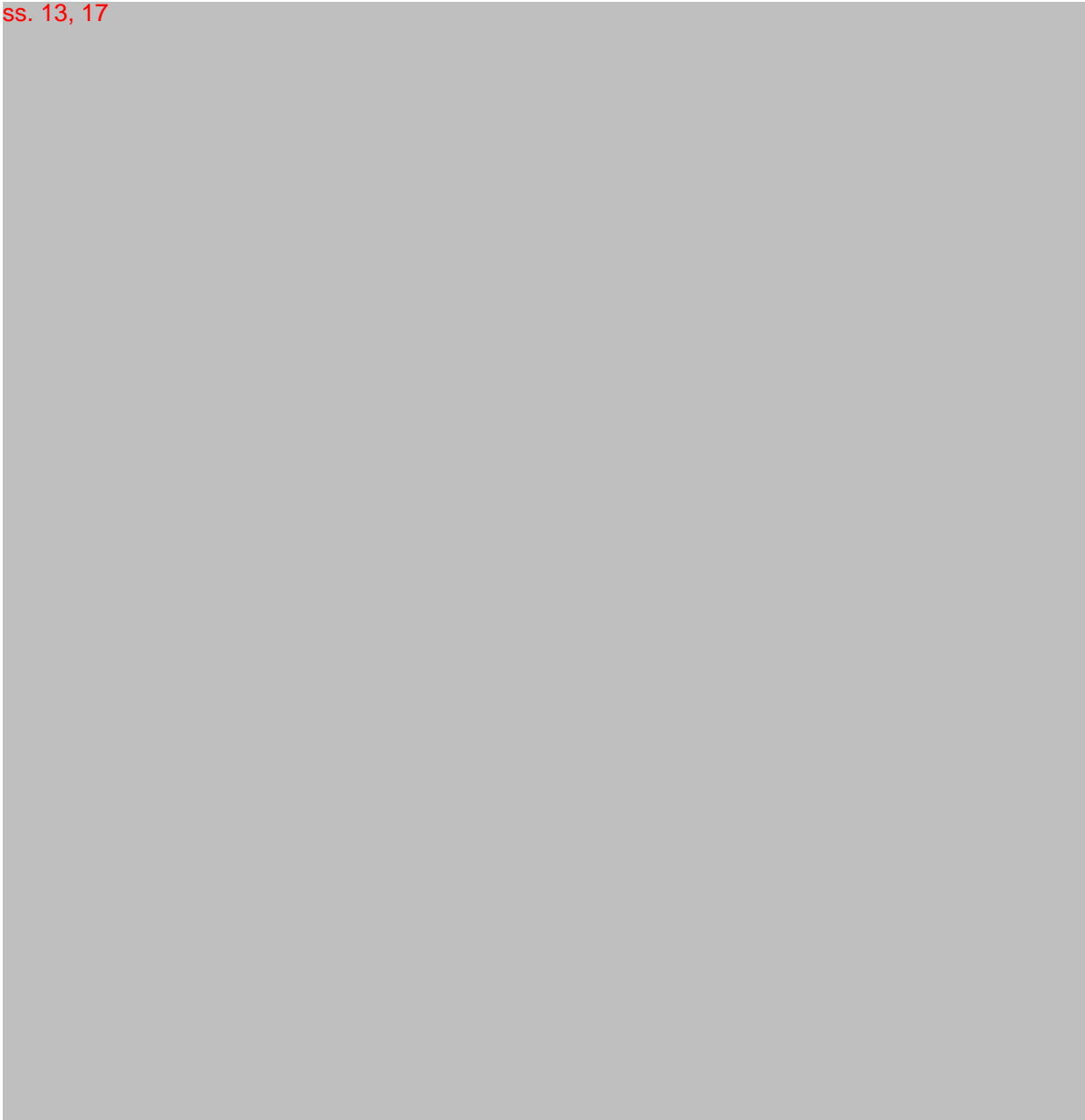
78 AEQ



ss. 13, 17

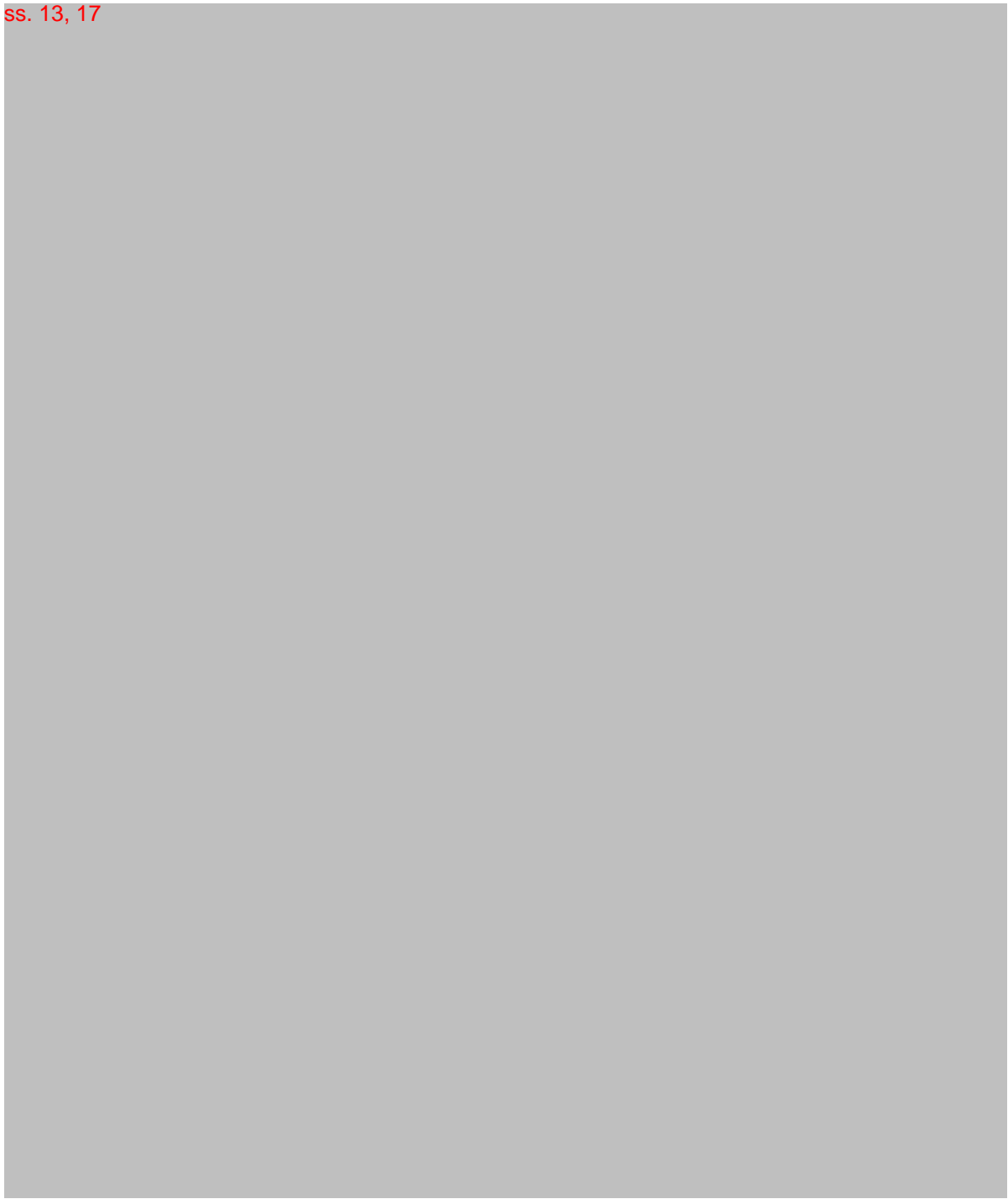


ss. 13, 17



ss. 13, 17





ss. 13, 17

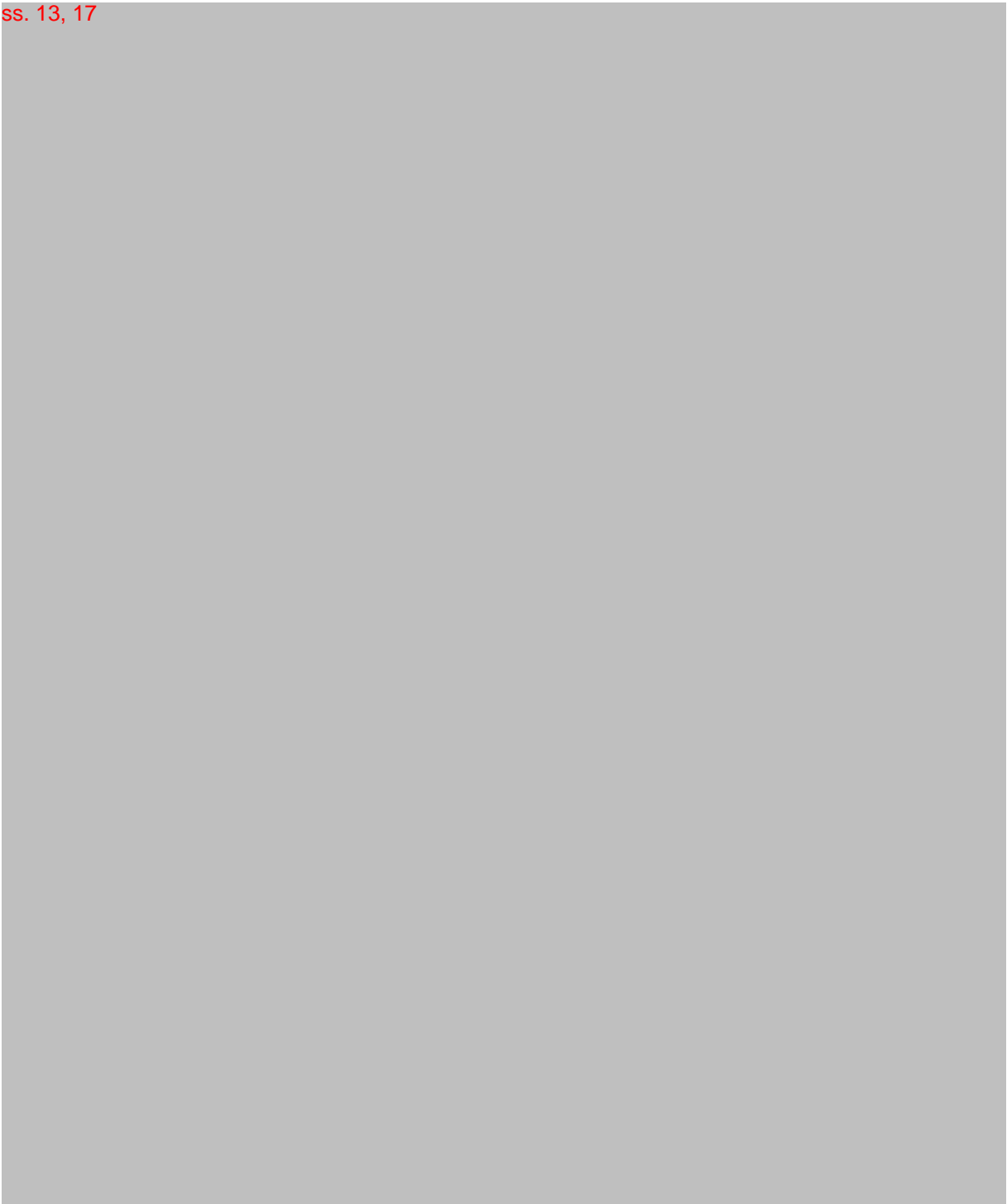




ss. 13, 17



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ss. 13, 17

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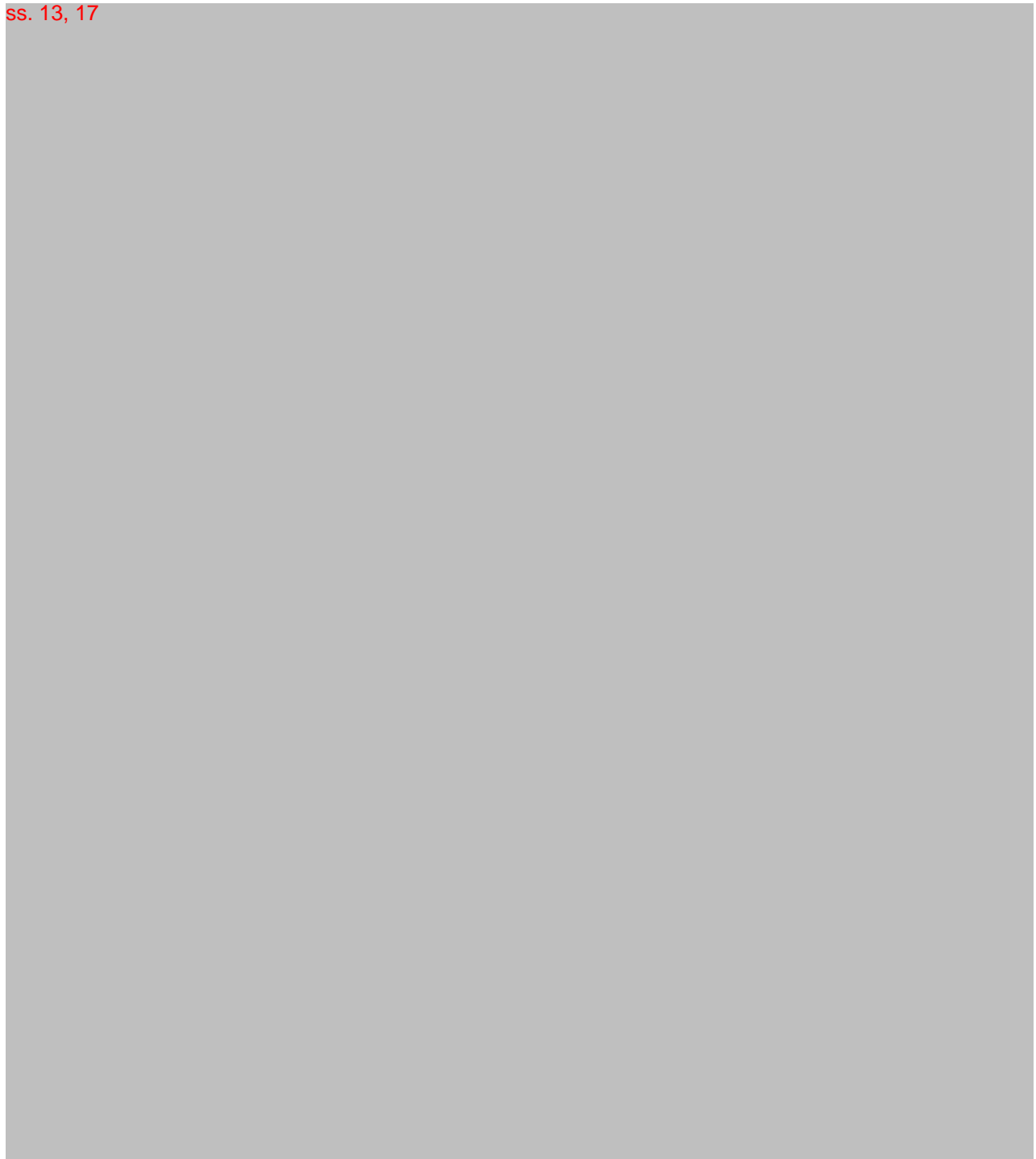
ss. 13, 17

ss. 13, 17



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ss. 13, 17



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ss. 13, 17



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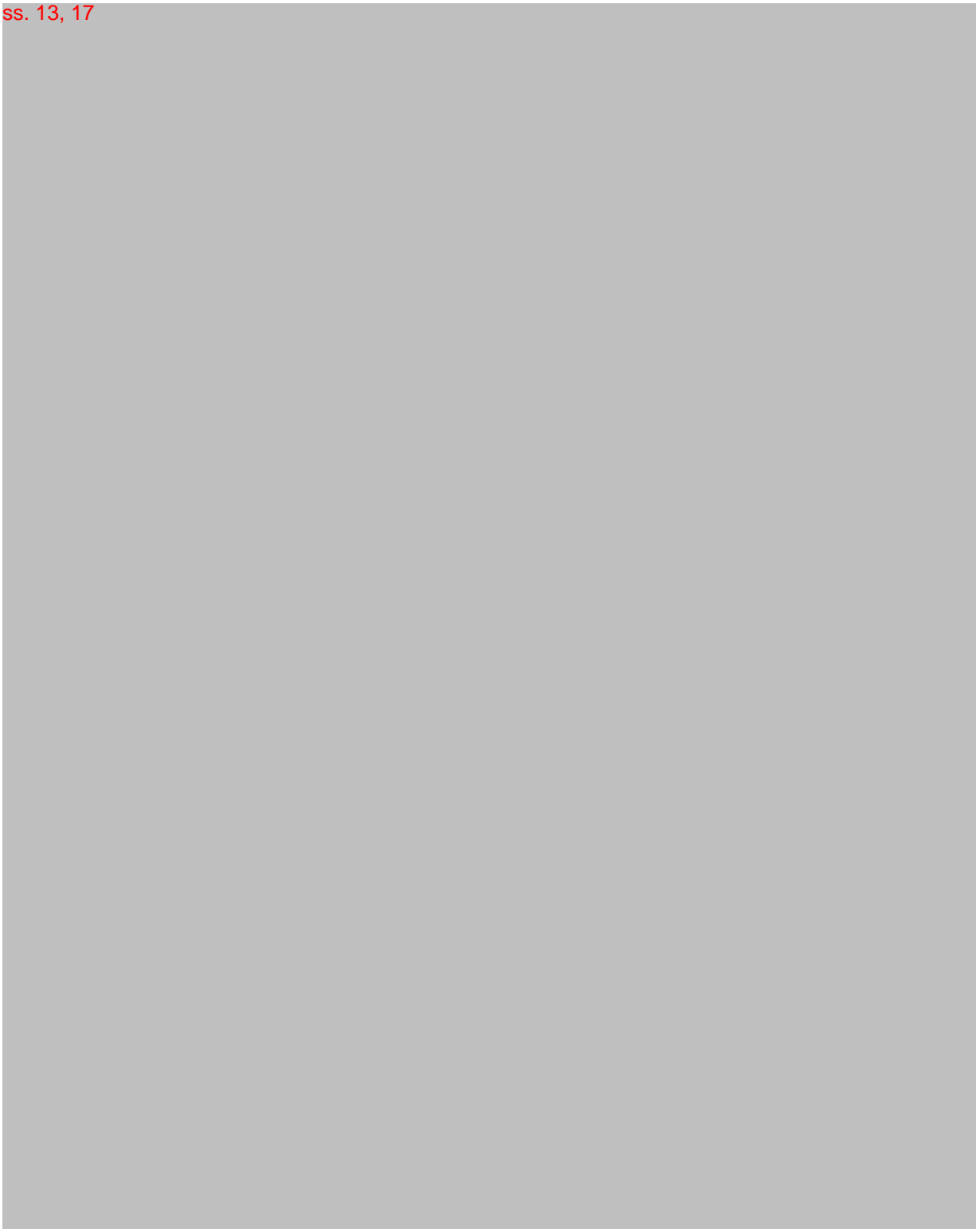




ss. 13, 17



ss. 13, 17



ss. 13, 17

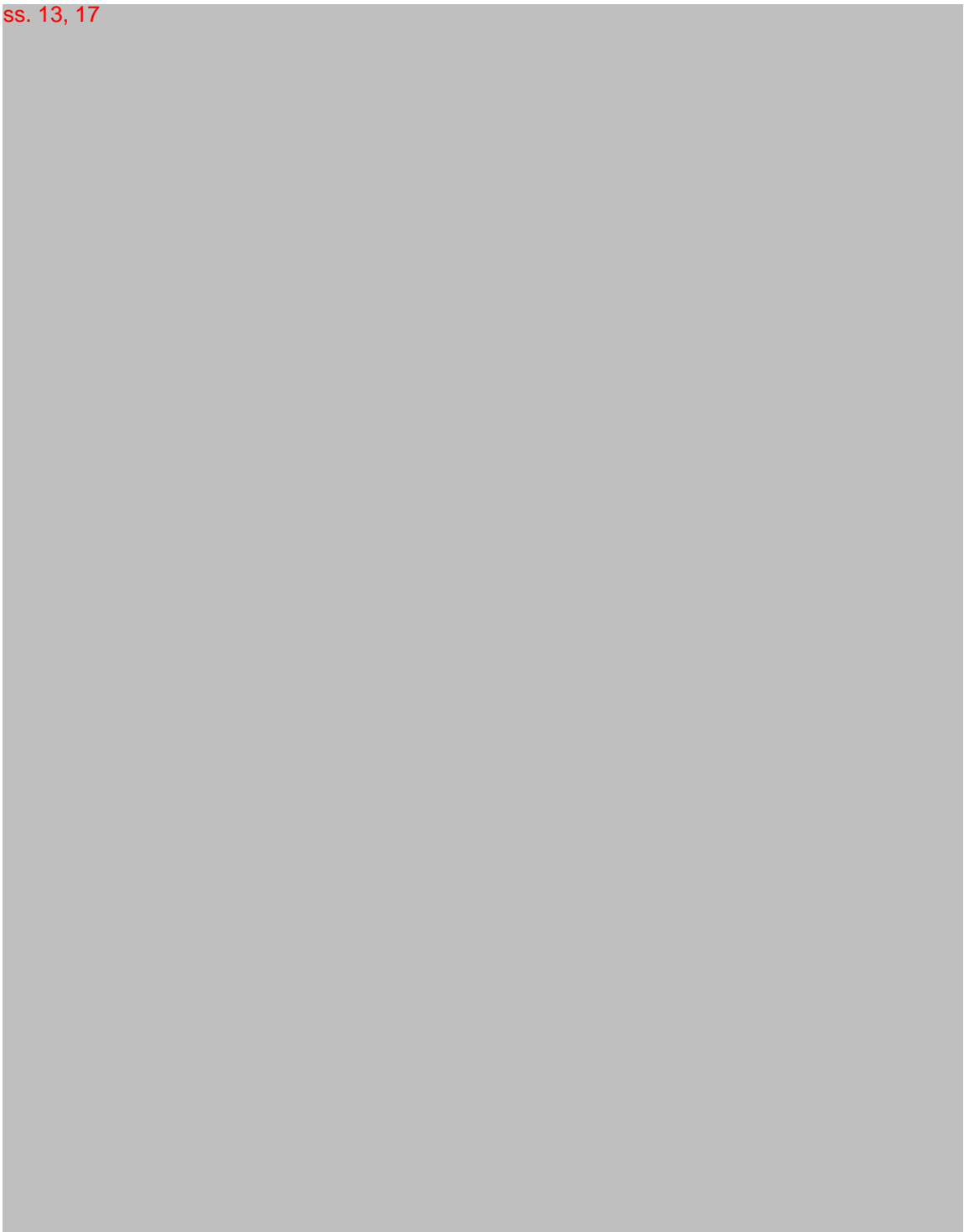




ss. 13, 17



ss. 13, 17



ss. 13, 17



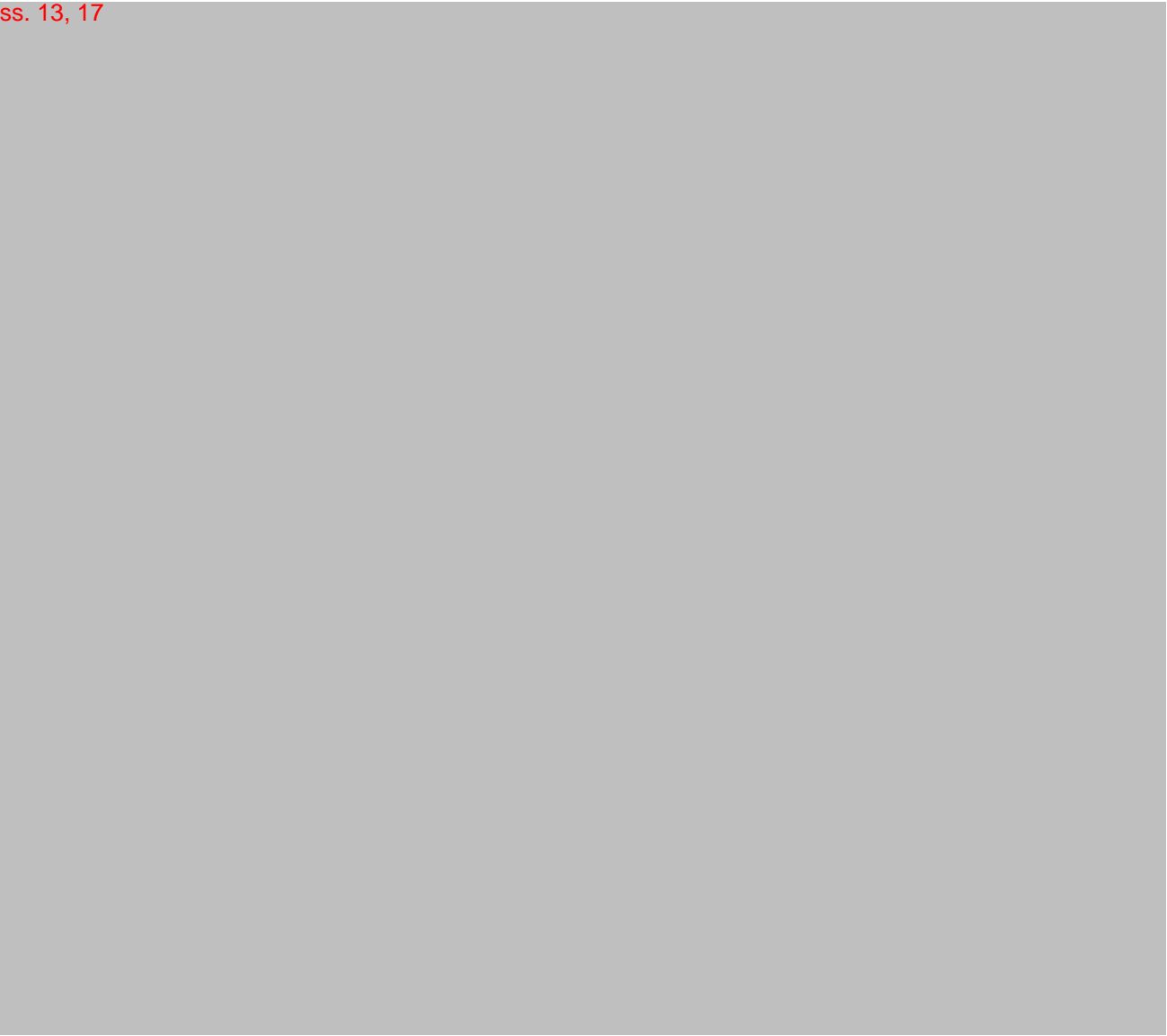
ss. 13, 17







ss. 13, 17







ss. 13, 17





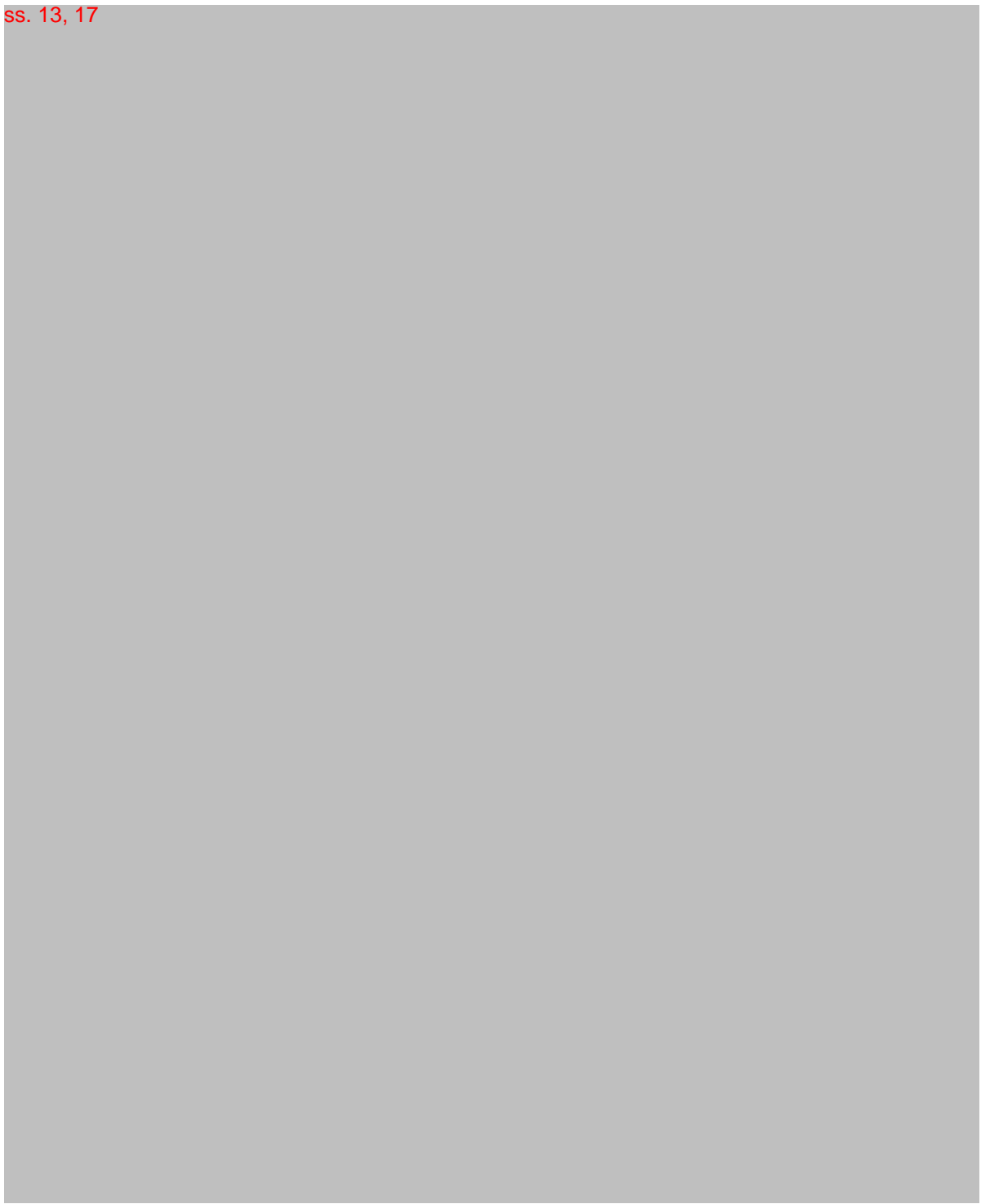


ss. 13, 17



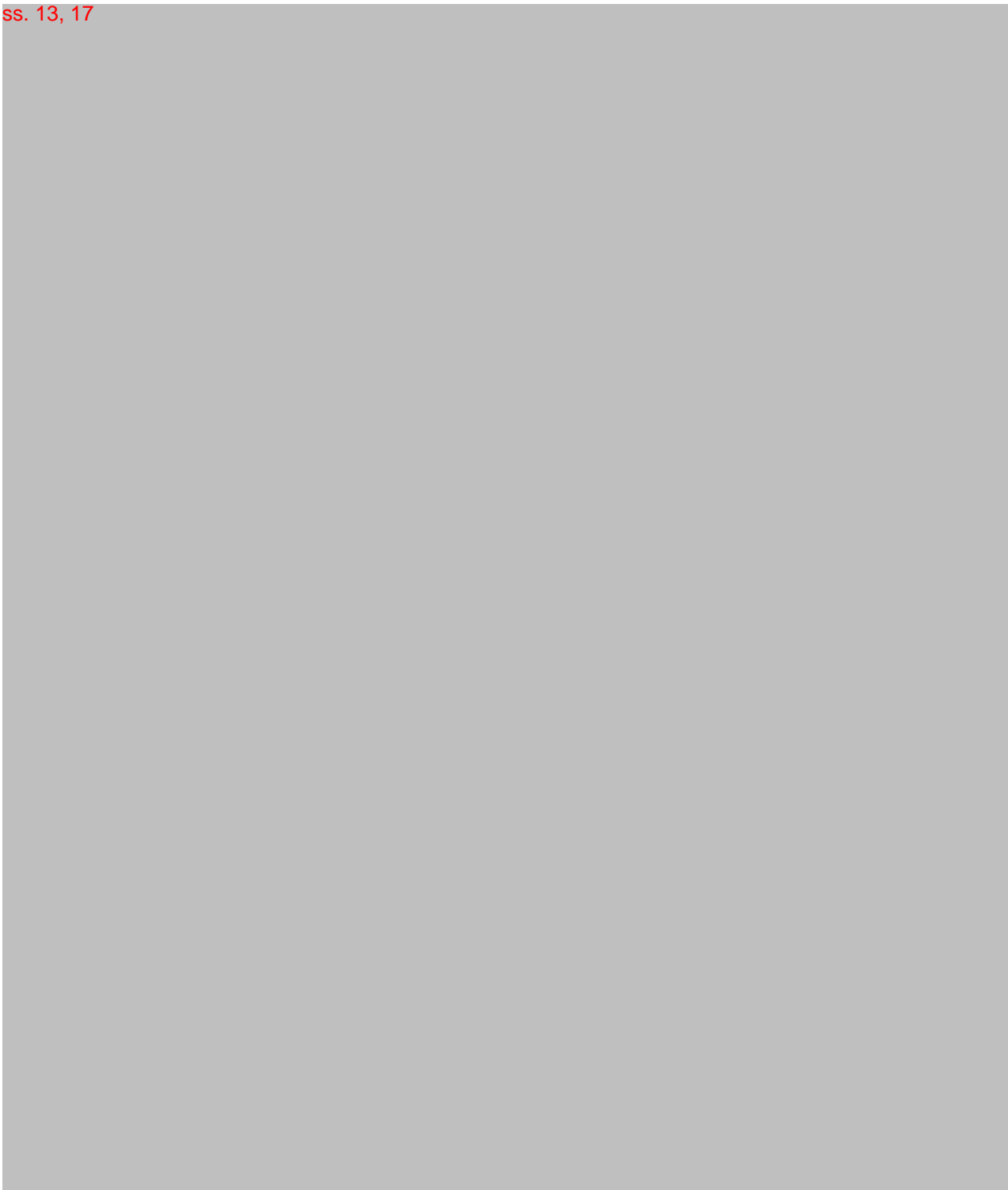






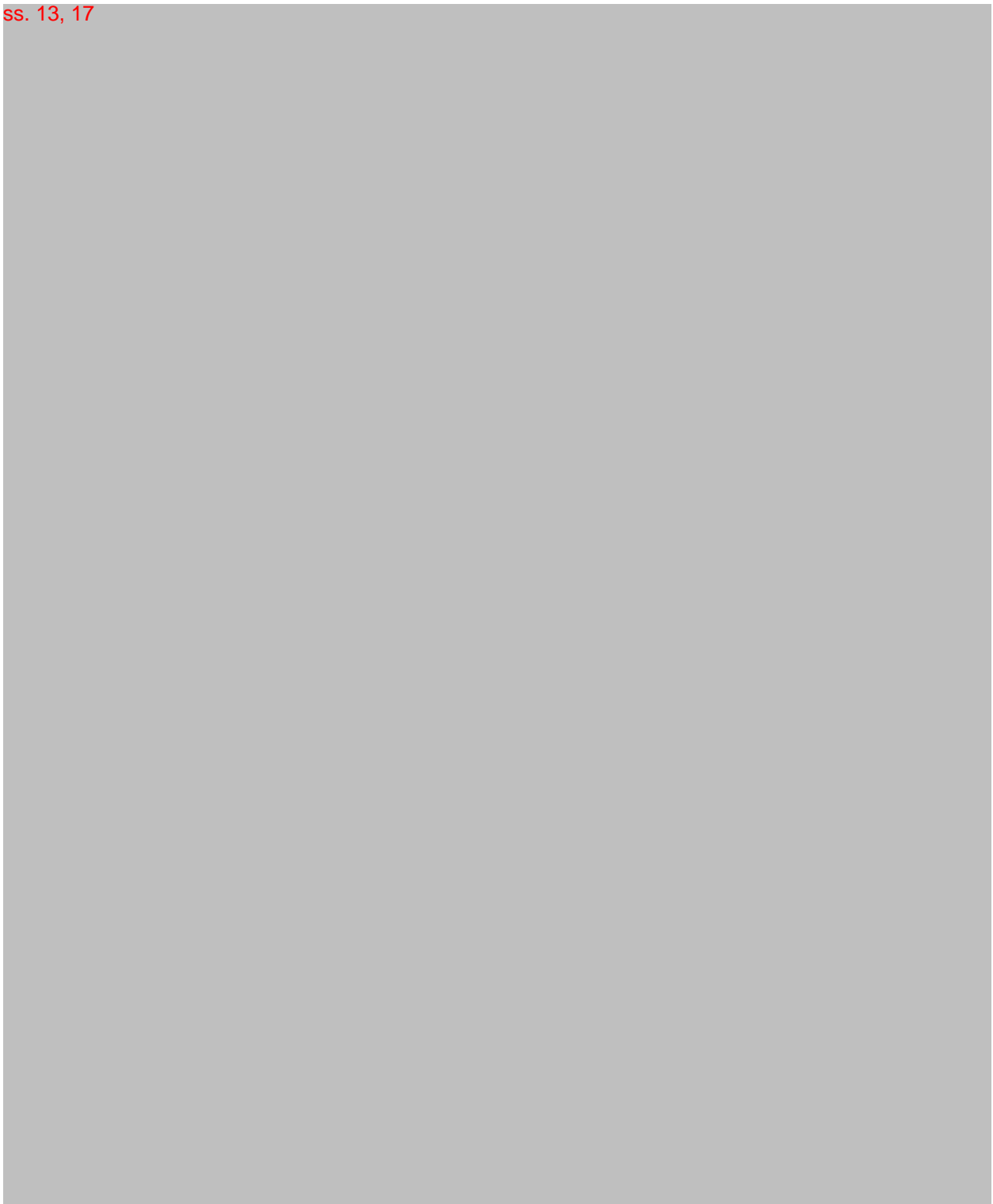
ss. 13, 17

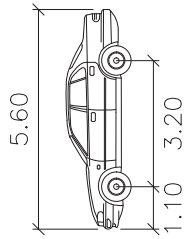




ss. 13, 17

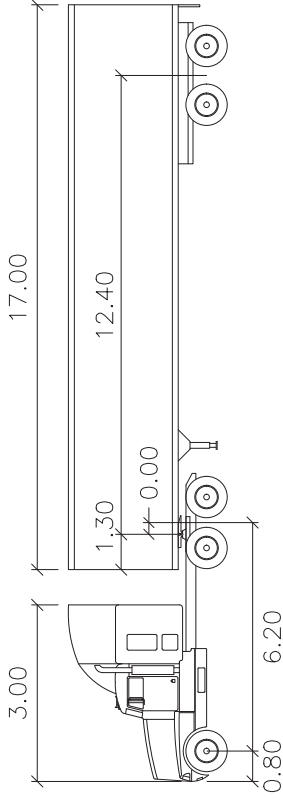






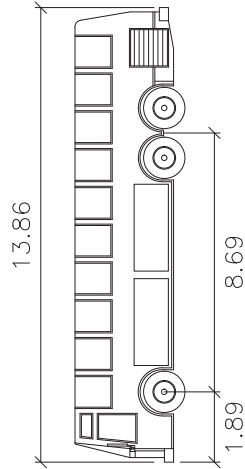
P TAC-2017 (CA)

- Width : 2.00
- Track : 2.00
- Lock to Lock Time : 6.0
- Steering Angle : 35.9



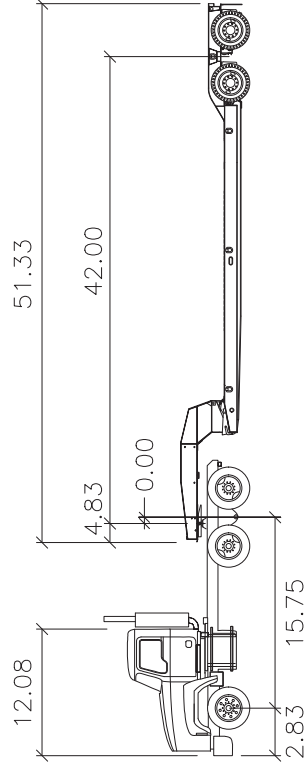
WB-20 TAC-2017 (CA)

- Tractor Width : 2.60
- Trailer Width : 2.60
- Tractor Track : 2.60
- Trailer Track : 2.60
- Lock to Lock Time : 6.0
- Steering Angle : 28.2
- Articulating Angle : 70.0



BUS-14M AASHTOM 2011 (US)

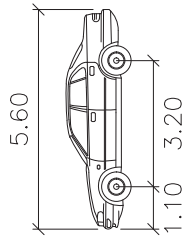
- Width : 2.59
- Track : 2.59
- Lock to Lock Time : 6.0
- Steering Angle : 45.2



Low-Boy Trailer 53 feet NCHRP REPORT 659 (US)

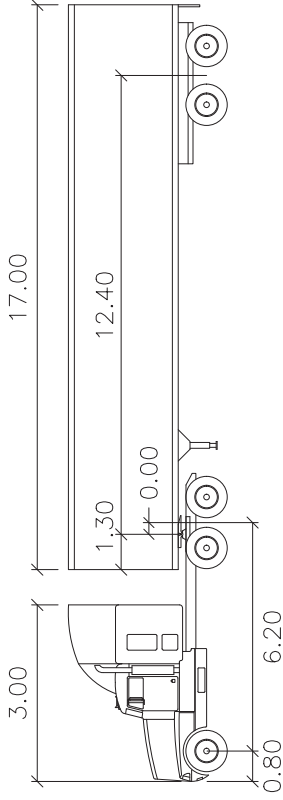
- Tractor Width : 8.50
- Trailer Width : 8.50
- Tractor Track : 8.50
- Trailer Track : 8.50
- Lock to Lock Time : 6.0
- Steering Angle : 22.3
- Articulating Angle : 70.0

TYPICAL AUTOTURN VEHICLES USED



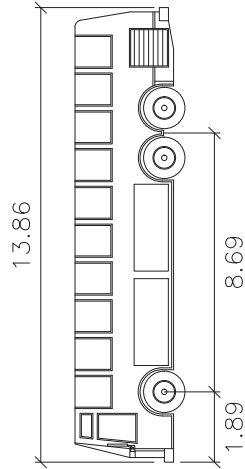
P TAC-2017 (CA)

meters
 Width : 2.00
 Track : 2.00
 Lock to Lock Time : 6.0
 Steering Angle : 35.9



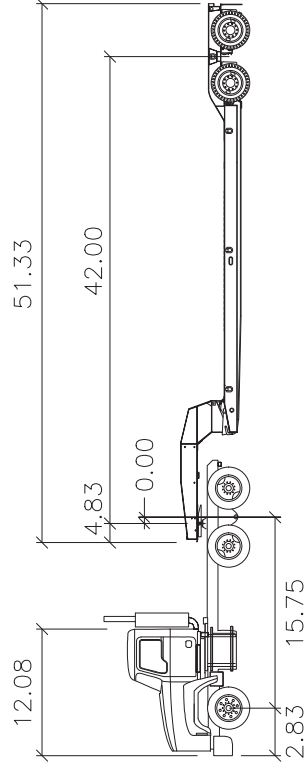
WB-20 TAC-2017 (CA)

meters
 Tractor Width : 2.60
 Trailer Width : 2.60
 Tractor Track : 2.60
 Trailer Track : 2.60
 Lock to Lock Time : 6.0
 Steering Angle : 28.2
 Articulating Angle : 70.0



BUS-14M AASHTOM 2011 (US)

meters
 Width : 2.59
 Track : 2.59
 Lock to Lock Time : 6.0
 Steering Angle : 45.2

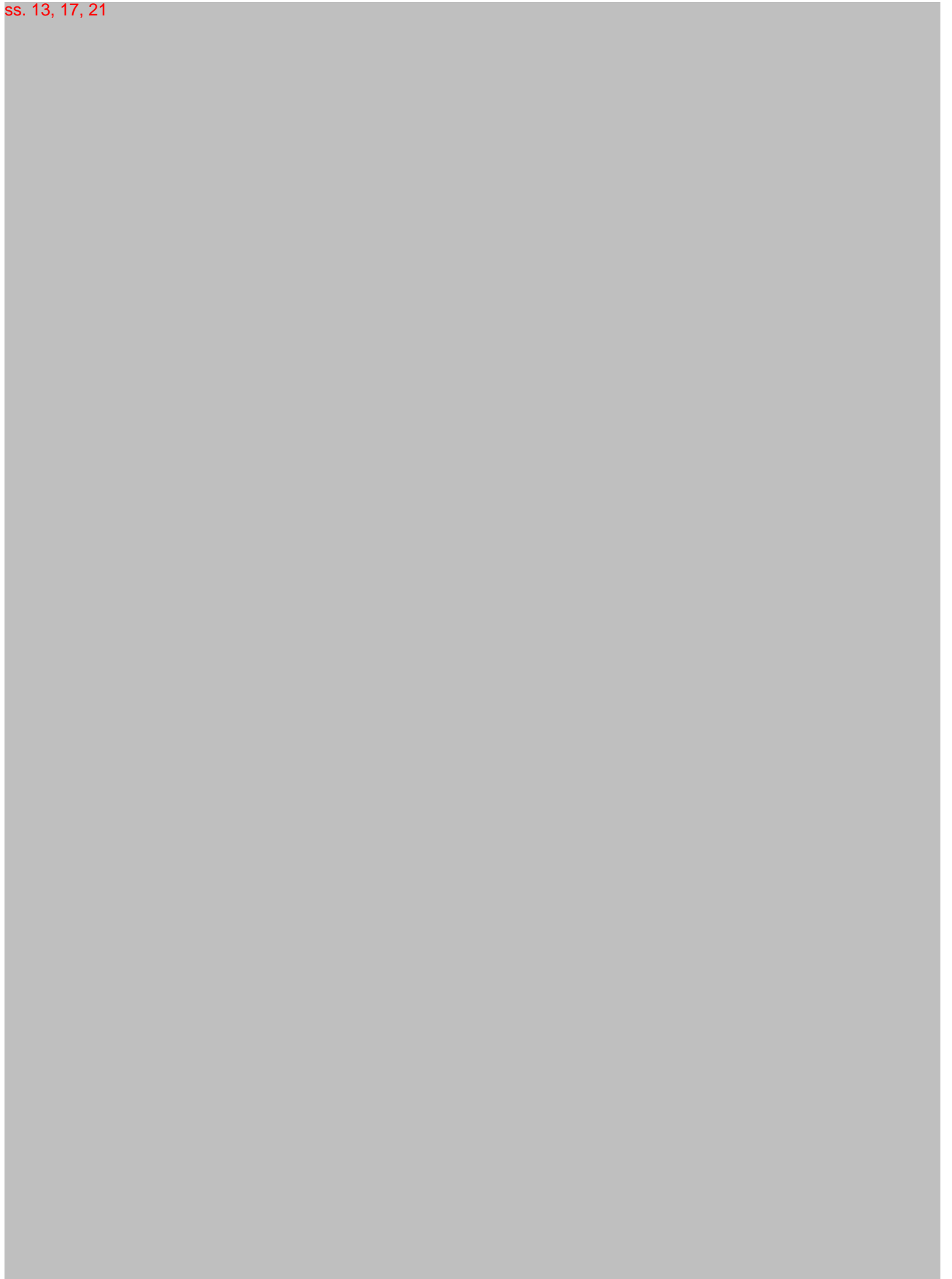


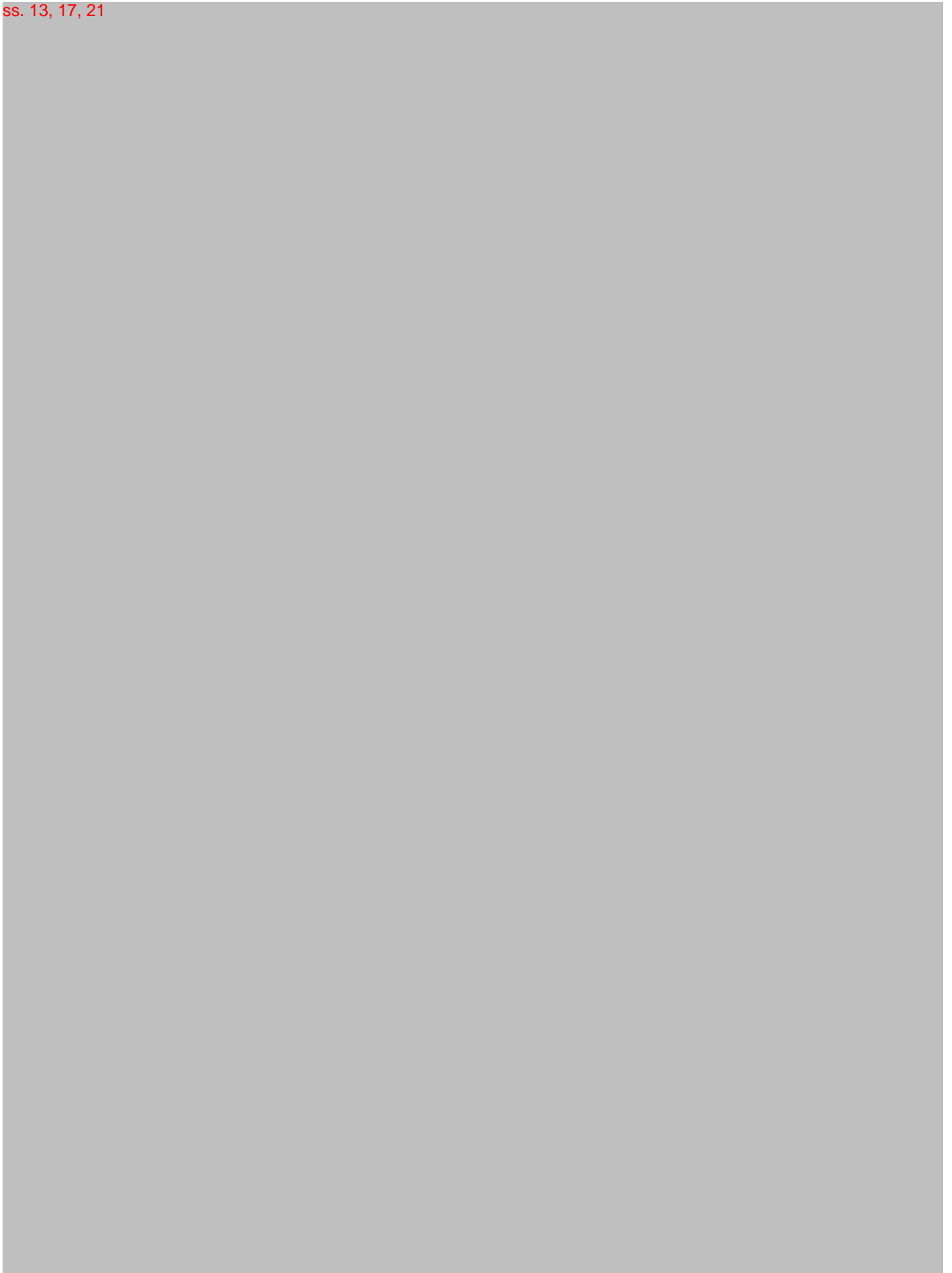
Low-Boy Trailer 53 feet NCHRP REPORT 659 (US)

feet
 Tractor Width : 8.50
 Trailer Width : 8.50
 Tractor Track : 8.50
 Trailer Track : 8.50
 Lock to Lock Time : 6.0
 Steering Angle : 22.3
 Articulating Angle : 70.0

TYPICAL AUTOTURN VEHICLES USED















From: [Adams, James W](#)
To: [Paterson, Bruce](#)
Cc: [Kearney, Bob](#); [Amusan, Sam](#); [Tataryn, Noel](#)
Subject: FW: Berth Interface issues - Baynes Sound Connector Asset Betterment Project
Date: February 24, 2022 3:25:31 PM
Attachments: [BUCK-266-SK012.pdf](#)
[BUCK-266-SK013.pdf](#)
[BSC General Arrangement - Widening RevA2mkup.pdf](#)

Hi Bruce,

Please see attached and email below for the BSC auto turn study. [ss. 13, 17](#)

[ss. 13, 17](#)

Can you please review and let me know if you have any questions? [ss. 13, 17](#)

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [ss. 15, 19](#) **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Sent: February 23, 2022 2:52 PM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi James,

Here is the autoturn study using a passenger car and the largest allowable commercial vehicle. [ss. 13, 17](#)

Please let me know if you need further scenarios shown.

Thank You,

Noel Tataryn
Draughtsperson
Terminal Construction
British Columbia Ferry Services Inc.
Suite 500 – 1321 Blanshard Street Victoria, B.C. V8W 0B7
T: 250-978-1696
Noel.tataryn@bcferries.com
bcferries.com | [Facebook](#) | [Twitter](#)

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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 15, 2022 11:14 AM
To: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: FW: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi Noel,

Hope you had a good time s. 22.

I reviewed the sketches with Bruce and have several comments noted in blue: ss. 13, 17

[Redacted]
[Redacted]
[Redacted]

ss. 13, 17
[Redacted]
[Redacted]
[Redacted]

[Redacted] Please confirm this as well.

Feel free to call when you've reviewed my notes.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: ss. 15, 19 F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 2:14 PM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

James,

I'm attaching a mark up of the proposed GA with some loss of AEQ spaces presumed because of access problems. This should be verified by your vehicle turning model. **ss. 13, 17**

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
Tel: (250) 978-1385
Cell: **ss. 15, 19**
Fax: (250) 978-1166
bruce.paterson@bcferries.com
www.bcferries.com
Safety and Operational Readiness

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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 1:55 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Thanks Bruce, I just sent you an invite for 3.

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** **ss. 15, 19** **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 1:00 PM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

I am clear this afternoon after 1:30

Bruce Paterson, P.Eng, M.Eng

Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

Tel: (250) 978-1385

Cell: ss. 15, 19

Fax: (250) 978-1166

bruce.paterson@bcferries.com

www.bcferries.com

Safety and Operational Readiness

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From: Adams, James W <James.Adams@bcferries.com>

Sent: February 11, 2022 12:26 PM

To: Paterson, Bruce <Bruce.Paterson@bcferries.com>

Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Are you available for a brief webex this afternoon or Monday to discuss the drawings? There are number of constraints we should consider first before I can answer your questions.

Thanks,

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922

james.adams@bcferries.com

bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>

Sent: February 11, 2022 10:46 AM

To: Adams, James W <James.Adams@bcferries.com>

Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>

Subject: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

James,

I am hoping for a bit of interpretation of the attached drawings. At first blush, it appears that the proposed layout is viable, particularly if:

ss. 13, 17



What are your thoughts?

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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Fax: (250) 978-1166
bruce.paterson@bcferries.com
www.bcferries.com
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 8:29 AM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Kearney, Bob <Bob.Kearney@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Further to my last email, see attached for additional sketches prepared by Noel showing the updated GA of the BSC/berth interface. I've added a couple comments in blue. ss. 13, 17

[Redacted]

[Redacted]

[Redacted] This will require further review.

Let me know if you have any additional comments.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Adams, James W
Sent: February 09, 2022 11:31 AM
To: Bruce Paterson (Bruce.Paterson@bcferries.com) <Bruce.Paterson@bcferries.com>

Cc: Tataryn, Noel (Noel.Tataryn@bcferries.com) <Noel.Tataryn@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Sam Amusan (Sam.Amusan@bcferries.com) <Sam.Amusan@bcferries.com>

Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Attached are the draft sketches from Noel showing the updated GA of the BSC/berth interface.

Can you please review and let me know if you have any suggested changes? **ss. 13, 17**

[Redacted]

Summary of Sketches:

ss. 13, 17

[Redacted]

[Redacted]

[Redacted]

[Redacted]

Please let us know if you have any suggested changes besides updating the location of the guide cables/sheaves.

Thanks again,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** **ss. 15, 19** **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Tataryn, Noel <Noel.Tataryn@bcferries.com>

Sent: February 09, 2022 10:03 AM

To: Adams, James W <James.Adams@bcferries.com>

Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi James,

Here are the sketches for the proposed widened BSC. **ss. 13, 17**



Please let me know if you want any revisions made.

Thanks,

Noel Tataryn

Draughtsperson

Terminal Construction

British Columbia Ferry Services Inc.

Suite 500 – 1321 Blanshard Street Victoria, B.C. V8W 0B7

T: 250-978-1696

Noel.tataryn@bcferries.com

bcferries.com | [Facebook](#) | [Twitter](#)

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From: Adams, James W <James.Adams@bcferries.com>

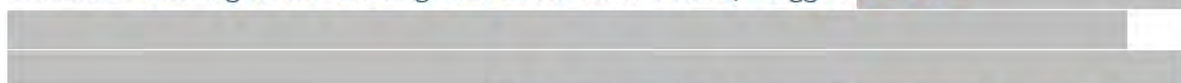
Sent: February 07, 2022 9:41 AM

To: Tataryn, Noel <Noel.Tataryn@bcferries.com>

Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Noel,

Thanks for working on the drawings this week. As discussed, I suggest **ss. 13, 17**



Engineering calculations will be required to verify the actual deflection angle.

Also sorry I can't recall but is it **s. 22** ?

Thanks again,

James

James Adams, P.Eng.

Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** 250-360-7672 **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Adams, James W
Sent: February 07, 2022 9:18 AM
To: Tataryn, Noel (Noel.Tataryn@bcferries.com) <Noel.Tataryn@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Morning Noel,

Further to my last email, see attached for the updated preliminary GA **ss. 13, 17**

Please review Bruce's comments below regarding **ss. 13, 17**

Keep the previous set as a separate sketch since those are considered current state.

Can you also include a sketch looking at vehicle auto turns?

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** **ss. 15, 19** **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 06, 2022 10:30 PM
To: Adams, James W <James.Adams@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

James,

Attached is a preliminary GA **ss. 13, 17**

Can I ask that you/Noel check the fit of the deck plan as shown on the berth? Let us know any conflicts that arise, particularly in light of the work we have just done looking at lateral movement and angles of approach?

With that feed back ,we will revert with the data on the weights and freeboards.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
Tel: (250) 978-1385
Cell: **ss. 15, 19**
Fax: (250) 978-1166
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 04,2022 3:58 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Thanks Bruce, when ready can Fleet Technical confirm the following details:

ss. 13, 17

A large rectangular area of the document is redacted with a grey box. The redaction covers several lines of text, likely containing sensitive information related to the fleet technical details mentioned in the preceding sentence.

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** **ss. 15, 19** **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 04, 2022 3:54 PM
To: Adams, James W <James.Adams@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

James – I have a couple edits for Bob to do. Stand-by

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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Cell: **ss. 15, 19**
Fax: (250) 978-1166
bruce.paterson@bcferries.com
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 04, 2022 3:20 PM
To: Kearney, Bob <Bob.Kearney@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bob,

I don't have access to the Fleet Tech J-drive – could you please send me a copy of the GA?

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** **ss. 15, 19** **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Kearney, Bob <Bob.Kearney@bcferries.com>
Sent: February 04, 2022 3:12 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>; Adams, James W <James.Adams@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Bruce,

I've placed "BSC General Arrangement - Widening RevA" into s. 15

Please note that ss. 13, 17. It could probably be rejigged to give another capacity, but that's what I derived.

Bob Kearney, ASCT
Naval Architect
Engineering – Fleet Technical
British Columbia Ferry Services Inc.
T: 250-978-2358 C: ss. 15, 19
bob.kearney@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: Thursday, February 03, 2022 11:24 AM
To: Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>; Adams, James W <James.Adams@bcferries.com>
Subject: Reference Directory for Baynes Sound Connector Asset Betterment Project

I've dumped a number of reference files for the BSC Asset Betterment project to the following directory:

s. 15

There are main sub-directories with information on the capacity increase:

s. 15

@Bob – can you drop your work into the this sub-directory?

There is a another main subdirectory for the Electrification project.

@Babak – the reference trials information is located at:

s. 15

Note there is trials data from the 2015 acceptance trials. This is what the BSC was contracted to meet. The more recent data (2021) shows the effect of a fouled hull, with the new bullwheel configuration, new cables, and reduced cable tensions.

I've included a file that provides the details on the hydraulic motors, and there is a separate directory on the hydraulic system specs.

Bruce Paterson, P.Eng, M.Eng

Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

Tel: (250) 978-1385

Cell: ss. 15, 19

Fax: (250) 978-1166

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From: [McKinnon, Miles](#)
To: [Paterson, Bruce](#); [Wong, Isaac \(Pak Yu\)](#)
Subject: FW: New Capital Project - BSC Asset Betterment
Date: March 19, 2021 2:25:00 PM

FYI – Master planning perspective:

Miles McKinnon, P.Eng.
Engineering Manager, Electrical and Control Systems
British Columbia Ferry Services Inc.
T: 250-978-2068 **C:** ss. 15, 19
miles.mckinnon@bcferries.com
bcferries.com

From: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Sent: March 05, 2021 9:59 AM
To: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Liu-Atkinson, Hansi <Hansi.Liu-Atkinson@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Subject: RE: New Capital Project - BSC Asset Betterment

Hi All,

The BSC will remain on Rte 21 and the Kahloke will be on Rte 22 until retirement, ss. 13, 17

ss. 13, 17

Hope those brief notes help – let me know if you have nay more questions.

Thx,
Joanne

From: McKinnon, Miles <Miles.Mckinnon@bcferries.com>
Sent: March 05, 2021 9:47 AM
To: Liu-Atkinson, Hansi <Hansi.Liu-Atkinson@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Subject: RE: New Capital Project - BSC Asset Betterment

Hansi, you read this closer than me to catch that!

For route **21** (Buckley Bay-Denman) the plan is to retain the BSC. ss. 13, 17

Route **22** is Denman-Horby. Regarding the comment on extra capacity for this route, there ss. 13, 17

ss. 13, 17

Miles

Miles McKinnon, P.Eng.
Engineering Manager, Electrical and Control Systems
British Columbia Ferry Services Inc.
T: 250-978-2068 C: ss. 15, 19
miles.mckinnon@bcferries.com
bcferries.com

From: Liu-Atkinson, Hansi <Hansi.Liu-Atkinson@bcferries.com>
Sent: March 05, 2021 9:42 AM
To: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Subject: RE: New Capital Project - BSC Asset Betterment

Hi Miles

This is exciting, thank you for sharing.

One question on Frank's first point, ss. 13, 17

Thanks!
Hansi

From: McKinnon, Miles <Miles.Mckinnon@bcferries.com>
Sent: March 05, 2021 9:38 AM
To: Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>; Liu-Atkinson, Hansi <Hansi.Liu-Atkinson@bcferries.com>
Subject: FW: New Capital Project - BSC Asset Betterment

Hi Babak and Hansi,

Just passing this on for awareness. The project for the Baynes Sound Connector is now official. In the near future I expect we'll have some meetings to plan the approach.
ss. 13, 17

More to come!

Miles

Miles McKinnon, P.Eng.
Engineering Manager, Electrical and Control Systems
British Columbia Ferry Services Inc.
T: 250-978-2068 C: ss. 15, 19
miles.mckinnon@bcferries.com
bcferries.com

From: Camden, Stuart <Stuart.Camden@bcferries.com>

Sent: March 04,2021 11:35 AM

To: Camaraire, Frank <Frank.Camaraire@bcferries.com>; Smith, Sandy <Sandy.Smith@bcferries.com>; Johnston, Darren <Darren.Johnston@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>

Cc: Elliott, Scott <scott.elliott@bcferries.com>; Riis, Daniel <Daniel.Riis@bcferries.com>; Stahuliak, Marian <Marian.Stahuliak@bcferries.com>; de Koninck, Captain Al <Al.deKoninck@bcferries.com>; McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>

Subject: RE: New Capital Project - BSC Asset Betterment

Hi Frank,

I will have the project setup in our system and then get a pre-imp request document started in the workflow to send to CPBC for approval.

Stuart Camden, CPA, CA
Senior Business Analyst
Financial Planning & Analysis (Capital)
British Columbia Ferry Services Inc.
Suite 500-1321 Blanshard Street, Victoria, BC, V8W 0B7
T: 250-978-2065 **C:** ss. 15, 19
Stuart.Camden@bcferries.com
bcferries.com

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From: Camaraire, Frank <Frank.Camaraire@bcferries.com>

Sent: Thursday, March 4, 2021 11:10 AM

To: Smith, Sandy <Sandy.Smith@bcferries.com>; Camden, Stuart <Stuart.Camden@bcferries.com>; Johnston, Darren <Darren.Johnston@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>

Cc: Elliott, Scott <scott.elliott@bcferries.com>; Riis, Daniel <Daniel.Riis@bcferries.com>; Stahuliak, Marian <Marian.Stahuliak@bcferries.com>; de Koninck, Captain Al <Al.deKoninck@bcferries.com>; McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>

Subject: New Capital Project - BSC Asset Betterment

Good Morning,

At the request of the COO, I have been tasked to create a new project to explore adding the following capabilities to the BSC:

1. Increase the vessel AEQs carrying capacity to better match the demand on that corridor (Route 21/22), including the increase capacity that will be created on route 22 ss. 13, 17 (Darren can perhaps re-phrase this more accurately); and

2. ss. 13, 17

Some pre-implementation funding would be necessary to advance the engineering work on the matters to determine feasibility, costs and schedule.

Project Manager: Isaac Wong

Project Owner: Darren Johnston

Project Sponsor: Brian Anderson (to be confirmed with Brian)

What are the steps required to formally create this new project?

Thank you

Frank

Frank Camaraille

Executive Director, Engineering

Operations Division

British Columbia Ferry Services Inc.

Suite 500 – 1321 Blanshard Street, Victoria, British Columbia, V8W 0B7

T: 250-978-1384 **C:** ss. 15, 19 **F:** 250-978-1166

frank.camaraille@bcferries.com

bcferries.com | [Facebook](#) | [Twitter](#)

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"Baynes Sound Connector"

INTACT STABILITY

Condition # 6, Fullload 100% Cons., 150 Complement & 10 Cars & 5 Trailers

CRITICAL POINT STATUS

bok draft: 0.947 @ 31.65f, 0.944 @ 31.65a
Trim: 0.000/63.300, Heel: Port 0.23 deg.

Critical Points	LCF	ICP	VCP	Height
(1) MG1	39.250f	5.228s	2.037	1.120
(2) MG2	39.250f	5.228p	2.037	1.078
(3) MG3	39.250a	5.228s	2.037	1.124
(4) MG4	39.250a	5.228p	2.037	1.083
(5) EREXH-1	FLOOD 5.173a	1.550s	5.290	4.361
(6) EREXH-2	FLOOD 9.748a	1.550p	5.290	4.361
(7) EREXH-3	FLOOD 5.173a	1.550p	5.290	4.349
(8) EREXH-4	FLOOD 9.748a	1.550p	5.290	4.349
(9) SUB DRAFT 1	31.650a	8.509s	1.014	0.114
(10) SUB DRAFT 2	31.650a	8.509p	1.014	0.046
(11) SUB DRAFT 3	31.650f	8.509s	1.014	0.110
(12) SUB DRAFT 4	31.650f	8.509p	1.014	0.042

Distances in METERS.----->
Fixed CG: LCG = 0.099f ICG = 0.064p VCG = 2.516

RIGHTING ARMS vs HEEL ANGLE

Origin Depth	Trim	Heel	Displacement	Weight	MT	in Trim	in Heel	Area	Flood Pt
0.936	0.00f	0.00	896.35	0.000	-0.088	4.354(5)	0.000	4.354(5)	
0.936	0.00f	0.23p	896.36	0.000	0.000	-0.0002	4.348(7)	4.348(7)	
0.919	0.00f	4.23p	896.40	0.000	1.516	0.0527	4.242(7)	4.242(7)	
0.837	0.00f	7.97p	896.32	0.000	2.662	0.1906	Marg Imm.		
0.829	0.00f	8.23p	896.33	0.000	2.732	0.2027	4.185(7)	4.185(7)	
0.693	0.01f	12.23p	896.41	0.000	3.411	0.4198	4.149(7)	4.149(7)	
0.553	0.01f	16.21p	896.35	0.000	3.564	0.6633	4.095(7)	4.095(7)	
0.552	0.01f	16.23p	896.35	0.000	3.564	0.6633	4.095(7)	4.095(7)	
0.530	0.01f	16.83p	896.35	0.000	3.567	0.7007	4.085(7)	4.085(7)	
0.523	0.01f	17.03p	896.35	0.000	3.567	0.7132	4.081(7)	4.081(7)	
0.522	0.01f	17.05p	896.35	0.000	3.567	0.7147	4.081(7)	4.081(7)	
0.407	0.01f	20.23p	896.35	0.002f	3.529	0.9117	4.021(7)	4.021(7)	
0.260	0.01f	24.23p	896.35	0.000	3.407	1.1545	3.929(7)	3.929(7)	
0.112	0.01f	28.23p	896.35	0.000	3.235	1.3869	3.817(7)	3.817(7)	
0.045	0.01f	30.00p	896.35	0.000	3.147	1.4856	3.762(7)	3.762(7)	
-0.038	0.01f	32.23p	896.35	0.000	3.029	1.6057	3.688(7)	3.688(7)	
-0.187	0.01f	36.23p	896.35	0.000	2.797	1.8092	3.540(7)	3.540(7)	
-0.328	0.02f	40.00p	896.35	0.000	2.560	1.8955	3.385(7)	3.385(7)	
-0.336	0.01f	40.23p	896.36	0.000	2.545	1.9957	3.375(7)	3.375(7)	
-0.483	0.02f	44.23p	896.35	0.000	2.276	2.1641	3.194(7)	3.194(7)	
-0.628	0.02f	48.23p	896.35	0.000	1.993	2.3131	2.997(7)	2.997(7)	
-0.769	0.02f	52.23p	896.35	0.000	1.697	2.4420	2.786(7)	2.786(7)	
-0.908	0.02f	56.23p	896.35	0.000	1.392	2.5499	2.562(7)	2.562(7)	
-1.041	0.02f	60.23p	896.35	0.000	1.079	2.6363	2.324(7)	2.324(7)	
-1.170	0.02f	64.23p	896.35	0.000	0.760	2.7005	2.076(7)	2.076(7)	
-1.293	0.02f	68.23p	896.35	0.000	0.437	2.7423	1.818(7)	1.818(7)	
-1.409	0.02f	72.23p	896.35	0.000	0.110	2.7614	1.550(7)	1.550(7)	
-1.446	0.02f	73.58p	896.50	0.000	0.000	2.7627	1.457(7)	1.457(7)	

Distances in METERS.----->
Specific Gravity = 1.025.-----Area in m.-Rad.

WEIGHT and DISPLACEMENT STATUS

bok draft: 0.947 @ 31.65f, 0.944 @ 31.65a
Trim: 0.000/63.300, Heel: Port 0.23 deg.

Part	Weight (MT)	LCG	ICG	VCG
LIGHT SHIP	637.13	0.106a	0.092p	2.000
CREW AND EFFECTS	2.00	0.000	0.000	4.000
Growth war\$	31.85	0.106a	0.029s	4.100
CABLE	22.00	0.000	0.000	2.093
150 COMP.	11.25	0.433f	0.000	3.110
7 AEQ @ 1.8	12.60	19.618a	7.000s	3.110
3 AEQ @ 1.8	5.40	26.828f	7.000s	3.110
4 trailers @32	128.00	6.500f	0.100s	4.110
1 trailers @32	32.00	18.000a	4.300p	4.110
Total fixed	882.23	0.099f	0.064p	2.516

Load	SpGr	Weight (MT)	LCG	ICG	VCG	FSM
HOLDINGTR.S	0.050	1.025	0.37	1.185f	2.384s	0.274
FW.P	0.980	1.000	6.48	1.180f	2.523p	0.707
SLUDGE.S	0.050	0.924	0.05	3.725a	1.218s	0.336
FO.S	0.980	0.870	2.97	9.289a	0.900s	3.415
FO.P	0.980	0.870	2.97	9.787a	0.900p	3.415
HO.P	0.750	0.924	0.56	4.946a	0.869p	5.387
LO.P	0.980	0.924	0.72	5.656a	0.869p	5.553
Total Tanks			14.12	3.936a	1.170p	2.263
Total Weight			896.35	0.036f	0.081p	2.512
HULL			896.36	0.036f	0.089p	0.511

Righting Arms: 0.000 0.000p
Distances in METERS.----->
Moments in m.-MT.

HYDROSTATIC PROPERTIES

Trim: 0.000/63.300, Heel: Port 0.23 deg., VCG = 2.512

Draft @	Displacement	Buoyancy-Ctr.	Weight/	Moment/
Origin	Weight (MT)	LCB	VCB	cm trim
0.945	896.36	0.036f	0.511	11.48
0.945	896.36	0.036f	0.511	11.48
0.945	896.36	0.036f	0.511	11.48
0.945	896.36	0.036f	0.511	11.48

Distances in METERS.----->
Specific Gravity = 1.025.-----Moment in m.-MT.
Trim is per 63.30m.

Draft is from bok. True Free Surface included.

Passenger Demand Analysis - Route 21

Passenger Demand, F20, Percentile Analysis

Percentile	All Sailings YR		Peak Season		Peak Season Combined	
	Buckley Bay	Denman West	Buckley Bay	Denman West	Buckley Bay	Denman West
0.85	86	81	112	100	125	111
0.9	96	89	121	108	142	126
0.95	111	101	130	118	206	171
0.98	127	116	139	127	247	210
Total Sailings	5838	5838	1300	1300	1152	1155

Passengers per AEQ, F20

Percentile	F16-F20 All Sailings	F16-F20 Peak Sailings	F20 All Sailings	F20 Peak	F20 Peak combined
Average	1.8	2.1	1.8	2	2.28
0.85	2.29	2.56	2.22	2.5	3
0.9	2.4	2.69	2.37	2.65	3.74
0.95	2.7	2.96	2.6	2.89	4.45
0.98	3.05	3.33	3	3.18	5.05
Total Sailings	56425	12967	11676	2600	2307

Potential Passenger Capacity using F20 Peak Combined Pass/AEQ Analysis

Percentile	Pass/AEQ	Vessel Capacity (AEQ)			
	45	70	75	80	
Average	2.28	102.6	159.6	171	182.4
0.85	3	135	210	225	240
0.9	3.74	168.3	261.8	280.5	299.2
0.95	4.45	200.25	311.5	333.75	356
0.98	5.05	227.25	353.5	378.75	404

This table combines vehicle and foot pax?

Students travel Tables

Average Students Travelling ex Buckley Bay F20

Departure	Su	Mo	Tu	We	Th	Fr	Sat
7:00:00 AM	0	0	0	0	0	0	0
7:40:00 AM	0	0	1	1	0	0	0
8:20:00 AM		1	0	0	0	0	0
9:00:00 AM	0	0	0	1	0	2	0
10:00:00 AM	2	5	2	5	0	1	1
11:00:00 AM	1	1	0	1	0	1	1
12:05:00 PM	1	0	0	0	0	1	1
1:05:00 PM	1	1	0	1	1	1	1
2:00:00 PM	2	1	2	2	2	1	2
3:00:00 PM	2	1	2	2	2	2	2
4:00:00 PM	3	14	15	13	12	15	2
5:00:00 PM	4	4	4	6	4	5	3
6:00:00 PM	6	7	5	4	5	7	4
7:00:00 PM	1	2	2	2	1	3	1
8:05:00 PM	2	4	6	4	5	5	2
8:30:00 PM	1	1	1	4	2	2	2
9:30:00 PM	1	2	2	3	3	3	2
10:00:00 PM	1	1	2	0	1	2	1
11:00:00 PM	0	0	0	0	0	0	0

Max Students Travelling ex Buckley Bay F20

Departure	Su	Mo	Tu	We	Th	Fr	Sat
7:00:00 AM	1	2	1	0	1	0	1
7:40:00 AM	1	2	19	28	2	1	2
8:20:00 AM		4	2	12	0	2	1
9:00:00 AM	3	3	1	51	9	73	6
10:00:00 AM	69	52	45	59	6	22	25
11:00:00 AM	5	43	2	45	3	25	4
12:05:00 PM	6	4	3	11	4	18	4
1:05:00 PM	5	15	3	17	4	4	7
2:00:00 PM	25	28	21	38	32	11	6
3:00:00 PM	38	5	7	30	25	30	8
4:00:00 PM	10	33	32	32	28	42	7
5:00:00 PM	12	12	35	19	38	47	10
6:00:00 PM	14	17	17	9	15	41	16
7:00:00 PM	4	5	3	5	5	16	3
8:05:00 PM	6	13	11	12	11	38	8
8:30:00 PM	7	4	3	22	5	5	6
9:30:00 PM	4	7	7	10	11	12	6
10:00:00 PM	2	5	4	1	3	7	4
11:00:00 PM	2	0	2	2	0	3	2

From: [Colin Wilson](#)
To: [Adams, James W](#)
Cc: [P-BCF-22BSC](#); [Paterson, Bruce](#)
Subject: Re: [EXTERNAL] Baynes Sound Connector Study RFI
Date: April 22, 2022 12:36:56 PM
Attachments: [image002.png](#)
[image003.jpg](#)
[image004.jpg](#)

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Received. Thanks a lot!

C

On Thu, Apr 21, 2022 at 3:50 PM Adams, James W <James.Adams@bcferries.com> wrote:

Hi Colin,

Please see below in green for the requested information for the dynamic analysis. The attached drawings may provide additional information if needed:

1) Dimensions of the pontoon (length, width, height, draft)

ss. 13, 17

[Redacted content]

2) Location of the bumpers relative to the centerline - also if you have an idea for the stiffness of the bumpers, I imagine the bumper deflection influences the overall displacement of the cables.

ss. 13, 17

[Redacted content]

3) Confirm the lateral spacing of the guide cables (I have 7.4m from the centerline)

ss. 13, 17

4) Confirm the location of the guide cable sheaves (I have 35m from the midship)

ss. 13, 17

Let me know if you have any questions.

Thanks,

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922

james.adams@bcferries.com

bcferries.com

From: Colin Wilson <colin.wilson@dsaocean.com>

Sent: April 21, 2022 1:48 PM

To: Adams, James W <James.Adams@bcferries.com>

Cc: P-BCF-22BSC <michele.archibald-P14017301-3AZHY81@mailbox.insight.ly>

Subject: [EXTERNAL] Baynes Sound Connector Study RFI

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Hi James,

I am updating the model we used for the BSC back in 2016 and wanted to confirm a few dimensions with you.

In order to capture the behavior of the terminal to ferry contact dynamics and cable interaction we require:

1) Dimensions of the pontoon (length, width, height, draft)

2) Location of the bumpers relative to the centerline - ss. 13, 17, 21

3) Confirm the lateral spacing of the guide cables ss. 13, 17, 21

4) Confirm the location of the guide cable sheaves ss. 13, 17, 21

The drawings you supplied can probably be annotated with this information from the CAD program relatively easily. Minus the sheave location since the drawings show ss. 13, 17, 21

image.png



Let me know if anything is unclear!

Cheers,

Colin

--



Colin Wilson, P.Eng.
Senior Ocean Engineer

www.dsaocean.com **P** +1-250-483-7207 x105
D +1-250-800-0958

Ocean Engineering Consultants & Creators of ProteusDS



--



Colin Wilson, P.Eng.
Senior Ocean Engineer

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D +1-250-800-0958

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From: [Michele Archibald](#)
To: [Dean Steinke](#)
Cc: [Adams, James W](#); [Colin Wilson](#); [Paterson, Bruce](#)
Subject: Re: [EXTERNAL] Re: FW: BSC AFU Increase Project - Berth Interface
Date: April 11, 2022 9:44:30 AM
Attachments: [image002.jpg](#)
[image003.jpg](#)
[image001.jpg](#)
[image004.jpg](#)

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Hi James,

Yes, the legal name and address are correct.

Please list me as the contact for payment.

Michele Archibald
250-391-6225
michele.archibald@dsaocean.com

Let me know if you have any questions,
Michele

On Mon, Apr 11, 2022 at 9:35 AM Dean Steinke <dean.steinke@dsaocean.com> wrote:

Hi James, please contact our admin Michele for setting us up as a vendor. She is copied on this email. Colin is on vacation this week.

D

On Fri, Apr 8, 2022 at 4:28 PM Adams, James W <James.Adams@bcferries.com> wrote:

Hi Colin,

Many thanks for updating the quotation. We will review and will let you know if we have any questions.

Unfortunately DSA is no longer a vendor in our purchasing database. I've asked purchasing department to add you as a vendor again but this could take some time.

Can you confirm the legal name and address is as follows:

Dynamic Systems Analysis Ltd.

[201 – 754 Broughton Street](#)

[Victoria, BC](#)

[V8W 1E1](#)

Also, Who is the contact for setting up payment details?

Thanks,

James

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** [ss. 15, 19](#) **F:** 250-361-4922

james.adams@bcferries.com

bcferries.com

From: Colin Wilson <colin.wilson@dsaocean.com>

Sent: April 08, 2022 4:12 PM

To: Adams, James W <James.Adams@bcferries.com>

Cc: Dean Steinke <dean.steinke@dsaocean.com>; Paterson, Bruce
<Bruce.Paterson@bcferries.com>

Subject: Re: [EXTERNAL] Re: FW: BSC AFU Increase Project - Berth Interface

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Hi James,

I have attached and updated the Quote 22-014 to focus on the 1 in 100 year beam storm conditions.

Let me know if you have any questions!

Cheers,

Colin

On Thu, Apr 7, 2022 at 3:55 PM Adams, James W <James.Adams@bcferries.com> wrote:

Hi Colin,

Thanks for submitting the updated quotation 22-015 Rev B. We look forward to receiving the other quote when ready.

I'll start working on the contract for quote 22-015.

Regards,

James

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 M: ss. 15, 19 F: 250-361-4922

james.adams@bcferries.com

bcferries.com

From: Colin Wilson <colin.wilson@dsaocean.com>

Sent: April 07, 2022 3:08 PM

To: Adams, James W <James.Adams@bcferries.com>

Cc: Dean Steinke <dean.steinke@dsaocean.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>

Subject: Re: [EXTERNAL] Re: FW: BSC AFU Increase Project - Berth Interface

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Hi James,

I have attached the updated quote 22-015 (RevB) that added the clarification comments you supplied and based on our discussion today. Note that the hours and price remain the same.

Regarding quote 22-014, we will revisit it and set specific environmental load cases which will steer the scope to be less open ended. Expect an updated quote in the next day or so.

As always, if you have any questions or comments, don't hesitate to call.

Cheers,

Colin

On Thu, Apr 7, 2022 at 2:37 PM Adams, James W <James.Adams@bcferries.com> wrote:

| Hi Colin,

Thanks for the call today regarding proposal estimates 22-014 & 22-015.

With regards to the attached proposal estimate 22-014 related to **ss. 13, 17**

Once we receive updated pricing, I'll work with the project owner to determine if budget is available to proceed.

Also, please send me a revised proposal estimate 22-015 that reflects our discussion and comments noted in my email sent to you yesterday. Please keep the revised estimates separate since we have different budget holders for each analysis.

Thanks,

James

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** **ss. 15, 19** **F:** 250-361-4922

james.adams@bcferries.com

bcferries.com

From: Colin Wilson <colin.wilson@dsaocean.com>

Sent: March 02, 2022 11:50 AM

To: Adams, James W <James.Adams@bcferries.com>

Cc: Dean Steinke <dean.steinke@dsaocean.com>; Ryan Nicoll <ryan@dsaocean.com>;

Paterson, Bruce <Bruce.Paterson@bcferries.com>

Subject: Re: [EXTERNAL] Re: FW: BSC AFU Increase Project - Berth Interface

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Hi James,

Thanks again for the opportunity to assist with the Baynes Sound Connector again. I have attached a quote for the first portion of the proposed work we discussed last week. This includes bringing the original model up to 2022 standards and assessing the existing and proposed docking configurations.

Let me know if you have any questions or comments.

Cheers,

Colin

On Tue, Feb 22, 2022 at 10:00 AM Adams, James W
<James.Adams@bcferries.com> wrote:

Hi Dean,

Can we change the meeting to Thursday at 9 AM?

Correct, the analysis will be a high level feasibility study.

Thanks!

James

Sent from my iPhone

On Feb 22, 2022, at 9:11 AM, Dean Steinke
<dean.steinke@dsaocean.com> wrote:

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Hi James,

Does tomorrow morning at 9:15am work for you? I can send a meeting invite.

In short, the study and analysis you have in mind is feasible. A conversation will be valuable to come up with the key deliverables for the study.

Do you have a timeline requirement?

D

On Fri, Feb 18, 2022 at 1:02 PM Adams, James W
<James.Adams@bcferries.com> wrote:

Thanks Ryan, good to hear things are going well at DSA. It's been very busy at BC Ferries too.

Looking forward to chatting with Dean on next steps.

Regards,

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922

james.adams@bcferries.com

bcferries.com

From: Ryan Nicoll <ryan@dsaocean.com>

Sent: February 18, 2022 12:56 PM

To: Adams, James W <James.Adams@bcferries.com>

Cc: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Dean Steinke <dean.steinke@dsaocean.com>; Colin Wilson <colin.wilson@dsaocean.com>

Subject: [EXTERNAL] Re: FW: BSC AFU Increase Project - Berth Interface

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi James,

It's good to hear from you. I hope things have been going well in spite of the tumultuous working environment in the last few years. We have managed to stay very busy!

We're happy to help with this. My colleague Dean heads up our services team and will connect with you on next steps in setting up a scope of work for this.

thanks again and have a great long weekend,

cheers,

Ryan Nicoll, P.Eng.
CTO



www.dsaocean.com P +1-250-483-7207 x104
D +1-250-999-6677

Ocean Engineering Consultants & Creators of ProteusDS

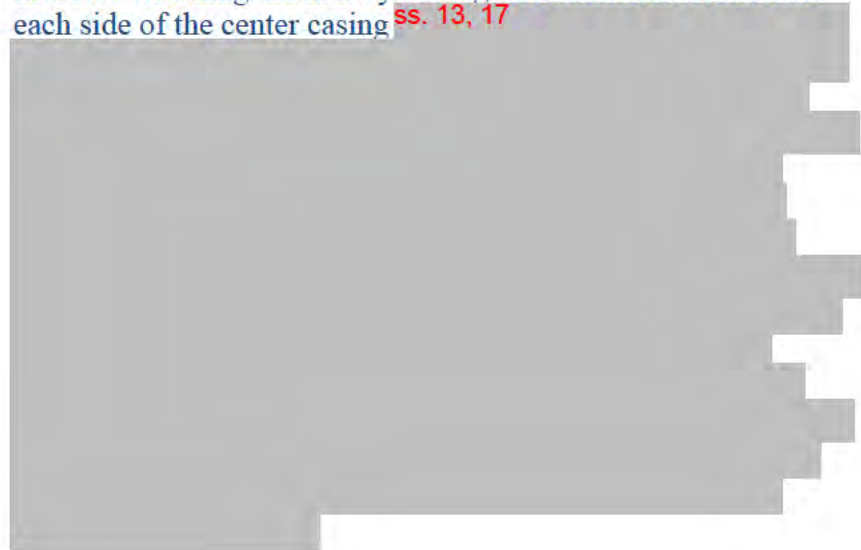


On Fri, Feb 18, 2022 at 12:33 PM Adams, James W
<James.Adams@bcferries.com> wrote:

Hi Ryan,

I hope you are doing well.

BCF has a feasibility project that involves widening the cable ferry in order to add two additional lanes. The current concept involves widening the hull by adding one additional section on each side of the center casing ^{ss. 13, 17}



Let me know if you there is a good time to discuss this further.

Attached are a couple preliminary concept drawings provided for reference.

SK008 - ss. 13, 17



SK0010 - ss. 13, 17



Regards,

James

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 M: ss. 15, 19 F: 250-361-4922

james.adams@bcferries.com

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--

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CEO



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C +1-250-507-0571

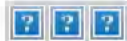
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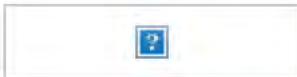
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From: [Adams, James W](#)
To: [Ryan Nicoll](#)
Cc: [Paterson, Bruce](#); [Dean Steinke](#); [Colin Wilson](#)
Subject: RE: [EXTERNAL] Re: FW: BSC AFU Increase Project - Berth Interface
Date: February 18, 2022 1:02:36 PM
Attachments: [image001.jpg](#)
[image002.jpg](#)

Thanks Ryan, good to hear things are going well at DSA. It's been very busy at BC Ferries too.

Looking forward to chatting with Dean on next steps.

Regards,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Ryan Nicoll <ryan@dsaocean.com>
Sent: February 18, 2022 12:56 PM
To: Adams, James W <James.Adams@bcferries.com>
Cc: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Dean Steinke <dean.steinke@dsaocean.com>; Colin Wilson <colin.wilson@dsaocean.com>
Subject: [EXTERNAL] Re: FW: BSC AFU Increase Project - Berth Interface

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Hi James,

It's good to hear from you. I hope things have been going well in spite of the tumultuous working environment in the last few years. We have managed to stay very busy!

We're happy to help with this. My colleague Dean heads up our services team and will connect with you on next steps in setting up a scope of work for this.

thanks again and have a great long weekend,

cheers,



Ryan Nicoll, P.Eng.
CTO

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D +1-250-999-6677

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On Fri, Feb 18, 2022 at 12:33 PM Adams, James W <James.Adams@bcferries.com> wrote:

Hi Ryan,

I hope you are doing well.

BCF has a feasibility project that involves widening the cable ferry in order to add two additional lanes. The current concept involves widening the hull by adding one additional section on each side of the center casing **ss. 13, 17**

Let me know if you there is a good time to discuss this further.

Attached are a couple preliminary concept drawings provided for reference.

SK008 - **ss. 13, 17**

SK0010 - **ss. 13, 17**

Regards,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: [Colin Wilson](#)
To: [Adams, James W](#)
Cc: [Dean Steinke](#); [Paterson, Bruce](#)
Subject: Re: [EXTERNAL] Re: FW: BSC AFU Increase Project - Berth Interface
Date: April 07, 2022 3:07:47 PM
Attachments: [image001.jpg](#)
[image002.jpg](#)
[image003.jpg](#)
[image004.jpg](#)

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Hi James,

I have attached the updated quote 22-015 (RevB) that added the clarification comments you supplied and based on our discussion today. Note that the hours and price remain the same.

Regarding quote 22-014, we will revisit it and set specific environmental load cases which will steer the scope to be less open ended. Expect an updated quote in the next day or so.

As always, if you have any questions or comments, don't hesitate to call.

Cheers,

Colin

On Thu, Apr 7, 2022 at 2:37 PM Adams, James W <James.Adams@bcferries.com> wrote:

Hi Colin,

Thanks for the call today regarding proposal estimates 22-014 & 22-015.

With regards to the attached proposal estimate 22-014 related to **ss. 13, 17**

Once we receive updated pricing, I'll work with the project owner to determine if budget is available to proceed.

Also, please send me a revised proposal estimate 22-015 that reflects our discussion and comments noted in my email sent to you yesterday. Please keep the revised estimates separate since we have different budget holders for each analysis.

Thanks,

James

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922

james.adams@bcferries.com

bcferries.com

From: Colin Wilson <colin.wilson@dsaocean.com>

Sent: March 02, 2022 11:50 AM

To: Adams, James W <James.Adams@bcferries.com>

Cc: Dean Steinke <dean.steinke@dsaocean.com>; Ryan Nicoll <ryan@dsaocean.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>

Subject: Re: [EXTERNAL] Re: FW: BSC AFU Increase Project - Berth Interface

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Hi James,

Thanks again for the opportunity to assist with the Baynes Sound Connector again. I have attached a quote for the first portion of the proposed work we discussed last week. This includes bringing the original model up to 2022 standards and assessing the existing and proposed docking configurations.

Let me know if you have any questions or comments.

Cheers,

Colin

On Tue, Feb 22, 2022 at 10:00 AM Adams, James W <James.Adams@bcferries.com> wrote:

Hi Dean,

Can we change the meeting to Thursday at 9 AM?

Correct, the analysis will be a high level feasibility study.

Thanks!

James

Sent from my iPhone

On Feb 22, 2022, at 9:11 AM, Dean Steinke <dean.steinke@dsaocean.com> wrote:

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi James,

Does tomorrow morning at 9:15am work for you? I can send a meeting invite.

In short, the study and analysis you have in mind is feasible. A conversation

will be valuable to come up with the key deliverables for the study.

Do you have a timeline requirement?

D

On Fri, Feb 18, 2022 at 1:02 PM Adams, James W
<James.Adams@bcferries.com> wrote:

Thanks Ryan, good to hear things are going well at DSA. It's been very busy at BC Ferries too.

Looking forwarding to chatting with Dean on next steps.

Regards,

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922

james.adams@bcferries.com

bcferries.com

From: Ryan Nicoll <ryan@dsaocean.com>

Sent: February 18, 2022 12:56 PM

To: Adams, James W <James.Adams@bcferries.com>

Cc: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Dean Steinke
<dean.steinke@dsaocean.com>; Colin Wilson <colin.wilson@dsaocean.com>

Subject: [EXTERNAL] Re: FW: BSC AFU Increase Project - Berth Interface

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi James,

It's good to hear from you. I hope things have been going well in spite of the tumultuous working environment in the last few years. We have managed to stay very busy!

We're happy to help with this. My colleague Dean heads up our services team and will connect with you on next steps in setting up a scope of work for this.

thanks again and have a great long weekend,

cheers,



Ryan Nicoll, P.Eng.
CTO

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D +1-250-999-6677

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On Fri, Feb 18, 2022 at 12:33 PM Adams, James W
<James.Adams@bcferries.com> wrote:

Hi Ryan,

I hope you are doing well.

BCF has a feasibility project that involves widening the cable ferry in order to add two additional lanes. The current concept involves widening

the hull by adding one additional section on each side of the center casing ss. 13, 17



Let me know if you there is a good time to discuss this further.

Attached are a couple preliminary concept drawings provided for reference.

SK008 - ss. 13, 17



SK0010 - ss. 13, 17



Regards,

James

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

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james.adams@bcferries.com

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--



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CEO

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--



Colin Wilson, P.Eng.

Senior Ocean Engineer

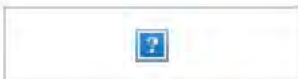
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Senior Ocean Engineer

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D +1-250-800-0958

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From: Wong, Isaac (Pak Yu)
 To: Paterson, Bruce
 Cc: Kearney, Bob; Bae, Chanwoo
 Subject: RE: BSC - Widening - Steel Weight Estimate
 Date: March 19, 2021 4:02:21 PM

Thanks for this Bruce et al.

Yours sincerely,
 Isaac Wong, P.Eng.
 T: 604-204-2286 C: ss. 15, 19 6

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
 Sent: March 19, 2021 3:10 PM
 To: Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
 Cc: Kearney, Bob <Bob.Kearney@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>
 Subject: FW: BSC - Widening - Steel Weight Estimate

Isaac,

Please find the weight estimate based on the proposed widening of the BSC. In summary:

	Steel Weight		Surface Area	
Each Side:	72307	kgs	1674	m2
Total - Both Sides:	144615	kgs	3348	m2
	144.6	tonnes		

The surface area is provided if you want to account for paint separately from the steel weight.

Bruce Paterson, P.Eng, M.Eng
 Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
 Tel: (250) 978-1385
 Cell ss. 15, 19
 Fax: (250) 978-1166
bruce.paterson@bcferries.com
www.bcferries.com
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From: Kearney, Bob <Bob.Kearney@bcferries.com>
 Sent: March 19, 2021 2:56 PM
 To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
 Subject: BSC - Widening - Steel Weight Estimate

Bruce,

Here is the weight estimate for two 2.6m wide longitudinal inserts.

Item	Description	Unit Weight	Amount	Unit	Weight	Surface Area (Paint)
Baynes Sound Connector						
Project: 2 X 2.6m Widening						
Weight - Each Side						
Deck Plate - 12.7mm	ss. 13, 17					
Bottom Plate - 9.5mm						
Deck Longitudinals - 5X						
Bottom Longitudinals - 5X						
Transverse Bulkhead plT - 8X						
Transverse Bulkhead Stfrs- 8X						
Transverse Deck Beam - 21X						
Web Frames Bottom - 21X						
Frame Diagonal Struts - 21X						
Frame Pillars						
BHD Stiff BKTS - Top						
BHD Stiff BKTS - Bottom						
Fore/Aft long end bkts						
NWT BHS FR 1 & 31						
6" Fire Main						
Gu de cable tunnel						
Bottom Shell Stiffers						

Welding & Misc pieces	ss. 13, 17								
				Each Side:	72307	kgs		1674	m2
				Total - Both Sides:	144615	kgs		3348	m2
					144.6	tonnes			

As a check:

Current Lightship = 637t

Existing breadth = 17m

ss. 13, 17

So, $637 \times (22.2/17) = 832t$

From estimate = $637 + 145 = 782t$ (Given that there is no additional casings, bulwarks or deckhouse the 145t estimate seems reasonable.)

Bob Kearney, ASCT

Naval Architect

Engineering – Fleet Technical

British Columbia Ferry Services Inc.

501-1321 Blanshard St., Victoria, BC, V8W 0B7

T: 250-978-2358 C: ss. 15, 19

bob.kearney@bcferries.com

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From: [Adams, James W](#)
To: [Paterson, Bruce](#)
Subject: RE: BSC 92264 / 92466 Follow up Meeting
Date: March 03, 2022 11:12:35 AM

Thanks Bruce, can you send me the latest GA drawings when ready?

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [ss. 15, 19](#) **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: March 03, 2022 10:20 AM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>; McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Cennon, Quentin <Quentin.Cennon@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: Jacobson, Mitchell <Mitchell.Jacobson@bcferries.com>
Subject: RE: BSC 92264 / 92466 Follow up Meeting

Sorry, I should have shared with the full group. Bob updated his layout using the original GA deck plan, unfortunately that GA employed the old AEQ dimensions. [ss. 13, 17](#)

[\[Redacted\]](#)

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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bruce.paterson@bcferries.com
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From: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Sent: March 01,2022 3:59 PM
To: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>; McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Cennon, Quentin <Quentin.Cennon@bcferries.com>;

Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>

Cc: Jacobson, Mitchell <Mitchell.Jacobson@bcferries.com>

Subject: RE: BSC 92264 / 92466 Follow up Meeting

Bruce,

Can you confirm that James is using the same concept for the BSC design as was shown last meeting? **ss. 13, 17**

Thanks,
Joanne

From: Adams, James W <James.Adams@bcferries.com>

Sent: March 01, 2022 3:53 PM

To: Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu)

<Isaac.Wong@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Simpson, Peter

<Peter.Simpson@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; McKinnon, Miles

<Miles.Mckinnon@bcferries.com>; Cennon, Quentin <Quentin.Cennon@bcferries.com>;

Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>

Cc: Jacobson, Mitchell <Mitchell.Jacobson@bcferries.com>

Subject: RE: BSC 92264 / 92466 Follow up Meeting

Hi All,

For discussion during Thursday's meeting, please see below for a high-level summary of the preliminary AEQ information related to the BSC AEQ increase project, and corresponding AEQ requirements at Buckley Bay/Denman West terminals:

Summary:

- The currently BSC expansion concept results in a revised AEQ of 66 (based on standard spacing of 6.1m)
- This results in an AEQ requirement of 82 at the terminals in order to meet the Terminal Network Master Plan (TNMP).
- Buckley Bay currently has an AEQ of 89, which satisfies the TNMP.
- Denman West has an AEQ of 51 inside the terminal and a total of 108 including the access road located outside the terminal. Further review is required to determine if the access road can be included to satisfy TNMP requirements.

BSC

Vessel	Current AEQ	Proposed AEQ	Increase
BSC	45	66	+21

Terminals:

				Total	AEQ	
--	--	--	--	-------	-----	--

Terminal	Road	Pre-ticket	Holding	(Pre-ticket & Holding)	Requirements to meet TNMP (**)	Variance to TNMP
Buckley Bay	0	28	61	89	82	+7
Denman West	57 (*)	0	51	51	82	-31

(*) TBD if access road achieves TNMP requirements at Denman West

(**) AEQ Requirements to meet TNMP: Vessel AEQ x 1.25 => 66 x 1.25 = 82 AEQ.

Thanks,

James Adams, P.Eng.
 Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: ss. 15, 19 F: 250-361-4922
james.adams@bcferries.com
bcferries.com

-----Original Appointment-----

From: Amusan, Sam <Sam.Amusan@bcferries.com>
Sent: February 23, 2022 7:11 PM
To: Amusan, Sam; Wong, Isaac (Pak Yu); Paterson, Bruce; Simpson, Peter; Doyle, Joanne; McKinnon, Miles; Adams, James W; Cennon, Quentin; Manouchehrinia, Babak
Subject: BSC 92264 / 92466 Follow up Meeting
When: March 03, 2022 1:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: WebEx

Hi All,

As discussed, please accept this follow-up meeting to further discuss the BSC projects.

Meeting date and time changed to accommodate Fleet technical.

Thank you.

Best regards,
 Sam Amusan, P.Eng., PMP
 Project Manager, Fleet Project Management Office
British Columbia Ferry Services Inc.
T: 604-204-2255 C: ss. 15, 19
Sam.amusan@bcferries.com
bcferries.com

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From: [Adams James W](#)
To: [Tataryn Noel](#)
Cc: [Kearney Bob](#); [Amusan Sam](#); [Paterson Bruce](#)
Subject: RE: BSC AFU Increase Project - Berth Interface
Date: February 24, 2022 2:45:35 PM
Attachments: [Pages from 32-254 Civil Record Set.pdf](#)
[BUCK-266-SK013.pdf](#)

Hi Noel,

Thanks for pointing this out. The terminal network master plan also uses 6.1m spacing for calculating AEQ. The attached drawings of the Buckley and DenW holding compounds indicate AEQ is based on 7.0m vehicle spacing. Can you please re-calculate the AEQ at each terminal based on this updated standard? Please include both holding compound storage and pre-ticket approach.

It is also interesting to note that the Terminal Network Master Plan defines Buckley and DenW as staffed minor terminals that require 1.25x maximum vessel AEQ capacity. The attached drawing of the BSC with 6 lanes indicates an AEQ of 66 based on 6.1m spacing. This equates to a minimum lot size of 82 AEQ at each terminal to meet the TNMP standard.

It would be great if you could provide this information by early next week if possible.

Also, are you aware if 7.0m spacing was a previous standard at other terminals?

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [ss. 15, 19](#) **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Sent: February 23, 2022 9:07 AM
To: Amusan, Sam <Sam.Amusan@bcferries.com>; Adams, James W <James.Adams@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Kearney, Bob <Bob.Kearney@bcferries.com>
Subject: RE: BSC AFU Increase Project - Berth Interface

Bruce,

On the widened BSC drawing supplied by fleet you used a vehicle AEQ box of 2.6m X 5.34m, but our fleet master plan 2021 (linked below) on page 16 shows we are to use a 2.6m X 6.1m vehicle AEQ. So the stated vessel AEQ will need revising.

[s. 15](#)

Thanks,

Noel Tataryn
Draughtsperson
Terminal Construction
British Columbia Ferry Services Inc.
Suite 500 – 1321 Blanshard Street Victoria, B.C. V8W 0B7
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From: Amusan, Sam <Sam.Amusan@bcferries.com>
Sent: February 18, 2022 4:42 PM
To: Adams, James W <James.Adams@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Kearney, Bob <Bob.Kearney@bcferries.com>; Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: RE: BSC AFU Increase Project - Berth Interface

Hi James,

We will get more information next week. Joanne confirmed she will revert next week.

Thanks

Sam Amusan, P.Eng., PMP
Project Manager, Fleet Project Management Office
British Columbia Ferry Services Inc.
T: 604-204-2255 C: **ss. 15, 19**
Sam.amusan@bcferries.com
bcferries.com

From: Adams, James W <James.Adams@bcferries.com>
Sent: February 18, 2022 4:35 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Amusan, Sam <Sam.Amusan@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: RE: BSC AFU Increase Project - Berth Interface

Thanks Bruce, we'll provide the auto turn details next week.

Sam – What is the status of the commercial load factors from Strategic Planning?

James Adams, P.Eng.
Project Manager, Terminal Construction
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james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 18, 2022 4:22 PM
To: Adams, James W <James.Adams@bcferries.com>
Cc: Amusan, Sam <Sam.Amusan@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: RE: BSC AFU Increase Project - Berth Interface

Thanks for this James. I would prefer to wait for the results of the AutoTurn analysis, and the data from Strategic Planning on commercial load factors, before we commit to deadweight and displacement numbers.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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Cell: **ss. 15, 19**

Fax: (250) 978-1166

bruce.paterson@bcferries.com

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From: Adams, James W <James.Adams@bcferries.com>

Sent: February 18, 2022 12:07 PM

To: Paterson, Bruce <Bruce.Paterson@bcferries.com>

Cc: Amusan, Sam <Sam.Amusan@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Tataryn, Noel <Noel.Tataryn@bcferries.com>

Subject: BSC AFU Increase Project - Berth Interface

Hi Bruce,

See attached for updated sketches showing the interface between the pontoon and BSC with two additional lanes.

See below for a summary of the sketches. **ss. 13, 17**

[Redacted content]

Is this information sufficient for preparing the displacement and freeboard calculations (lightship and full load)? It would be great to receive this information in order to engage DSA for the docking analysis. Please note that the Auto-turn study will be prepared next week.

-

Summary of Sketches:

SK008 - **ss. 13, 17**

[Redacted content]

SK009 - **ss. 13, 17**

[Redacted content]

SK0010 - **ss. 13, 17**

[Redacted content]

SK0011 - **ss. 13, 17**

[Redacted content]

Thanks,

James

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922

james.adams@bcferries.com
bcferries.com

From: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Sent: February 18, 2022 8:51 AM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi James,

Here are the plans with the revisions asked for. I am just waiting for fleet to send me the BCS CAD file and then I will start looking at the AutoTURN sketches, I should have those ready early next week once I receive the file.

Thanks,

Noel Tataryn
Draughtsperson
Terminal Construction
British Columbia Ferry Services Inc.
Suite 500 – 1321 Blanshard Street Victoria, B.C. V8W 0B7
T: 250-978-1696
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 15, 2022 11:14 AM
To: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: FW: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi Noel,

Hope you had a **s. 22**

I reviewed the sketches with Bruce and have several comments noted in blue: **ss. 13, 17**

In Bruce's attached widening drawing Rev A2, he would like use to complete the auto turn study to review total AEQ and confirm whether the dead areas highlighted in red can be used or not. **ss. 13, 17**

Please confirm this as well.

Feel free to call when you've reviewed my notes.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 2:14 PM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

James,

I'm attaching a mark up of the proposed GA with some loss of AEQ spaces presumed because of access problems. This should be verified by your vehicle turning model. **ss. 13, 15, 17, 19**

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
Tel: (250) 978-1385
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 1:55 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Thanks Bruce, I just sent you an invite for 3.

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 1:00 PM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

I am clear this afternoon after 1:30

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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www.bcferries.com
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 12:26 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Are you available for a brief webex this afternoon or Monday to discuss the drawings? There are number of constraints we should consider first before I can answer your questions.

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 10:46 AM
To: Adams, James W <James.Adams@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>
Subject: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

James,

I am hoping for a bit of interpretation of the attached drawings. At first blush, it appears that the proposed layout is viable, particularly if:

ss. 13, 17



What are your thoughts?

Bruce Paterson, P.Eng. M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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www.bcferries.com
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 8:29 AM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Kearney, Bob <Bob.Kearney@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Further to my last email, see attached for additional sketches prepared by Noel showing the updated GA of the BSC/berth interface. I've added a couple comments in blue. **ss. 13, 17**

[REDACTED] This will
[REDACTED] require further review.

Let me know if you have any additional comments.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Adams, James W
Sent: February 09, 2022 11:31 AM
To: Bruce Paterson (Bruce.Paterson@bcferries.com) <Bruce.Paterson@bcferries.com>
Cc: Tataryn, Noel (Noel.Tataryn@bcferries.com) <Noel.Tataryn@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Sam Amusan (Sam.Amusan@bcferries.com) <Sam.Amusan@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Attached are the draft sketches from Noel showing the updated GA of the BSC/berth interface.

Can you please review and let me know if you have any suggested changes? **ss. 13, 17**

Summary of Sketches:

SK004 - **ss. 13, 17**

SK005 - **ss. 13, 17**

SK006 - **ss. 13, 17**

SK007 - **ss. 13, 17**

ss. 13, 17

Please let us know if you have any suggested changes besides updating the location of the guide cables/sheaves.

Thanks again,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: ss. 15, 19 F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Sent: February 09, 2022 10:03 AM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi James,

Here are the sketches for the proposed widened BSC. The only change I made was that there in no sketch showing the vessel 1.5m from berth. ss. 13, 17

Please let me know if you want any revisions made.

Thanks,

Noel Tataryn
Draughtsperson
Terminal Construction
British Columbia Ferry Services Inc.
Suite 500 – 1321 Blanshard Street Victoria, B.C. V8W 0B7
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Noel.tataryn@bcferries.com
bcferries.com | [Facebook](#) | [Twitter](#)

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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 07, 2022 9:41 AM
To: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Noel,

Thanks for working on the drawings this week. ss. 13, 17

Also sorry I can't recall but is it **s. 22** ?

Thanks again,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Adams, James W
Sent: February 07, 2022 9:18 AM
To: Tataryn, Noel (Noel.Tataryn@bcferries.com) <Noel.Tataryn@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Morning Noel,

Further to my last email, see attached for the updated preliminary GA with additional lanes and wider vehicle gate.

Please review Bruce's comments below regarding **ss. 13, 17**

[REDACTED] Keep the previous set as a separate sketch since those are considered current state.

Can you also include a sketch looking at vehicle auto turns?

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 06, 2022 10:30 PM
To: Adams, James W <James.Adams@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

James,

Attached is a preliminary GA with the additional lanes included. The location of vehicles is notional. Of particular interest in the configuration at the ends of the vessel. **ss. 13, 17**

[REDACTED]

With that feed back ,we will revert with the data on the weights and freeboards.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

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From: Adams, James W <James.Adams@bcferries.com>

Sent: February 04, 2022 3:58 PM

To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>

Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>

Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Thanks Bruce, when ready can Fleet Technical confirm the following details:

ss. 13, 17

Thanks,

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922

james.adams@bcferries.com

bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>

Sent: February 04, 2022 3:54 PM

To: Adams, James W <James.Adams@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>

Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>

Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

James – I have a couple edits for Bob to do. Stand-by

Bruce Paterson, P.Eng, M.Eng

Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

Tel: (250) 978-1385

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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 04, 2022 3:20 PM
To: Kearney, Bob <Bob.Kearney@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bob,

I don't have access to the Fleet Tech J-drive – could you please send me a copy of the GA?

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Kearney, Bob <Bob.Kearney@bcferries.com>
Sent: February 04, 2022 3:12 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>; Adams, James W <James.Adams@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Bruce,

I've placed "BSC General Arrangement - Widening RevA" into **s. 15**

ss. 13, 17

Bob Kearney, ASCT
Naval Architect
Engineering – Fleet Technical
British Columbia Ferry Services Inc.
T: 250-978-2358 C: **ss. 15, 19**
bob.kearney@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: Thursday, February 03, 2022 11:24 AM
To: Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>; Adams, James W <James.Adams@bcferries.com>
Subject: Reference Directory for Baynes Sound Connector Asset Betterment Project

I've dumped a number of reference files for the BSC Asset Betterment project to the following directory:

s. 15

There are main sub-directories with information on the capacity increase:

s. 15

@Bob – can you drop your work into the this sub-directory?

There is a another main subdirectory for the Electrification project.

@Babak – the reference trials information is located at:

s. 15

Note there is trials data from the 2015 acceptance trials. This is what the BSC was contracted to meet. ss. 13,

17

I've included a file that provides the details on the hydraulic motors, and there is a separate directory on the hydraulic system specs.

Bruce Paterson, P.Eng, M.Eng

Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

Tel: (250) 978-1385

Cell: ss. 15, 19

Fax: (250) 978-1166

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From: [Tataryn, Noel](#)
To: [Amusan, Sam](#); [Adams, James W](#); [Paterson, Bruce](#)
Cc: [Kearney, Bob](#)
Subject: RE: BSC AFU Increase Project - Berth Interface
Date: February 23, 2022 9:07:15 AM

Bruce,

On the widened BSC drawing supplied by fleet you used a **ss. 13, 17** . So the stated vessel AEQ will need revising.

s. 15

Thanks,

Noel Tataryn
Draughtsperson
Terminal Construction
British Columbia Ferry Services Inc.
Suite 500 – 1321 Blanshard Street Victoria, B.C. V8W 0B7
T: 250-978-1696
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bcferries.com | [Facebook](#) | [Twitter](#)

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From: Amusan, Sam <Sam.Amusan@bcferries.com>
Sent: February 18, 2022 4:42 PM
To: Adams, James W <James.Adams@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Kearney, Bob <Bob.Kearney@bcferries.com>; Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: RE: BSC AFU Increase Project - Berth Interface

Hi James,

We will get more information next week. Joanne confirmed she will revert next week.

Thanks

Sam Amusan, P.Eng., PMP
Project Manager, Fleet Project Management Office
British Columbia Ferry Services Inc.
T: 604-204-2255 C: **ss. 15, 19**
Sam.amusan@bcferries.com
bcferries.com

From: Adams, James W <James.Adams@bcferries.com>
Sent: February 18, 2022 4:35 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Amusan, Sam <Sam.Amusan@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: RE: BSC AFU Increase Project - Berth Interface

Thanks Bruce, we'll provide the auto turn details next week.

Sam – What is the status of the commercial load factors from Strategic Planning?

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 18, 2022 4:22 PM
To: Adams, James W <James.Adams@bcferries.com>
Cc: Amusan, Sam <Sam.Amusan@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: RE: BSC AFU Increase Project - Berth Interface

Thanks for this James. I would prefer to wait for the results of the AutoTurn analysis, and the data from Strategic Planning on commercial load factors, before we commit to deadweight and displacement numbers.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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Sent: February 18, 2022 12:07 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Amusan, Sam <Sam.Amusan@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: BSC AFU Increase Project - Berth Interface

Hi Bruce,

See attached for updated sketches showing the interface between the pontoon and BSC with two additional lanes.

See below for a summary of the sketches. **ss. 13, 17**

[Redacted content]

Is this information sufficient for preparing the displacement and freeboard calculations (lightship and full load)? It would be great to receive this information in order to engage DSA for the docking analysis. Please note that the Auto-turn study will be prepared next week.

-
Summary of Sketches:

SK008 - ss. 13, 17

SK009 - ss. 13, 17

SK0010 - ss. 13, 17

SK0011 - ss. 13, 17

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: ss. 15, 19 F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Sent: February 18, 2022 8:51 AM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi James,

Here are the plans with the revisions asked for. I am just waiting for fleet to send me the BCS CAD file and then I will start looking at the AutoTURN sketches, I should have those ready early next week once I receive the file.

Thanks,

Noel Tataryn
Draughtsperson
Terminal Construction
British Columbia Ferry Services Inc.
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T: 250-978-1696
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 15, 2022 11:14 AM
To: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: FW: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi Noel,

Hope you had a s. 22

I reviewed the sketches with Bruce and have several comments noted in blue: ss. 13, 17

In Bruce's attached widening drawing Rev A2, he would like use to complete the auto turn study to review total AEQ and confirm whether the dead areas highlighted in red can be used or not. ss. 13, 17

Please confirm this as well.

Feel free to call when you've reviewed my notes.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: ss. 15, 19 F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 2:14 PM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

James,

I'm attaching a mark up of the proposed GA with some loss of AEQ spaces presumed because of access problems. This should be verified by your vehicle turning model. ss. 13, 15, 17, 19

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
Tel: (250) 978-1385
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Fax: (250) 978-1166
bruce.paterson@bcferries.com
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 1:55 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Thanks Bruce, I just sent you an invite for 3.

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.

T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 1:00 PM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

I am clear this afternoon after 1:30

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
Tel: (250) 978-1385
Cell: **ss. 15, 19**
Fax: (250) 978-1166
bruce.paterson@bcferries.com
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Safety and Operational Readiness

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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 12:26 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Subject: RE: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Are you available for a brief webex this afternoon or Monday to discuss the drawings? There are number of constraints we should consider first before I can answer your questions.

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 10:46 AM
To: Adams, James W <James.Adams@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>
Subject: Berth Interface issues - Baynes Sound Connector Asset Betterment Project

James,

I am hoping for a bit of interpretation of the attached drawings. At first blush, it appears that the proposed layout is viable, particularly if:

ss. 13, 17

ss. 13, 17

What are your thoughts?

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 11, 2022 8:29 AM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Kearney, Bob <Bob.Kearney@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Further to my last email, see attached for additional sketches prepared by Noel showing the updated GA of the BSC/berth interface. I've added a couple comments in blue. ss. 13, 17

[REDACTED]
[REDACTED] This will
require further review.

Let me know if you have any additional comments.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: ss. 15, 19 F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Adams, James W
Sent: February 09, 2022 11:31 AM
To: Bruce Paterson (Bruce.Paterson@bcferries.com) <Bruce.Paterson@bcferries.com>
Cc: Tataryn, Noel (Noel.Tataryn@bcferries.com) <Noel.Tataryn@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Sam Amusan (Sam.Amusan@bcferries.com) <Sam.Amusan@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bruce,

Attached are the draft sketches from Noel showing the updated GA of the BSC/berth interface.

Can you please review and let me know if you have any suggested changes? **ss. 13, 17**

Summary of Sketches:

SK004 - **ss. 13, 17**

SK005 - **ss. 13, 17**

SK006 - **ss. 13, 17**

SK007 - **ss. 13, 17**

ss. 13, 17

Please let us know if you have any suggested changes besides updating the location of the guide cables/sheaves.

Thanks again,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
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T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Sent: February 09, 2022 10:03 AM
To: Adams, James W <James.Adams@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi James,

Here are the sketches for the proposed widened BSC. The only change I made was that there in no sketch showing the vessel 1.5m from berth. **ss. 13, 17**

Please let me know if you want any revisions made.

Thanks,

Noel Tataryn
Draughtsperson
Terminal Construction
British Columbia Ferry Services Inc.
Suite 500 – 1321 Blanshard Street Victoria, B.C. V8W 0B7
T: 250-978-1696

Noel.tataryn@bcferries.com
bcferries.com | [Facebook](#) | [Twitter](#)

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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 07, 2022 9:41 AM
To: Tataryn, Noel <Noel.Tataryn@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Noel,

Thanks for working on the drawings this week. **ss. 13, 17**

Also sorry I can't recall but is it **s. 22** ?

Thanks again,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** **ss. 15, 19** **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Adams, James W
Sent: February 07, 2022 9:18 AM
To: Tataryn, Noel (Noel.Tataryn@bcferries.com) <Noel.Tataryn@bcferries.com>
Subject: FW: Reference Directory for Baynes Sound Connector Asset Betterment Project

Morning Noel,

Further to my last email, see attached for the updated preliminary GA with additional lanes and wider vehicle gate.

Please review Bruce's comments below regarding **ss. 13, 17**

Keep the previous set as a separate sketch since those are considered current state.

Can you also include a sketch looking at vehicle auto turns?

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** **ss. 15, 19** **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 06, 2022 10:30 PM
To: Adams, James W <James.Adams@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

James,

Attached is a preliminary GA with the additional lanes included. The location of vehicles is notional. Of particular interest in the configuration at the ends of the vessel. **ss. 13, 17**

With that feed back ,we will revert with the data on the weights and freeboards.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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Safety and Operational Readiness

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From: Adams, James W <James.Adams@bcferries.com>
Sent: February 04,2022 3:58 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>
Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Thanks Bruce, when ready can Fleet Technical confirm the following details:

ss. 13, 17

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 04, 2022 3:54 PM
To: Adams, James W <James.Adams@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>

Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>

Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

James – I have a couple edits for Bob to do. Stand-by

Bruce Paterson, P.Eng, M.Eng
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From: Adams, James W <James.Adams@bcferries.com>

Sent: February 04, 2022 3:20 PM

To: Kearney, Bob <Bob.Kearney@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>

Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>

Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Hi Bob,

I don't have access to the Fleet Tech J-drive – could you please send me a copy of the GA?

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: **ss. 15, 19** F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Kearney, Bob <Bob.Kearney@bcferries.com>

Sent: February 04, 2022 3:12 PM

To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>

Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>; Adams, James W <James.Adams@bcferries.com>

Subject: RE: Reference Directory for Baynes Sound Connector Asset Betterment Project

Bruce,

I've placed "BSC General Arrangement - Widening RevA" into **s. 15**

Please note that positioning the AEQs onto the 5.3m wider deck gives 78AEQ. It could probably be rejigged to give another capacity, but that's what I derived.

Bob Kearney, ASCT
Naval Architect
Engineering – Fleet Technical
British Columbia Ferry Services Inc.
T: 250-978-2358 C: **ss. 15, 19**
bob.kearney@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: Thursday, February 03, 2022 11:24 AM
To: Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>; Kearney, Bob <Bob.Kearney@bcferries.com>
Cc: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Vollmers, Tony <Tony.Vollmers@bcferries.com>; Bae, Chanwoo <Chanwoo.Bae@bcferries.com>; Adams, James W <James.Adams@bcferries.com>
Subject: Reference Directory for Baynes Sound Connector Asset Betterment Project

I've dumped a number of reference files for the BSC Asset Betterment project to the following directory:

s. 15

There are main sub-directories with information on the capacity increase:

s. 15

@Bob – can you drop your work into the this sub-directory?

There is a another main subdirectory for the Electrification project.

@Babak – the reference trials information is located at:

s. 15

Note there is trials data from the 2015 acceptance trials. This is what the BSC was contracted to meet. **ss. 13,**

17

I've included a file that provides the details on the hydraulic motors, and there is a separate directory on the hydraulic system specs.

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Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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From: [Adams, James W](#)
To: [Simpson, Peter](#); [Dovle, Joanne](#); [Paterson, Bruce](#); [Amusan, Sam](#)
Cc: [Wong, Isaac \(Pak Yu\)](#)
Subject: RE: BSC Asset Betterment - Capacity proposals
Date: March 21, 2022 11:05:40 AM

Hi Everyone,

Thanks for your input and comments.

Sam - Did we want to arrange a final working group meeting to confirm the group agrees with BSC capacity of ~66 AEQ ?

ss. 13, 17 [Redacted]
[Redacted]
[Redacted] See below for requirements at each terminal:

Buckley Bay

[Redacted] ss. 13, 17
[Redacted]
[Redacted]
[Redacted]

Denman West

[Redacted] ss. 13, 17
[Redacted]
[Redacted]
[Redacted]
[Redacted]

ss. 13, 17

Please let me know if you have any questions or comments regarding the above. ss. 13, 17

Regards,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: ss. 15, 19 F: 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: March 18, 2022 2:02 PM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>
Cc: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: RE: BSC Asset Betterment - Capacity proposals

Nothing further wrt the BSC. Compound sizes aren't an issue is it?
Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
British Columbia Ferry Services Inc.
T: 250-978-1163 C: ss. 15, 19
peter.simpson@bcferries.com
bcferries.com

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From: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Sent: March 15, 2022 1:38 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: RE: BSC Asset Betterment - Capacity proposals

Hi Bruce & All,

Thank you very much for this summary, missing the last meeting I wondered where we left it.

Item #3 – Vessel Capacity

ss. 13, 17
[Redacted]

ss. 13, 17
[Redacted]

Item #4 – Commercial capacity

ss. 13, 17
[Redacted]

A couple other questions I have include:

- ss. 13, 17
[Redacted]
- [Redacted]
- [Redacted]
- [Redacted]

Peter – any other factors we should be considering for the capacity of the vessel or either of the projects ss. 13, 17 [Redacted] ?

Thanks,
Joanne

Joanne Doyle
Manager, Fleet Strategic Planning
Strategy & Community Engagement
British Columbia Ferry Services Inc.
The Atrium
Suite 500, 1321 Blanshard St., Victoria, BC V8W 0B7
T: 250-978-1322 **C:** ss. 15, 19 **F:** 250-388-9599
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From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: March 14, 2022 9:45 PM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: BSC Asset Betterment - Capacity proposals

Joanne/Peter,

I am following up our recent meetings on the BSC capacity expansion, re. items to follow up:

Item #3 – Heat Maps (AEQ Capacity). ss. 13, 17

[Redacted]

The heat maps indicate we could need capacity in 12 years if there is unbridled growth in traffic, or much longer if growth is lower or is capped. ss. 13, 17

[Redacted]

Item #5 – Commercial Capacity. ss. 13, 17

[Redacted]

ss. 13, 17

Does this make sense, or are there other factors to consider?

Bruce Paterson, P.Eng, M.Eng

Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

Tel: (250) 978-1385

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From: [Doyle, Joanne](#)
To: [Paterson, Bruce](#); [Simpson, Peter](#)
Cc: [Adams, James W](#); [Amusan, Sam](#); [Wong, Isaac \(Pak Yu\)](#)
Subject: RE: BSC Asset Betterment - Capacity proposals
Date: March 15, 2022 1:37:52 PM

Hi Bruce & All,

Thank you very much for this summary, missing the last meeting I wondered where we left it.

Item #3 – Vessel Capacity

ss. 13, 17 [Redacted]

ss. 13, 17 [Redacted]

Item #4 – Commercial capacity

ss. 13, 17 [Redacted]

A couple other questions I have include:

- S [Redacted]
- S [Redacted]
- .
- 1 [Redacted]
- 3 [Redacted]
- .
- 1 [Redacted]
- 7 [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]

Peter – any other factors we should be considering for the capacity of the vessel or either of the projects ss. 13, 17 [Redacted] ?

Thanks,
Joanne

Joanne Doyle
Manager, Fleet Strategic Planning
Strategy & Community Engagement
British Columbia Ferry Services Inc.

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bcferries.com | Facebook | Twitter

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From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: March 14, 2022 9:45 PM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: BSC Asset Betterment - Capacity proposals

Joanne/Peter,

I am following up our recent meetings on the BSC capacity expansion, re. items to follow up:

Item #3 – Heat Maps (AEQ Capacity). ss. 13, 17

[Redacted]

The heat maps indicate we could need capacity in 12 years if there is unbridled growth in traffic, or much longer if growth is lower or is capped. ss. 13, 17

[Redacted]

Item #5 – Commercial Capacity. ss. 13, 17

[Redacted]

Does this make sense, or are there other factors to consider?

Bruce Paterson, P.Eng, M.Eng

Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

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From: [Adams, James W](#)
To: [Paterson, Bruce](#)
Cc: [Amusan, Sam](#)
Subject: RE: BSC Asset Betterment - Capacity proposals
Date: May 02, 2022 2:58:30 PM
Attachments: [BSC General Arrangement - Widening RevA.pdf](#)
[BUCK-266-SK013b.pdf](#)

Hi Bruce,

I am preparing an RFP for the terminal capacity assessment as a result of increasing the displacement of the BSC. Can you let me know if the principal particulars noted in the attached General Arrangement drawing from Feb 2 are still up to date? **ss. 13, 17**

ss. 13, 17

I can also keep this information in a separate file if you would prefer.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** **ss. 15, 19** **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: March 29, 2022 12:55 PM
To: Adams, James W <James.Adams@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>; McWalter, Emma <Emma.McWalter@bcferries.com>
Subject: RE: BSC Asset Betterment - Capacity proposals

James,

Thanks for this. I think the capacities are defensible, which is important for the business case. No issues from me.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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From: Adams, James W <James.Adams@bcferries.com>
Sent: March 29, 2022 12:17 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>; McWalter, Emma <Emma.McWalter@bcferries.com>
Subject: RE: BSC Asset Betterment - Capacity proposals

Hi Everyone,

Further to our meeting last week regarding the BSC expansion, please find the attached two drawings and notes below:

- SK013 rev B - ss. 13, 17

- SK014 Rev A - ss. 13, 17

The initial objective was to develop a layout that achieves ss. 13, 17
Is this sufficient or should we explore other options?

Please let me know if you have any suggestions/questions with the autoturn study.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** ss. 15, 19 **F:** 250-361-4922
james.adams@bcferries.com

bcferrries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: March 15, 2022 3:30 PM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: RE: BSC Asset Betterment - Capacity proposals

Joanne/Peter,

My clarifications in red in the text below.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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From: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Sent: March 15,2022 1:38 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: RE: BSC Asset Betterment - Capacity proposals

Hi Bruce & All,

Thank you very much for this summary, missing the last meeting I wondered where we left it.

Item #3 – Vessel Capacity

ss. 13, 17
[Redacted text block]

projects **ss. 13, 17** [redacted] ?

Thanks,
Joanne

Joanne Doyle
Manager, Fleet Strategic Planning
Strategy & Community Engagement
British Columbia Ferry Services Inc.
The Atrium
Suite 500, 1321 Blanshard St., Victoria, BC V8W 0B7
T: 250-978-1322 **C:** **ss. 15, 19** [redacted] **F:** 250-388-9599
Joanne.doyle@bcferries.com
bcferries.com | **Facebook** | **Twitter**

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From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: March 14, 2022 9:45 PM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: BSC Asset Betterment - Capacity proposals

Joanne/Peter,

I am following up our recent meetings on the BSC capacity expansion, re. items to follow up:

Item #3 – Heat Maps (AEQ Capacity). **ss. 13, 17** [redacted]
[redacted]
[redacted]
[redacted]
[redacted]

The heat maps indicate we could need capacity in 12 years if there is unbridled growth in traffic, or much longer if growth is lower or is capped. **ss. 13, 17** [redacted]
[redacted]
[redacted]
[redacted]

Item #5 – Commercial Capacity. ss. 13, 17

[REDACTED]

Does this make sense, or are there other factors to consider?

Bruce Paterson, P.Eng, M.Eng

Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

Tel: (250) 978-1385

Cell: ss. 15, 19

Fax: (250) 978-1166

bruce.paterson@bcferries.com

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From: [Simpson, Peter](#)
To: [Doyle, Joanne](#); [Paterson, Bruce](#)
Cc: [Adams, James W](#); [Amusan, Sam](#); [Wong, Isaac \(Pak Yu\)](#)
Subject: RE: BSC Asset Betterment - Capacity proposals
Date: March 18, 2022 2:02:24 PM

Nothing further wrt the BSC. Compound sizes aren't an issue is it?
Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
British Columbia Ferry Services Inc.
T: 250-978-1163 C: **ss. 15, 19**
peter.simpson@bcferries.com
bcferries.com

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From: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Sent: March 15, 2022 1:38 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: RE: BSC Asset Betterment - Capacity proposals

Hi Bruce & All,

Thank you very much for this summary, missing the last meeting I wondered where we left it.

Item #3 – Vessel Capacity

ss. 13, 17
[Redacted text block]

ss. 13, 17
[Redacted text block]

Item #4 – Commercial capacity

ss. 13, 17
[Redacted text block]

Joanne/Peter,

I am following up on our recent meetings on the BSC capacity expansion, re. items to follow up:

Item #3 – Heat Maps (AEQ Capacity). **ss. 13, 17**
[Redacted]

The heat maps indicate we could need capacity in 12 years if there is unbridled growth in traffic, or much longer if growth is lower or is capped. **ss. 13, 17**
[Redacted]

Item #5 – Commercial Capacity. **ss. 13, 17**
[Redacted]

Does this make sense, or are there other factors to consider?

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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From: [Paterson, Bruce](#)
To: [Doyle, Joanne](#); [Simpson, Peter](#)
Cc: [Adams, James W](#); [Amusan, Sam](#); [Wong, Isaac \(Pak Yu\)](#)
Subject: RE: BSC Asset Betterment - Capacity proposals
Date: March 15, 2022 3:29:00 PM
Attachments: [BSC-004 Life Saving Equipment Plan - Rev 3 Jul 17.pdf](#)

Joanne/Peter,

My clarifications in red in the text below.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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Fax: (250) 978-1166
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From: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Sent: March 15, 2022 1:38 PM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: RE: BSC Asset Betterment - Capacity proposals

Hi Bruce & All,

Thank you very much for this summary, missing the last meeting I wondered where we left it.

Item #3 – Vessel Capacity

ss. 13, 17
[Redacted text block]

ss. 13, 17
[Redacted text block]

Item #4 – Commercial capacity

ss. 13, 17

[Redacted text block]

[Redacted text block]

[Redacted text block]

A couple other questions I have include:

- ss. 13, 17 [Redacted text block]

[Redacted text block]

- ss. 13, 17 [Redacted text block]

- ss. 13, 17 [Redacted text block]

- ss. 13, 17 [Redacted text block]

Peter – any other factors we should be considering for the capacity of the vessel or either of the projects ss. 13, 17 [Redacted text block] ?

Thanks,
Joanne

Joanne Doyle
Manager, Fleet Strategic Planning
Strategy & Community Engagement
British Columbia Ferry Services Inc.
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From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: March 14, 2022 9:45 PM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Adams, James W <James.Adams@bcferries.com>; Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: BSC Asset Betterment - Capacity proposals

Joanne/Peter,

I am following up our recent meetings on the BSC capacity expansion, re. items to follow up:

Item #3 – Heat Maps (AEQ Capacity). **ss. 13, 17** [Redacted]

The heat maps indicate we could need capacity in 12 years if there is unbridled growth in traffic, or much longer if growth is lower or is capped. **ss. 13, 17** [Redacted]

Item #5 – Commercial Capacity. **ss. 13, 17** [Redacted]

ss. 13, 17

Does this make sense, or are there other factors to consider?

Bruce Paterson, P.Eng, M.Eng

Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

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From: [McKinnon, Miles](#)
To: [Paterson, Bruce](#); [Manouchehrinia, Babak](#); [Cennon, Quentin](#); [Adams, James W](#)
Cc: [Amusan, Sam](#); [Wong, Isaac \(Pak Yu\)](#)
Subject: RE: BSC Asset Betterment AEQ Increase - Terminal Electrical Infrastructure
Date: February 11, 2022 9:29:07 AM

(adding James A)

Thanks for sharing this Bruce,

ss. 13, 17
[Redacted]

ss. 13, 17
[Redacted]

Thanks,
Miles

Miles McKinnon, P.Eng.
Engineering Manager, Electrical and Control Systems
British Columbia Ferry Services Inc.
T: 250-978-2062 **C:** ss. 15, 19
miles.mckinnon@bcferries.com
bcferries.com

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: February 11, 2022 8:37 AM
To: McKinnon, Miles <Miles.Mckinnon@bcferries.com>; Manouchehrinia, Babak <Babak.Manouchehrinia@bcferries.com>; Cennon, Quentin <Quentin.Cennon@bcferries.com>
Cc: Amusan, Sam <Sam.Amusan@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>
Subject: FW: BSC Asset Betterment AEQ Increase - Terminal Electrical Infrastructure

Miles/Babak/Quentin/James,

I am forwarding notes (in the e-mail chain below) from a short Webex to discuss the capacity requirements for the BSC Asset Betterment with Fleet Deployment. ss. 13, 17

[Redacted]

ss. 13, 17
[Redacted]

ss. 13, 17

Bruce Paterson, P.Eng, M.Eng
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From: Amusan, Sam <Sam.Amusan@bcferries.com>
Sent: February 10, 2022 9:49 PM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Subject: RE: BSC Asset Betterment AEQ Increase

Hi All,

Thanks for attending the meeting. Please see meeting notes below:

ss. 13, 17

[Redacted content]

ss. 13, 17

Joanne will provide:

1. ss. 13, 17

Please review and revert with any comments.

Thank you.

Sam Amusan, P.Eng., PMP
Project Manager, Fleet Project Management Office
British Columbia Ferry Services Inc.
T: 604-204-2255 C: ss. 15, 19
Sam.amusan@bcferries.com
bcferries.com

From: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Sent: February 10, 2022 4:00 PM
To: Amusan, Sam <Sam.Amusan@bcferries.com>
Cc: Wong, Isaac (Pak Yu) <Isaac.Wong@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Simpson, Peter <Peter.Simpson@bcferries.com>
Subject: RE: BSC Asset Betterment AEQ Increase

Hi Sam,

I am unable to find time for Peter and I to work on this next week due to a number of conflicts so it will be the following week. Just wanted to share as a FYI so that when you plan for the follow-up meeting it is sometime after February 23.

Thanks,
Joanne

-----Original Appointment-----

From: Amusan, Sam <Sam.Amusan@bcferries.com>
Sent: February 07, 2022 2:22 PM
To: Amusan, Sam; Doyle, Joanne; Wong, Isaac (Pak Yu); Paterson, Bruce
Subject: BSC Asset Betterment AEQ Increase
When: February 10, 2022 12:30 PM-1:00 PM (UTC-08:00) Pacific Time (US & Canada).
Where: webEx