

C:\USERS\BRENDEEN FORBES\ONE DRIVE - CASCARA CONSULTING ENGINEERS LIMITED\1172-001 HORNBLY BOAT LAUNCH\04 - DRAWINGS\1172-001 CIVIL DRAWINGS



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1:500

CASCARA

|     |                                                       |
|-----|-------------------------------------------------------|
| C01 | LOCATION PLAN, KEY PLAN, DRAWING LIST & GENERAL NOTES |
| C02 | EXISTING CONDITIONS                                   |
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| C04 | BOAT LAUNCH PLAN & PROFILE                            |
| C05 | DETAILS                                               |
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| C07 | EROSION AND SEDIMENT CONTROL PLAN                     |

|             |                   |
|-------------|-------------------|
| 1207-1000-0 | OVERVIEW DRAWING  |
| 1207-100-0  | FLOAT AT SHORE    |
| 1207-200-0  | FLOAT WITH PILE   |
| 1207-300-0  | FLOAT NO PILE     |
| 1207-400-0  | FLOAT AT END      |
| 1207-BOM-0  | BILL OF MATERIALS |

1. ALL ELEVATIONS SHOWN ARE IN METERS AND REDUCED TO CHART DATUM (LLWL = 0m). CHART DATUM IS 3.089 BELOW GEODETIC CGSD28 VERTICAL DATUM AS DEFINED AT THE PUBLISHED CHS BENCHMARK 29-1967 LOCATED IN FORDS COVE.
2. MEAN WATER LEVEL (MWL) IS EQUAL TO 3.2m
3. LOWEST LOW WATER LARGE TIDE (LLWLT) IS EQUAL TO 0.0m
4. HIGHEST HIGH WATER LARGE TIDE (HHWLT) IS EQUAL TO 5.3m
5. MEAN HIGH WATER LEVEL (HHW) IS EQUAL TO 4.6m
6. MEAN LOW WATER LEVEL (LLW) IS EQUAL TO 1.2m



GENERAL NOTES:

1. ALL WORK AND MATERIALS ARE TO BE AS DESCRIBED IN THE MASTER MUNICIPAL CONSTRUCTION DOCUMENTS (MMCD), LATEST EDITION, OR AS OTHERWISE APPROVED BY THE ENGINEER.
2. ALL LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE ONLY AND SHOULD BE CONFIRMED BY USE OF A PIPE LOCATOR AND MANUAL DIGGING. ALL OR ANY STRUCTURES NOT NECESSARILY SHOWN.
3. ANY ALTERNATIVES TO SPECIFIED MATERIALS OR APPURTENANCES TO BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
4. ALL DISTURBED SURFACES TO BE RESTORED TO EXISTING CONDITION OR BETTER.
5. THE ENGINEER SHALL BE NOTIFIED 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
6. CONTRACTY TO COMPLY WITH ALL APPLICABLE MINISTRY OF ENVIRONMENT REQUIREMENTS AT ALL TIMES DURING CONSTRUCTION.
7. DIMENSIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
8. CONTRACTOR TO MEASURE AND CONFIRM ALL OFFSETS IN THE FIELD PRIOR TO CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REVIEWED WITH THE ENGINEER.
9. COORDINATES ARE GROUND LEVEL (UTM NAD 83 WITH COMBINED SCALE FACTOR OF 1/0.9996851) AND ALL ELEVATIONS ARE METRES AND ARE TO CGVD28BC DATUM, DERIVED FROM DUAL FREQUENCY GNSS OBSERVATIONS.
10. TOPOGRAPHIC AND BATHYMETRIC SURVEY COMPLETED BY MCCOI MARINE LTD. HYDROGRAPHIC SURVEYING AND MARINE CONTRACTING IN JANUARY 2024.

BOAT RAMP BASE, SHOT ROCK FILL, CORE MATERIAL, AND RIP RAP FILL GRADATIONS:

1. GRADATION TO CONFORM WITH THE FOLLOWING TABLE:
2. CORE MATERIAL TO BE PIT RUN GRAVEL AS PER MMCD SPECIFICATION 32 05 17 2.3
2. CLASS 250 AND 500 RIPRAP MATERIAL TO MEET SECTION 205 OF THE MOTI STANDARD SPECIFICATION

| CLASS OF<br>RIPRAP (kg) | APPROXIMATE AVERAGE DIMENSION (mm) -<br>EQUIVALENT DIAMETER |     |      |       |
|-------------------------|-------------------------------------------------------------|-----|------|-------|
|                         | 15%                                                         | 50% | 85%  | <100% |
| 250                     | 260                                                         | 565 | 815  | 965   |
| 500                     | 330                                                         | 715 | 1030 | 1220  |
|                         |                                                             |     |      |       |

REINFORCED CONCRETE:

1. CONCRETE MATERIALS, QUALITY, MIXING, PLACING, FORMWORK, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CAN CSA STD A23.1, A23.2 AND A23.4.
2. MATERIALS
  - 2.1. CEMENT TO CAN/CSA-A3001, TYPE GUL.
  - 2.2. SUPPLEMENTARY CEMENTING MATERIALS: WITH 15% TYPE F FLY ASH REPLACEMENT AND 5% TYPE SF SILICA FUME, BY MASS OF TOTAL CEMENTITIOUS MATERIALS TO CAN/CSA A3001. TOTAL SUPPLEMENTARY MATERIALS NOT TO EXCEED 20% BY MASS OF TOTAL CEMENTITIOUS MATERIAL.
  - 2.3. WATER: TO CSA-A23.1/A23.2
  - 2.4. REINFORCING STEEL: TO CAN/CSA-G30.18, BARE WHEN SILICA FUME USED.
  - 2.5. HARDWARE AND MISCELLANEOUS MATERIALS: TO CSA-A23.1/A23.2.
  - 2.6. FORMS: TO CSA-A23.4.
  - 2.7. AIR ENTRAINMENT ADMIXTURES: TO ASTM C260.
  - 2.8. FINE AGGREGATE SHALL CONFORM TO CLAUSE 5.3 CSA STANDARD CAN3.A23.1-M.
  - 2.9. COARSE AGGREGATE SHALL CONFORM TO CLAUSE 5.4 CSA STANDARD CAN3.A23.1-M GROUP 1. MAX AGGREGATE SIZE TO BE 20mm.
  - 2.10. WATER SHALL BE CLEAN AND FREE FROM INJURIOUS AMOUNTS OF OIL, ALKALI, ORGANIC MATTER AND DELETERIOUS MATERIALS.
3. CONCRETE MIXES
  - 3.1. CONCRETE TO MEET PERFORMANCE CRITERIA IN ACCORDANCE WITH CAN/CSA-A23.1/A23.2
  - 3.2. DURABILITY AND CLASS OF EXPOSURE: C-1
  - 3.3. MINIMUM 28-DAY COMPRESSIVE STRENGTH: 35MPa
  - 3.4. INTENDED APPLICATION: CONTINUOUS WATER SUBMERSION AND SPLASH ZONE (FREQUENT WETTING AND DRYING CYCLES)
  - 3.5. MAXIMUM WATER CEMENT RATIO SHALL BE 0.40.
  - 3.6. AIR CONTENT SHALL BE BETWEEN 5% AND 8%.
  - 3.7. SET RETARDING ADMIXTURES SHALL NOT BE USED UNLESS APPROVED BY THE ENGINEER.
  - 3.8. CONCRETE MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACING CONCRETE. THE MIX DESIGN INCLUDING ADMIXTURES SHALL NOT BE CHANGED WITHOUT PRIOR APPROVAL OF THE ENGINEER.
  - 3.9. ALL REINFORCING STEEL TO BE DEFORMED BARS GRADE 400 CONFORMING TO CAN CSA STD. G30.18.
  - 3.10. MINIMUM COVER TO ALL REINFORCEMENT TO BE 60mm UNLESS OTHERWISE NOTED.
  - 3.11. ALL REINFORCEMENT HOOKS, LAPS AND DEVELOPMENT LENGTHS TO BE IN ACCORDANCE WITH CAN CSA STD A23.2.
  - 3.12. ALL EXPOSED CONCRETE EDGE TO BE CHAMFERED 25mm.
  - 3.13. ALLOWABLE BEARING PRESSURE: 150 kPa
  - 3.14. NOTIFY ENGINEER 48 HOURS PRIOR TO CONCRETE PLACEMENT FOR REVIEW OF REINFORCEMENT AND FORMWORK.
  - 3.15. FIELD AND LABORATORY TESTING OF CONCRETE TO BE COMPLETED BY A THIRD PARTY TESTING AND INSPECTION AGENCY APPROVED BY AND RESPONSIBLE TO THE ENGINEER. TESTING AGENCY SHALL BE CERTIFIED TO CSA-A283. ONE SET OF 3 CYLINDERS SHALL BE MADE FOR EACH DAY'S POUR. COPIES OF TEST RESULTS TO BE SENT TO THE ENGINEER AND CONTRACTOR. C.O.N. TO PAY FOR TESTS.
  - 3.16. COLD WEATHER REQUIREMENTS FOR PLACING CONCRETE AS DEFINED BY CAN/CSA 23.1, CLAUSE 7.4.2.5 MUST BE MET.
  - 3.17. HOT WEATHER REQUIREMENTS FOR PLACING CONCRETE AS DEFINED BY CAN/CSA 23.1, CLAUSE 7.4.1.8.1 MUST BE MET.
  - 3.18. REINFORCEMENT IS NOT TO BE WELDED, UNLESS SPECIFICALLY APPROVED BY THE ENGINEER
  - 3.19. ALL REINFORCEMENT TO BE SUPPORTED AT 900mm MAXIMUM SPACING
4. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CAN/CSA-S269.3

STRUCTURAL AND MISCELLANEOUS STEEL:

1. ALL ROLLED SECTION AND MISCELLANEOUS PLATES TO BE GRADE 300W CONFORMING TO CAN CSA STD. G40.20/G40.21 UNLESS OTHERWISE NOTED
2. ALL BOLTS TO CONFORM TO ASTM A325 UNLESS OTHERWISE NOTED.
3. ALL WELDING TO CONFORM TO ASTM A325 UNLESS OTHERWISE NOTED.

MISCELLANEOUS NOTES:

1. ALL NON-WOVEN GEOTEXTILE TO BE ADS 601T OR APPROVED EQUAL.

CLIENT

COMOX VALLEY  
REGIONAL DISTRICT

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| 1    | 2025FEB06  | BGF | ISSUED FOR CONSTRUCTION | BGF |
| D    | 2024DEC19  | BGF | ISSUED FOR TENDER       | BGF |
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| B    | 2024MAR28  | BGF | REISSUED FOR REVIEW     | BGF |
| A    | 2024FEB23  | BGF | ISSUED FOR REVIEW       | BGF |
| REV. | DATE       | BY  | DESCRIPTION             | ENG |

# SHINGLE SPIT BOAT LAUNCH

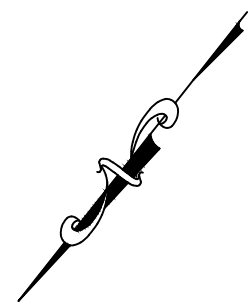
HORNBY ISLAND, B.C.

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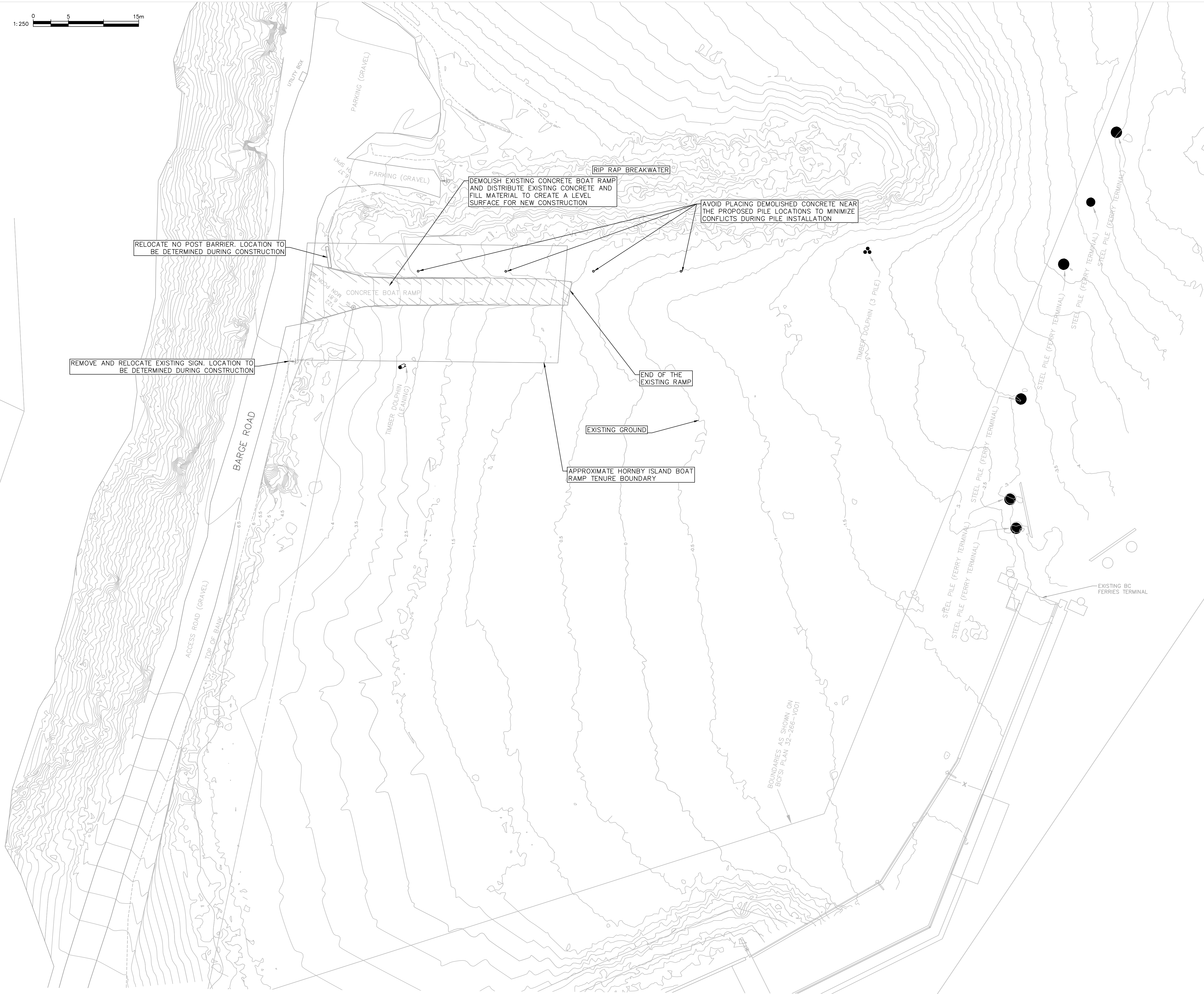
LOCATION PLAN,  
KEY PLAN, DRAWING LIST  
& GENERAL NOTES

 **CASCARA**  
CONSULTING ENGINEERS LIMITED  
EGBC PERMIT No. 1000784  
#206-335 WESLEY STREET NAINAIMO, BC V9R 2T5  
TEL: 250.591.7364 EMAIL: [info@cascara.ca](mailto:info@cascara.ca)

|                                                                                                |                                                                                                                                 |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| DESIGN BY:<br>BGF                                                                              | CHECKED BY:<br>CDR                                                                                                              |
| DRAWN BY:<br>BGF                                                                               | APPROVED BY:                                                                                                                    |
| SEAL:<br> | SCALE:<br>HORIZ: SHOWN VERT: N/A<br>DATE: 2047EBF23 SHEET: 1 OF 7<br>ENG. FILE NUMBER:<br><br>CITY DWG # PROJECT #:<br>1372-001 |
|                                                                                                | DRAWING NUMBER: C01 REV: 1                                                                                                      |



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CLIENT

COMOX VALLEY  
REGIONAL DISTRICT

| REV. | DATE       | BY  | DESCRIPTION             | ENG |
|------|------------|-----|-------------------------|-----|
| 1    | 2025FEB06  | BGF | ISSUED FOR CONSTRUCTION | BGF |
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SHINGLE SPIT  
BOAT LAUNCH

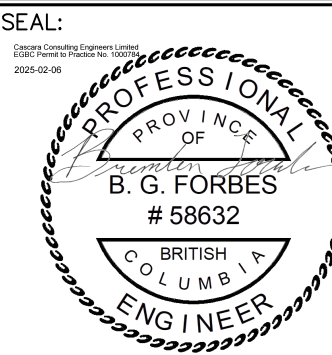
HORNBY ISLAND, B.C.

DRAWING TITLE:

EXISTING CONDITIONS  
& DEMOLITION PLAN

**CASCARA**  
CONSULTING ENGINEERS LIMITED  
EGBC PERMIT No. 1000784  
#206-335 WESLEY STREET NANAIMO, BC V9R 2T5  
TEL: 250.591.7364 EMAIL: info@cascara.ca

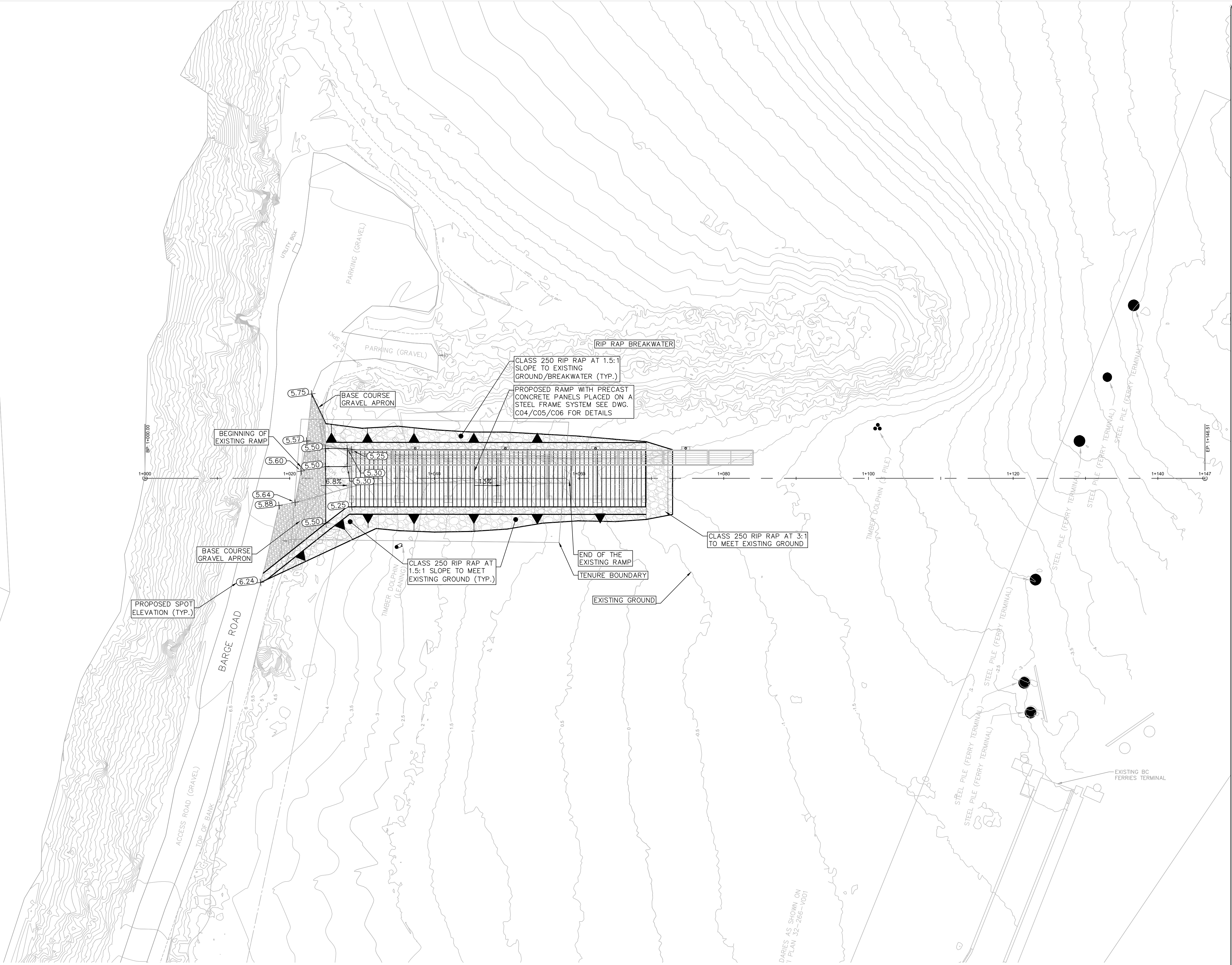
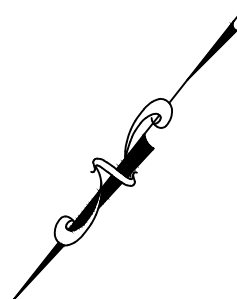
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| SCALE:            | HORIZ: SHOWN VERT: N/A |
| DATE:             | 2024FEB23              |
| ENG. FILE NUMBER: | 1172-001               |
| CITY DWG #:       | PROJECT #:             |
| DRAWING NUMBER:   | REV:                   |
| C02               | 1                      |

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2.6.2025



NOTES:

1. REFER TO DRAWING NUMBER C01 FOR GENERAL NOTES.

OVERALL SITE PLAN



CLIENT

COMOX VALLEY  
REGIONAL DISTRICT

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| REV. | DATE       | BY  | DESCRIPTION             | ENG |

SHINGLE SPIT  
BOAT LAUNCH

HORNBY ISLAND, B.C.

DRAWING TITLE:

OVERALL  
SITE PLAN



CASCARA  
CONSULTING ENGINEERS LIMITED  
EGBC PERMIT No. 1000784  
#206-335 WESLEY STREET NANAIMO, BC V9R 2T5  
TEL: 250.591.7364 EMAIL: info@cascara.ca

DESIGN BY:

BGF

DRAWN BY:

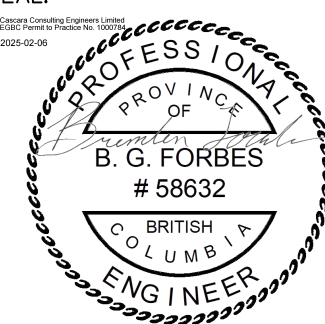
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CHECKED BY:

CDR

APPROVED BY:

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SCALE:

HORIZ: SHOWN VERT: N/A

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OF 7

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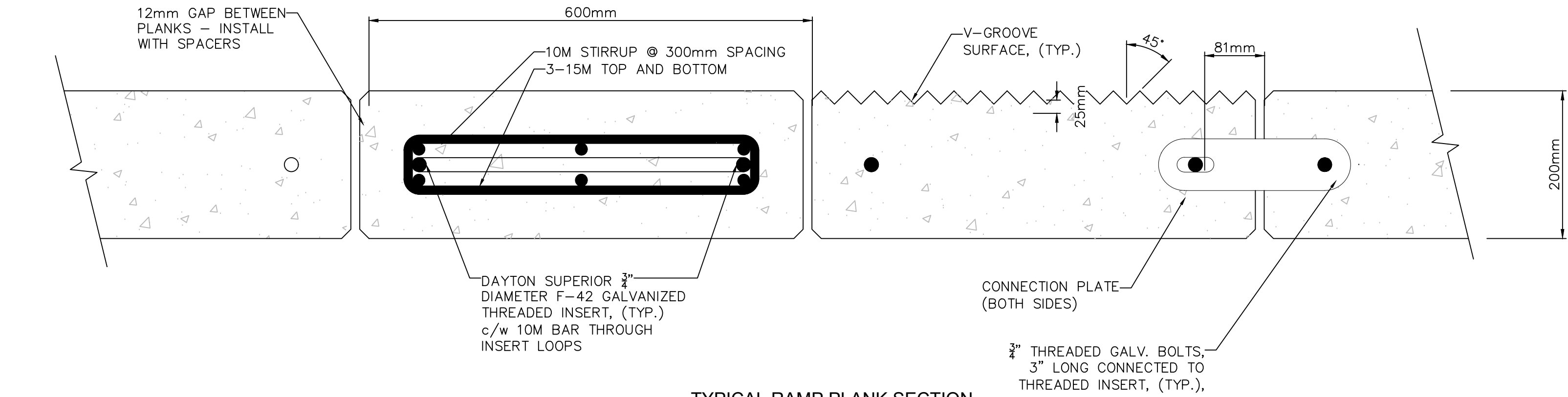
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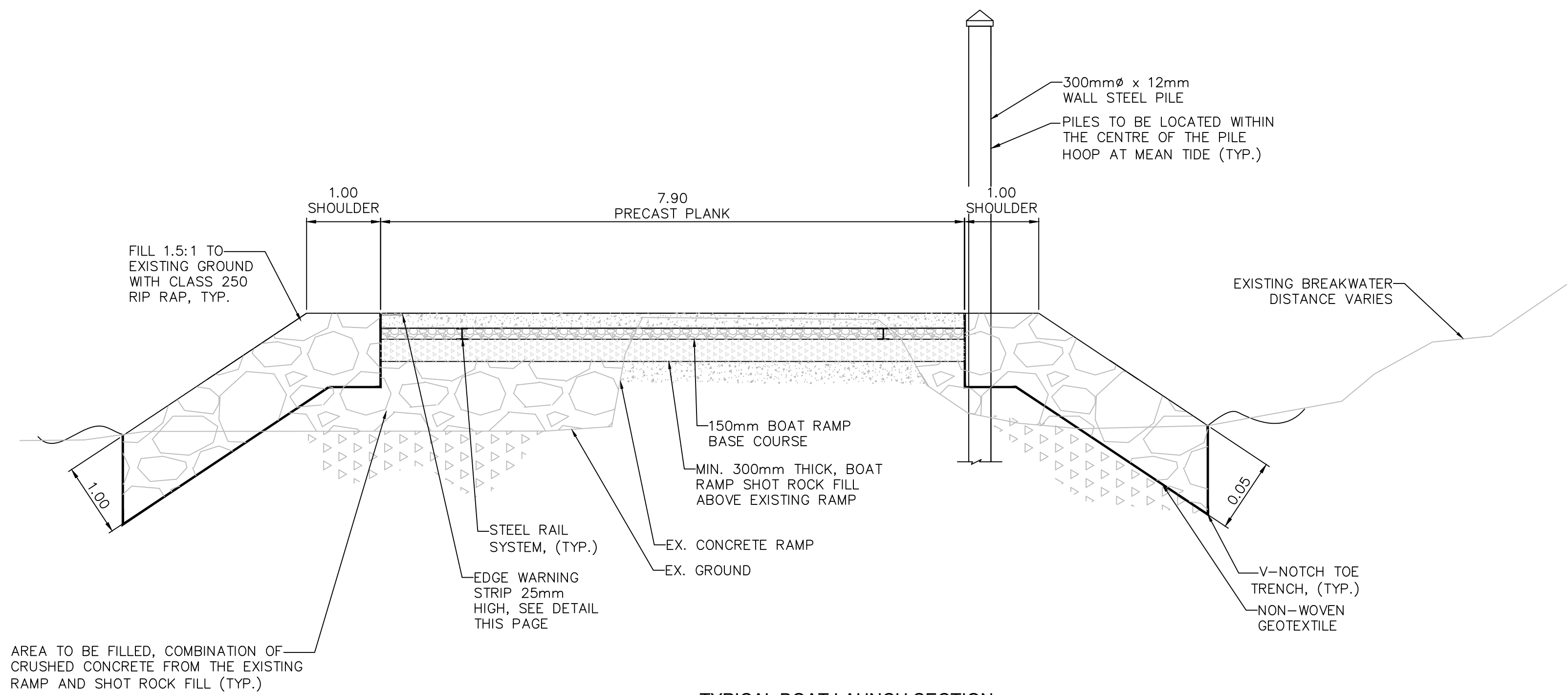
C:\USERS\BRENDEN FORBES\ONE\DRIVE - CASCARA CONSULTING ENGINEERS LIMITED\1172-001 HORNBY BOAT LAUNCH\04 - DRAWINGS\1172-001 CIVIL DRAWINGS

2/2/2025



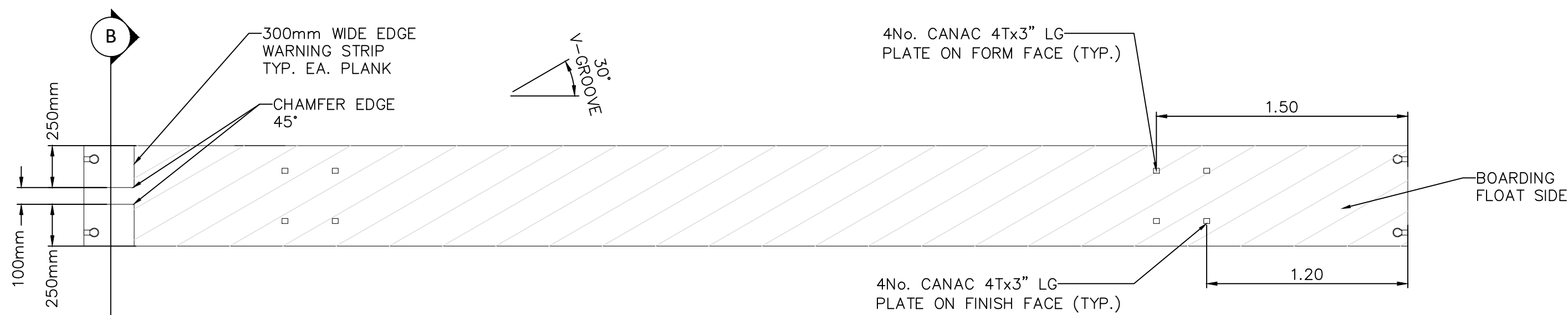
TYPICAL RAMP PLANK SECTION

NTS  
NOTE: V-GROOVE SURFACE AND SLOPE NOT SHOWN FOR CLARITY



TYPICAL BOAT LAUNCH SECTION

NTS  
NOTE: V-GROOVE NOT SHOWN FOR CLARITY



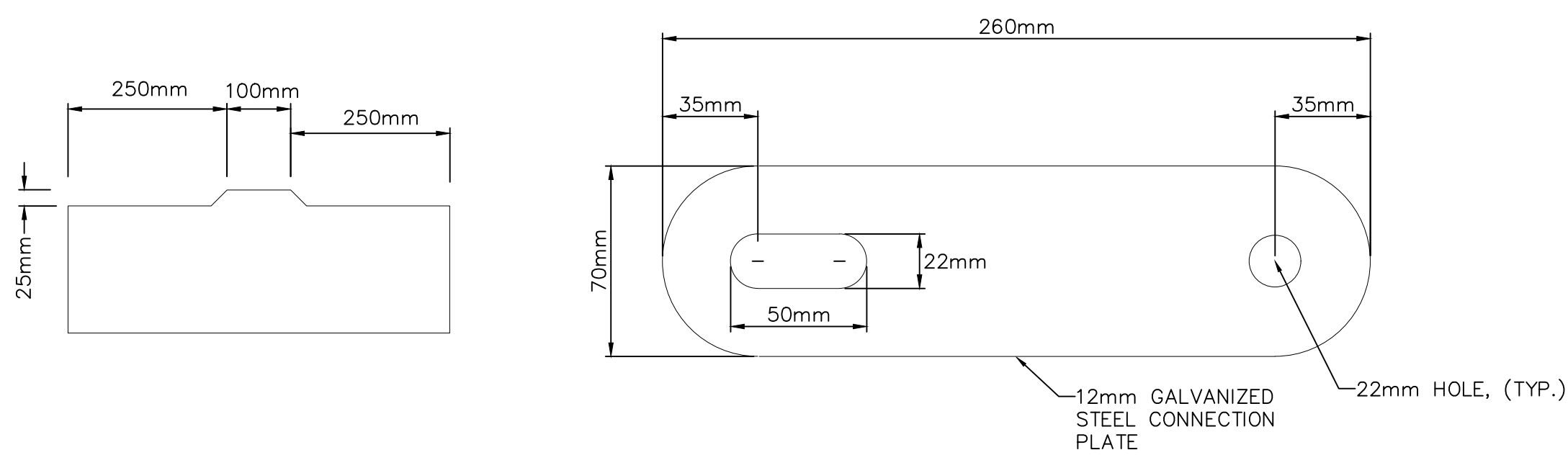
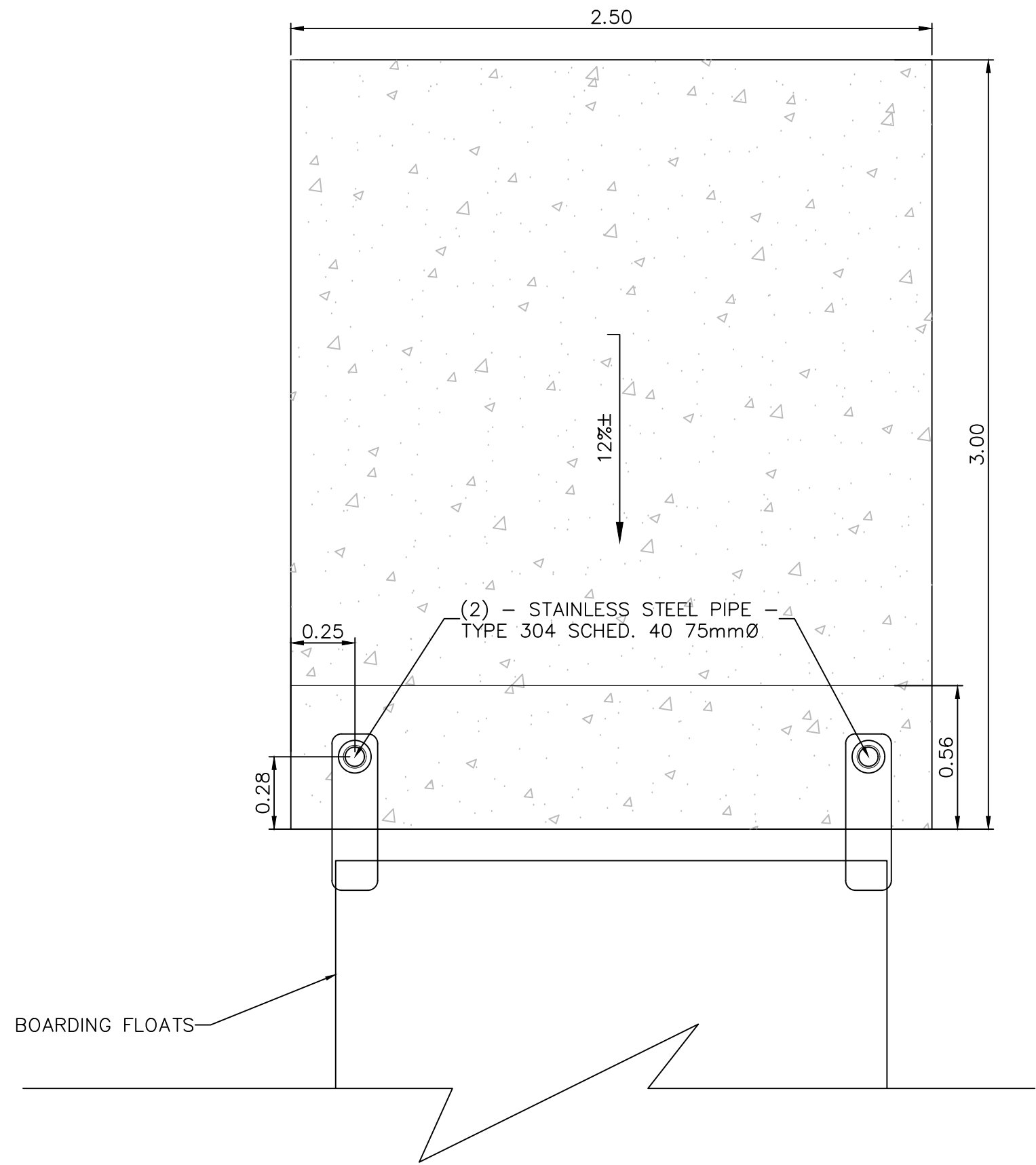
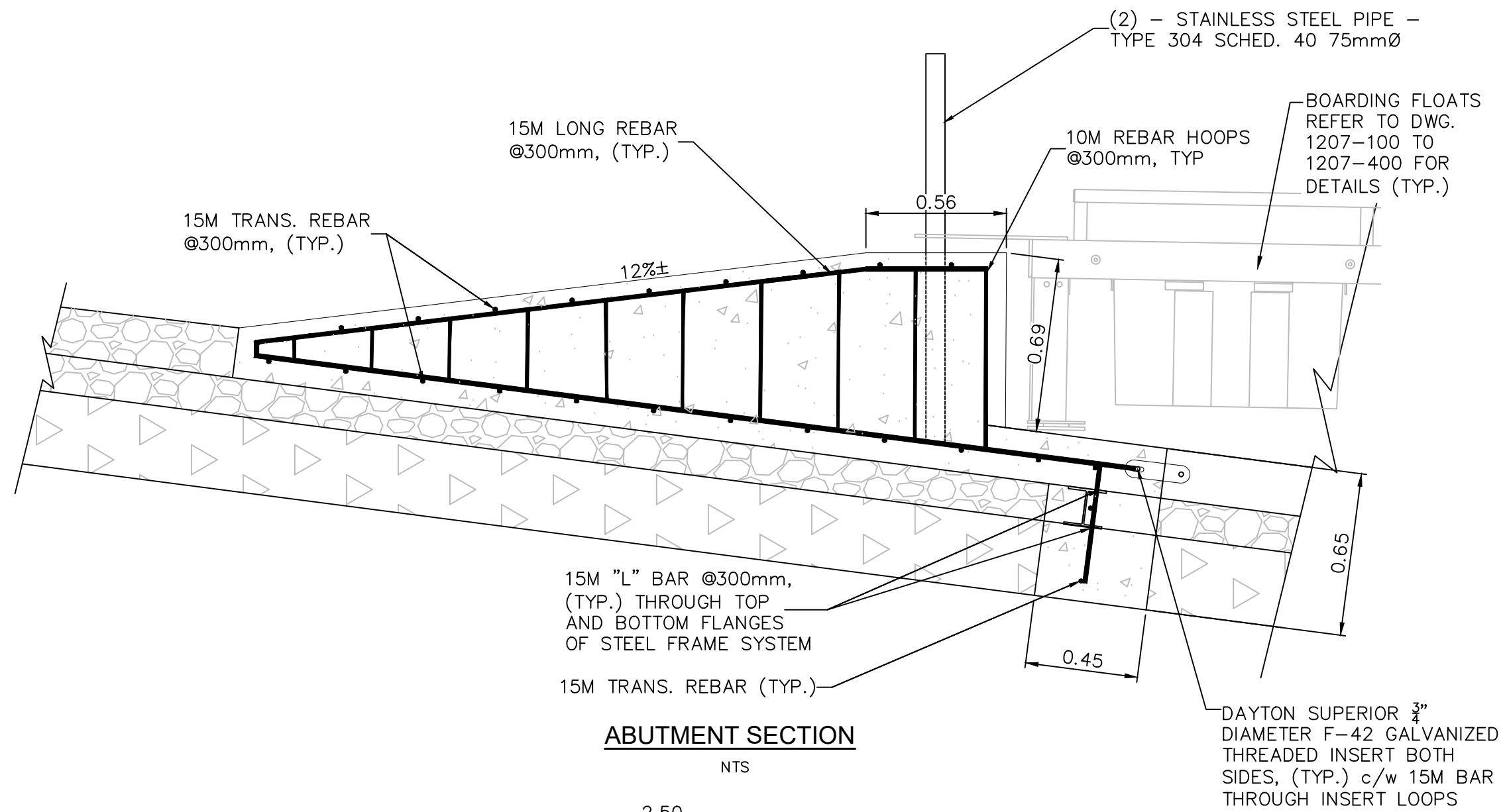
NOTE: V-GROOVE ORIENTATED AWAY FROM BOARDING FLOATS

RAMP PLANK PLAN

NTS

NOTES:

1. REFER TO DRAWING NUMBER C01 FOR GENERAL NOTES.



CLIENT

COMOX VALLEY  
REGIONAL DISTRICT

| REV. | DATE       | BY  | DESCRIPTION             | ENG |
|------|------------|-----|-------------------------|-----|
| 1    | 2025FEB06  | BGF | ISSUED FOR CONSTRUCTION | BGF |
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SHINGLE SPIT  
BOAT LAUNCH

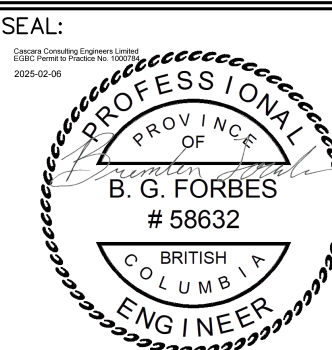
HORNBY ISLAND, B.C.

DRAWING TITLE:

DETAILS

**CASCARA**  
CONSULTING ENGINEERS LIMITED  
EGBC PERMIT No. 1000784  
#206-335 WESLEY STREET NANAIMO, BC V9R 2T5  
TEL: 250.591.7364 EMAIL: info@cascara.ca

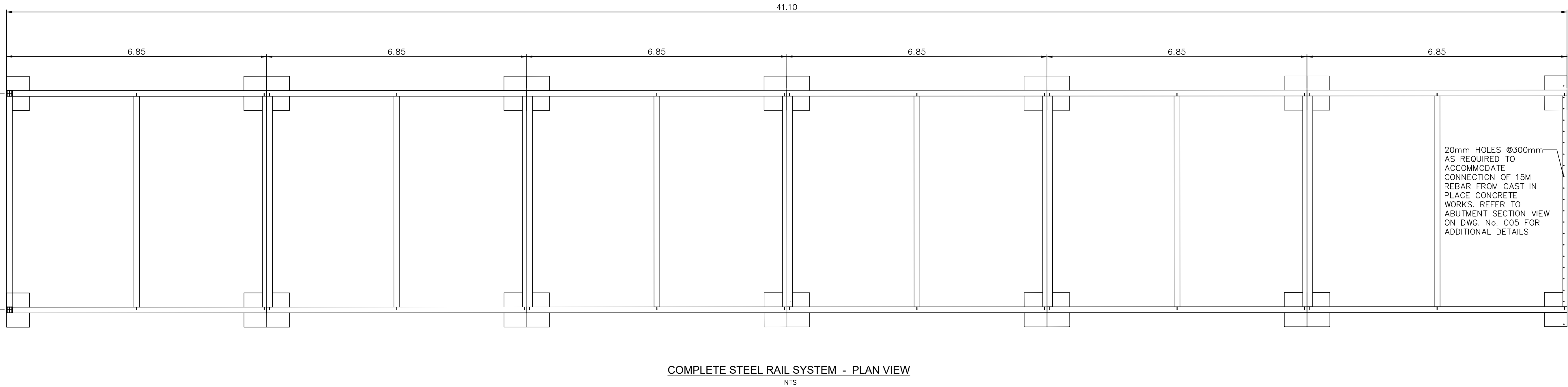
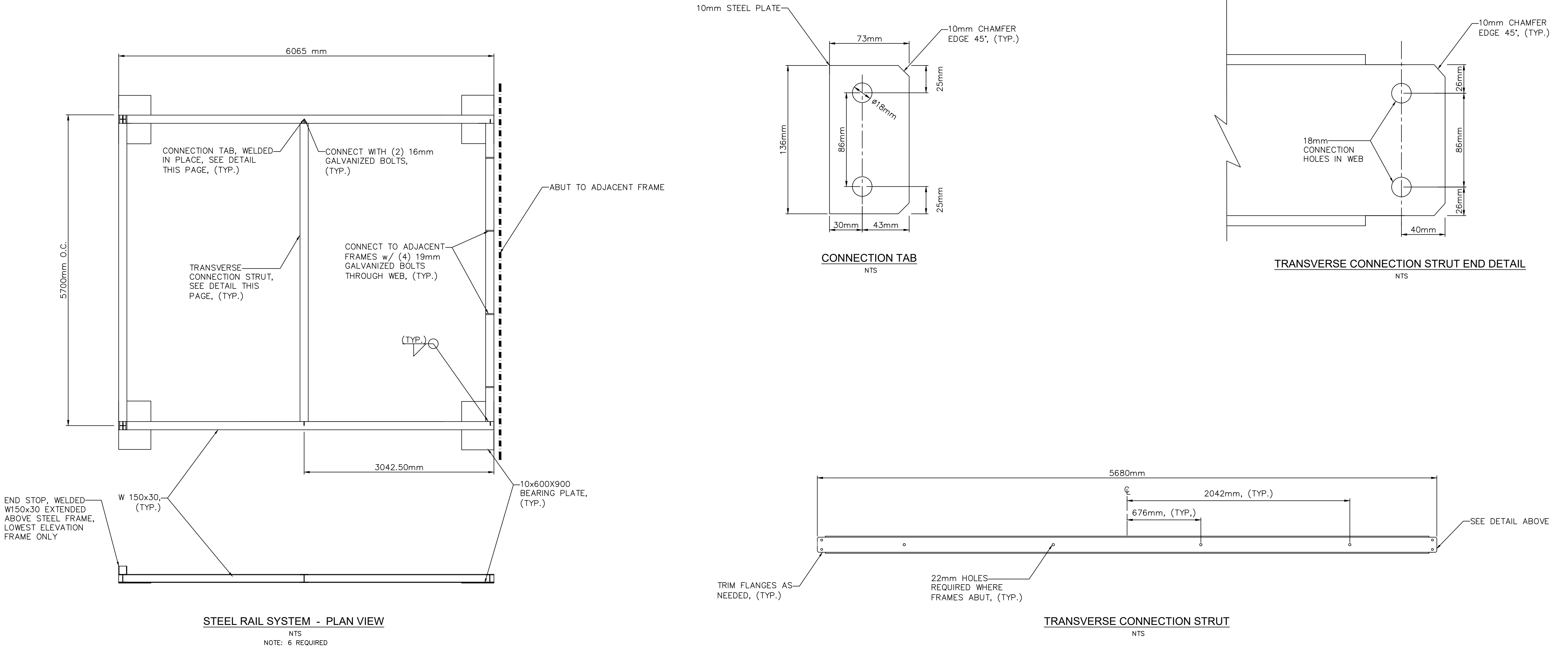
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| SCALE:            | HORIZ: SHOWN | VERT: N/A     |
| DATE:             | 2024FEB23    | SHEET: 3 OF 7 |
| ENG. FILE NUMBER: | CITY DWG #:  | PROJECT #:    |
| DRAWING NUMBER:   | C05          | REV: 1        |

C:\USERS\BRENDOEN FORBES\ONE DRIVE - CASCARA CONSULTING ENGINEERS LIMITED\1172-001 HORNBLY BOAT LAUNCH\1172-001 HORNBLY BOAT LAUNCH\1172-001 CIVIL DRAWINGS

2.8.2025



| CLIENT                         |            |     |                         |     |
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| COMOX VALLEY REGIONAL DISTRICT |            |     |                         |     |
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| A                              | 2024FEB23  | BGF | ISSUED FOR REVIEW       | BGF |
| REV.                           | DATE       | BY  | DESCRIPTION             | ENG |

SHINGLE SPIT BOAT LAUNCH

HORNBY ISLAND, B.C.

DRAWING TITLE:

STEEL FRAME SYSTEM

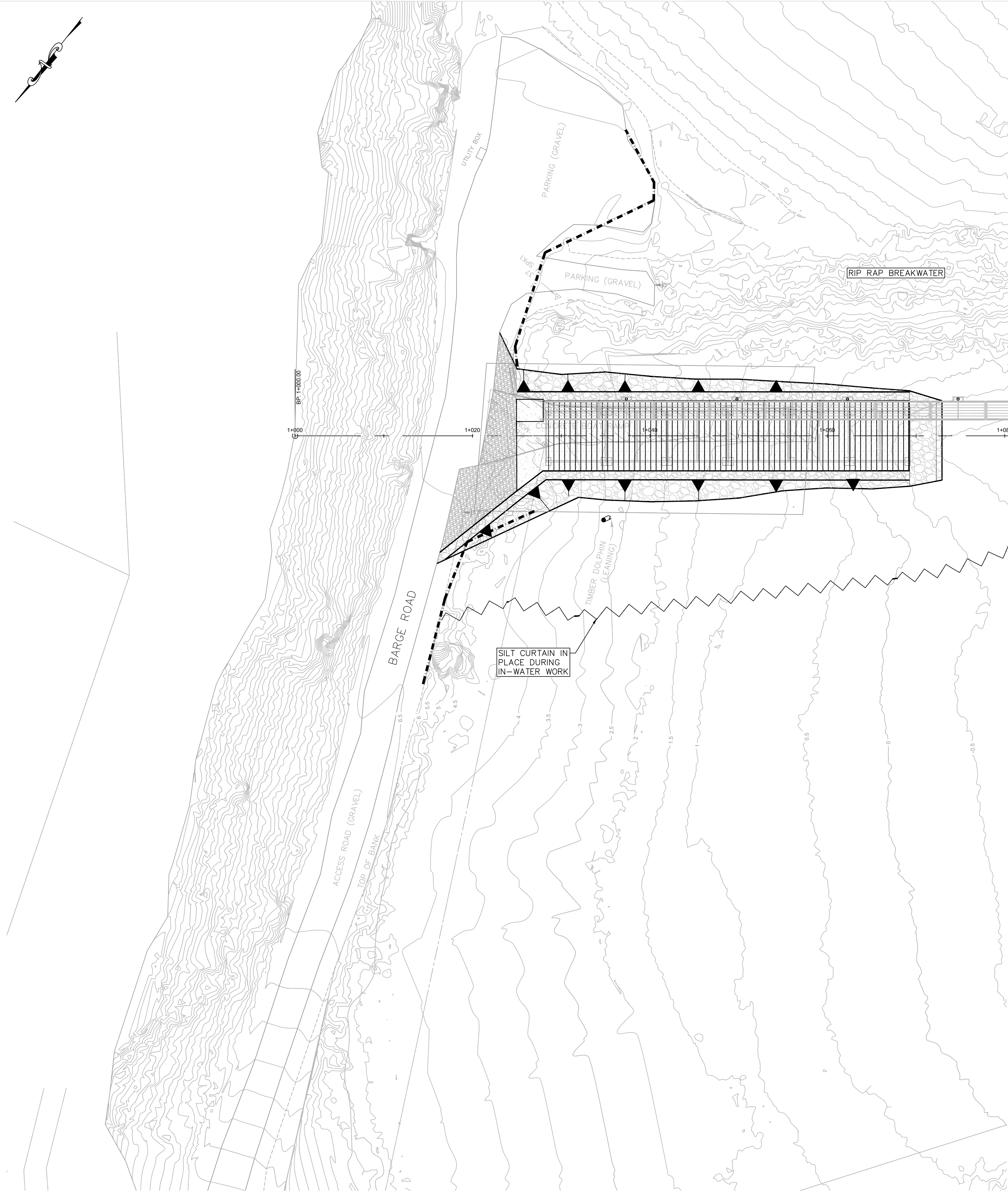
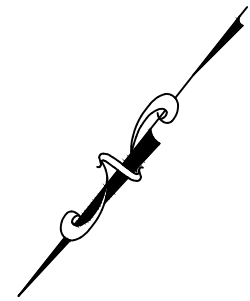
**CASCARA**  
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TEL: 250.591.7364 EMAIL: info@cascara.ca

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| DESIGN BY: | BGF | CHECKED BY:  | CDR |
| DRAWN BY:  | BGF | APPROVED BY: |     |

SEAL:

PROFESSIONAL  
ENGINEER  
B. G. FORBES  
#58632  
BRITISH COLUMBIA

|                   |                        |             |            |
|-------------------|------------------------|-------------|------------|
| SCALE:            | HORIZ: SHOWN VERT: N/A |             |            |
| DATE:             | 2024FEB23              | SHEET:      | 6 OF 7     |
| ENG. FILE NUMBER: |                        | CITY DWG #: | PROJECT #: |
| DRAWING NUMBER:   | C06                    | REV:        | 1          |



**EROSION & SEDIMENT CONTROL NOTES:**

1. EROSION AND SEDIMENT CONTROL FOR THIS PROJECT WILL BE AS OUTLINED IN THE FISHERIES AND OCEANS CANADA & MINISTRY OF WATER, LANDS AND AIR PROTECTION HANDBOOK ENTITLED "LAND DEVELOPMENT GUIDELINES FOR THE PROTECTION OF THE AQUATIC HABITAT, SEPTEMBER 1993" AND "ENVIRONMENTAL BEST MANAGEMENT PRACTICES FOR URBAN AND RURAL LAND DEVELOPMENT IN BRITISH COLUMBIA, JUNE 2004" AND "EROSION & SEDIMENT CONTROL GUIDELINE" BY THE CITY OF NANAIMO. IT IS INCUMBENT UPON THE CONTRACTOR TO ACQUIRE THESE GUIDELINES AND BE FAMILIARIZED WITH THE REQUIREMENTS WITHIN.
2. THE CONSULTANT ASSUMES NO RESPONSIBILITY FOR DAMAGES RESULTING FROM IMPROPER EROSION AND SEDIMENT CONTROL MEASURES UNDERTAKEN BY THE CONTRACTOR.
3. ANY DIRECTION GIVEN BY THE CONSULTANT OR CITY TO THE CONTRACTOR FOR EROSION AND SEDIMENT CONTROL AND NOT FOLLOWED BY THE CONTRACTOR IS TO BE REPORTED TO NANOOSE FIRST NATION IMMEDIATELY.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE NO MUD, DIRT, SOIL, SILT OR ANY OTHER SUBSTANCES ARE SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY, OR AREAS THAT LEAD TO CATCH BASINS CONNECTED TO PUBLIC SYSTEMS. THE CONTRACTOR IS TO CLEAN ANY SUCH MATERIAL IMMEDIATELY. I.E. STREETS ARE TO BE SWEEPED WITH A VACUUM STREET SWEEPER AFTER WORK STOPPAGE EACH DAY.
5. PRIOR TO CONSTRUCTION, INSTALL A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT TO LIMIT TRACKING OF SITE SOILS ONTO OFFSITE ROADWAYS. THE WIDTH OF THE PAD SHOULD NOT BE LESS THAN THE FULL WIDTH OF POINT OF INGRESS OR EGRESS IN ANY CASE SHOULD NOT BE LESS THAN 6m WIDE WITH A LENGTH OF THE PAD NOT LESS THAN 20m AND HAVING A MINIMUM THICKNESS OF 200mm (8") OF COARSE GRANULAR MATERIAL. COARSE GRANULAR MATERIAL SUCH AS 75mm PLUS SHOT ROCK OR FRACTURED DRAIN ROCK UNDERLAIN WITH GEO-TEXTILE FABRIC IS RECOMMENDED.
6. THE ENTRANCE SHOULD BE MAINTAINED FOR THE DURATION OF CONSTRUCTION, IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY, OR AREAS THAT LEAD TO CATCH BASINS CONNECTED TO PUBLIC SYSTEMS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL MATERIAL AS CONDITIONS DEMAND. THE PAD MAY BE REMOVED ONCE PERMANENT PAVEMENTS ARE IN PLACE AT THE SITE. A WHEEL WASH MAY BE REQUIRED IF THE TEMPORARY GRAVEL PAD IS NOT WORKING.
7. CONTRACTOR TO STAGE CONSTRUCTION OPERATIONS TO LIMIT DISTURBANCE. STRIP AND GRUB ONLY THOSE AREAS NECESSARY FOR THE CURRENT CONSTRUCTION. DO NOT STRIP ANY AREA UNTIL REQUIRED.
8. CONTRACTOR TO GRADE WORK AREAS AWAY FROM ADJACENT PROPERTIES.
9. SILT FENCING IS TO BE INSTALLED AROUND ALL STOCK/SPOIL PILES, OR PILES ARE TO BE OTHERWISE COVERED TO LIMIT EROSION AND SEDIMENT GENERATION.
10. ROUTINE INSPECTION AND MAINTENANCE OF THE SYSTEM COMPONENTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHOULD DESIGNATE AN ON-SITE PERSON TO BE RESPONSIBLE FOR DAY-TO-DAY MANAGEMENT OF THE ESCP. AT A MINIMUM, INSPECT ALL BMP'S WEEKLY TO ENSURE PROPER FUNCTION WITH INSPECTION REPORTS PROVIDED TO THE ENGINEER FOR REVIEW.
11. 48 HOURS PRIOR TO ANY PREDICTED SIGNIFICANT STORM EVENT, THE DESIGNATED SITE PERSON SHOULD INSPECT THE E&SC WORKS AND ENSURE THAT THE WORKS ARE ADEQUATE TO PROTECT THE SITE DURING THE STORM EVENT AND PROVIDE A WRITTEN REPORT TO THE ENGINEER AND/OR THE CITY UPON REQUEST. IF THE DESIGNATED SITE PERSON DETERMINES THAT THE E&SC WORKS ARE NOT ADEQUATE TO PROTECT THE SITE DURING THE ANTICIPATED STORM EVENT, THEN HE/SHE IS TO IMMEDIATELY INFORM THE ENGINEER AND CONTRACTOR SO THAT THE WORKS CAN BE MODIFIED TO ADEQUATELY PROTECT THE SITE DURING THE STORM EVENT AND PROVIDE A WRITTEN REPORT TO THE ENGINEER AND/OR THE NANOOSE FIRST NATION UPON REQUEST.

**EROSION AND SEDIMENT CONTROL PLAN**



**NOTES:**

1. REFER TO DRAWING NUMBER C01 FOR GENERAL NOTES.

| LEGEND       |       |
|--------------|-------|
| SILT FENCE   | ----- |
| SILT CURTAIN | ~~~~~ |

CLIENT

COMOX VALLEY  
REGIONAL DISTRICT

| REV. | DATE       | BY  | DESCRIPTION             | ENG |
|------|------------|-----|-------------------------|-----|
| 1    | 2025FEB06  | BGF | ISSUED FOR CONSTRUCTION | BGF |
| E    | 2024DEC19  | BGF | ISSUED FOR TENDER       | BGF |
| D    | 2024AUG27  | BGF | ISSUED FOR APPROVAL     | BGF |
| C    | 2024JULY04 | BGF | ISSUED FOR COORDINATION | BGF |
| B    | 2024MAR28  | BGF | REISSUED FOR REVIEW     | BGF |
| A    | 2024FEB23  | BGF | ISSUED FOR REVIEW       | BGF |

SHINGLE SPIT  
BOAT LAUNCH

HORNBY ISLAND, B.C.

DRAWING TITLE:

EROSION &  
SEDIMENT CONTROL  
PLAN

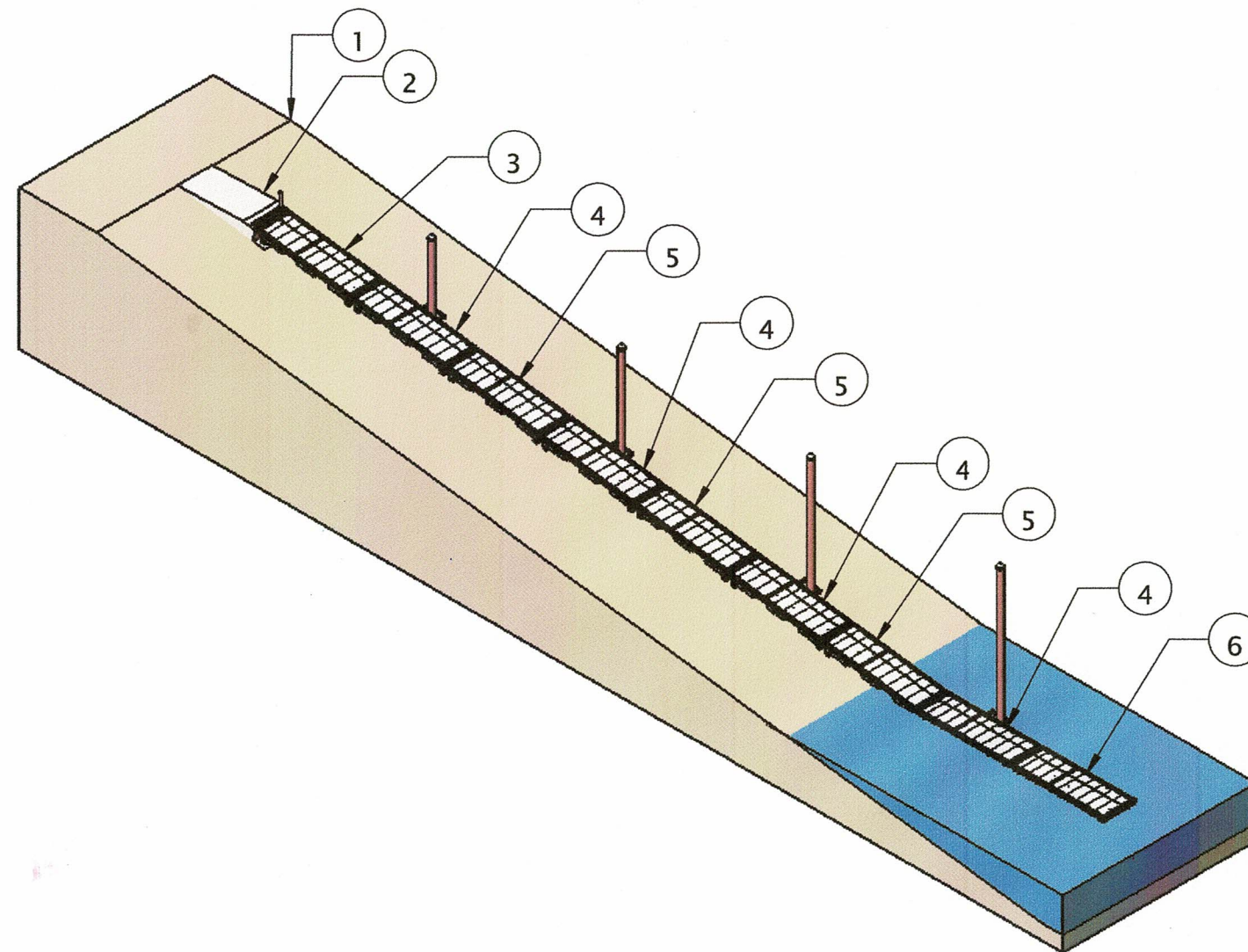
**CASCARA**  
CONSULTING ENGINEERS LIMITED  
EGBC PERMIT No. 1000784  
#206-335 WESLEY STREET NANAIMO, BC V9R 2T5  
TEL: 250.591.7364 EMAIL: info@cascara.ca

|                                                                                                                                                |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| DESIGN BY: BGF                                                                                                                                 | CHECKED BY: CDR |
| DRAWN BY: BGF                                                                                                                                  | APPROVED BY:    |
| SEAL:<br>                                                                                                                                      |                 |
| SCALE:<br>HORIZ: SHOWN VERT: N/A<br>DATE: 2024FEB23 SHEET: 7 OF 7<br>ENG. FILE NUMBER:<br>CITY DWG #: PROJECT #:<br>DRAWING NUMBER: C07 REV: 1 |                 |

NOTES

- 1. DESIGN TO OREGON BOAT LAUNCH FACILITIES 2011  
CSA S157-2022 STRENGTH DESIGN IN ALUMINUM
- 2. DESIGN LOADS:  
LIVE LOAD 1.0 kPa (21 psf), POINT LOAD 1.8 kN (400 lbs)  
WAVE LOAD 0.2 kN/m (14 plf)
- 3. MATERIALS SHAPES 6061-T6, PLATE 5052-H32
- 4. WELDING TO CONFORM TO CSA W59.2 WELDED ALUMINUM
- 5. WELDS 1/4" FILLET AND FLARE GROOVE UNO, FILLER 5356

| ITEM No. | PART No.  | DWG No.  | REV | DESCRIPTION            | QTY. | LBS  |
|----------|-----------|----------|-----|------------------------|------|------|
| 1        | 1207-1001 |          |     | SHINGLE SPIT BOAT RAMP | 1    |      |
| 2        | 1207-1010 |          | 0   | CONCRETE RAMP APPROACH | 1    |      |
| 3        | 1207-100  | 1207-100 | 0   | FLOAT AT SHORE         | 1    | 1362 |
| 4        | 1207-100  | 1207-200 | 0   | FLOAT WITH PILE        | 4    | 1329 |
| 5        | 1207-100  | 1207-300 | 0   | FLOAT NO PILE          | 3    | 1292 |
| 6        | 1207-100  | 1207-400 | 0   | FLOAT AT END           | 1    | 1292 |
| 7        | 1207-1003 |          |     | PILE CAP 12"           | 4    |      |

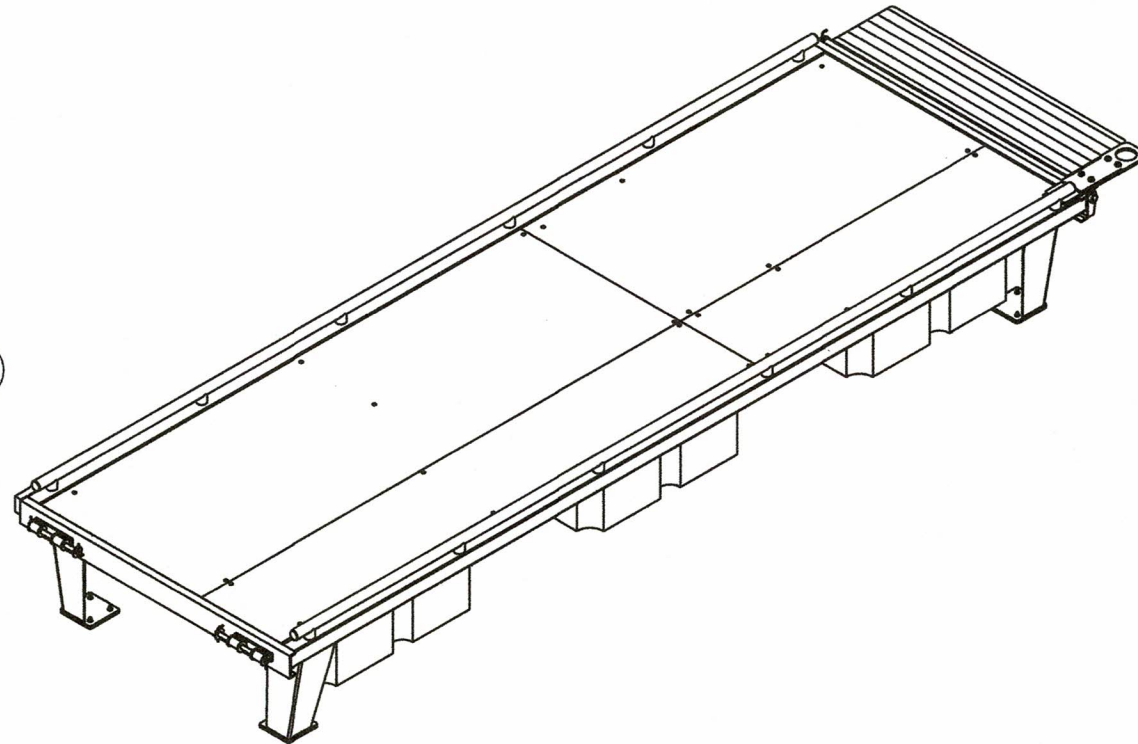
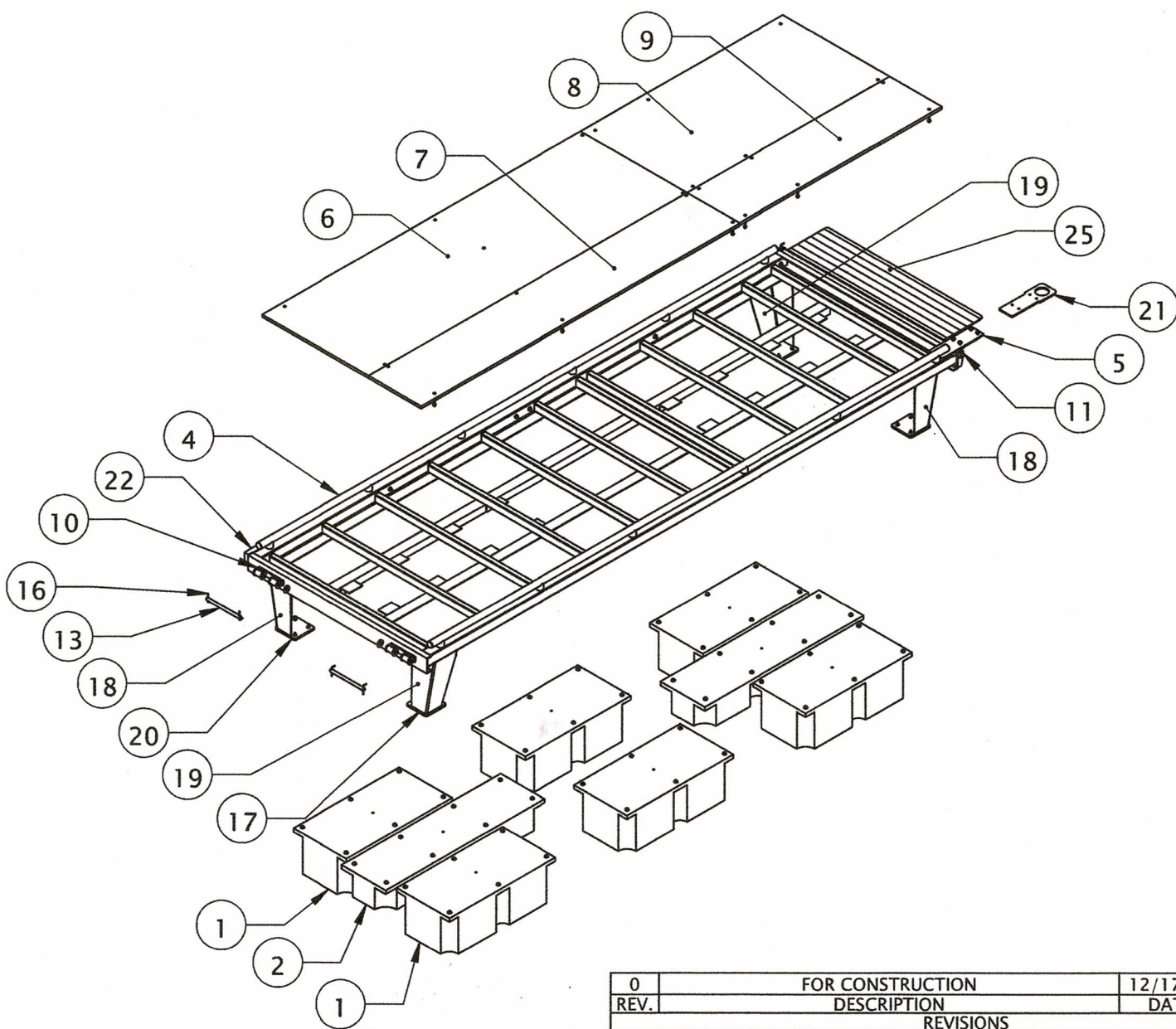


|                                                                                                                                                                         |                  |                   |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|----------|
| 0                                                                                                                                                                       | FOR CONSTRUCTION | 12/17/24          | JK       |
| REV.                                                                                                                                                                    | DESCRIPTION      | DATE              | APPROVED |
| REVISIONS                                                                                                                                                               |                  |                   |          |
| DIMENSIONS IN INCHES                                                                                                                                                    |                  | SHEET SIZE        | DRAWN BY |
|                                                                                                                                                                         |                  | B (11x17)         | J KING   |
|                                                                                                                                                                         |                  | DATE (mm/dd/yyyy) | 12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                  |                   |          |
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|                |                |                                         |     |                     |  |
|----------------|----------------|-----------------------------------------|-----|---------------------|--|
| CLIENT         |                | COMOX VALLEY<br>REGIONAL DISTRICT       |     | CR Engineering Inc. |  |
| PROJECT        |                | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |     | TITLE               |  |
|                |                |                                         |     | GENERAL ARRANGEMENT |  |
| PROJECT NUMBER | DRAWING NUMBER | SHEET                                   | REV |                     |  |
| 1207           | 1207-1000      | 1 OF 1                                  | 0   |                     |  |

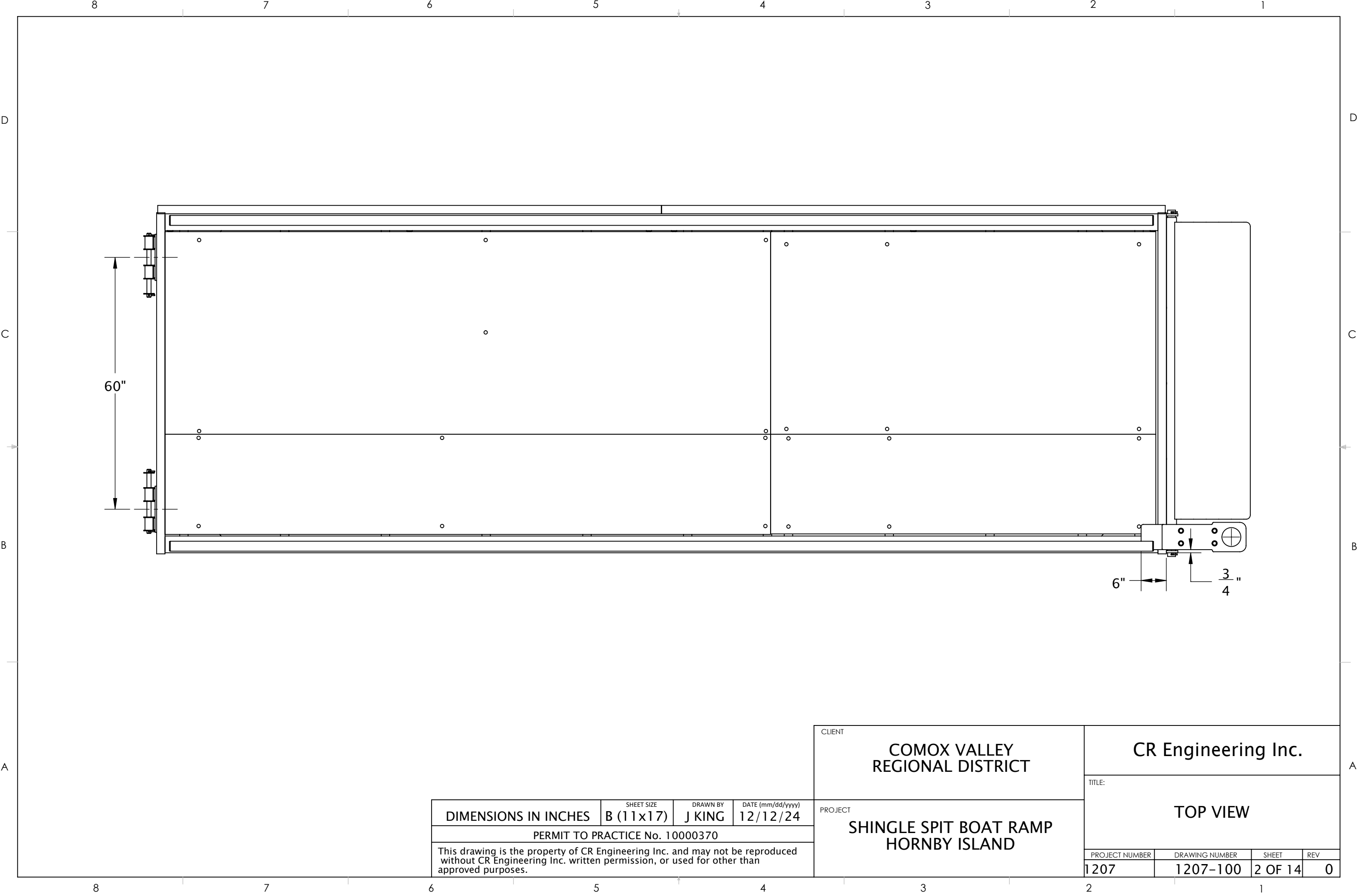
NOTES

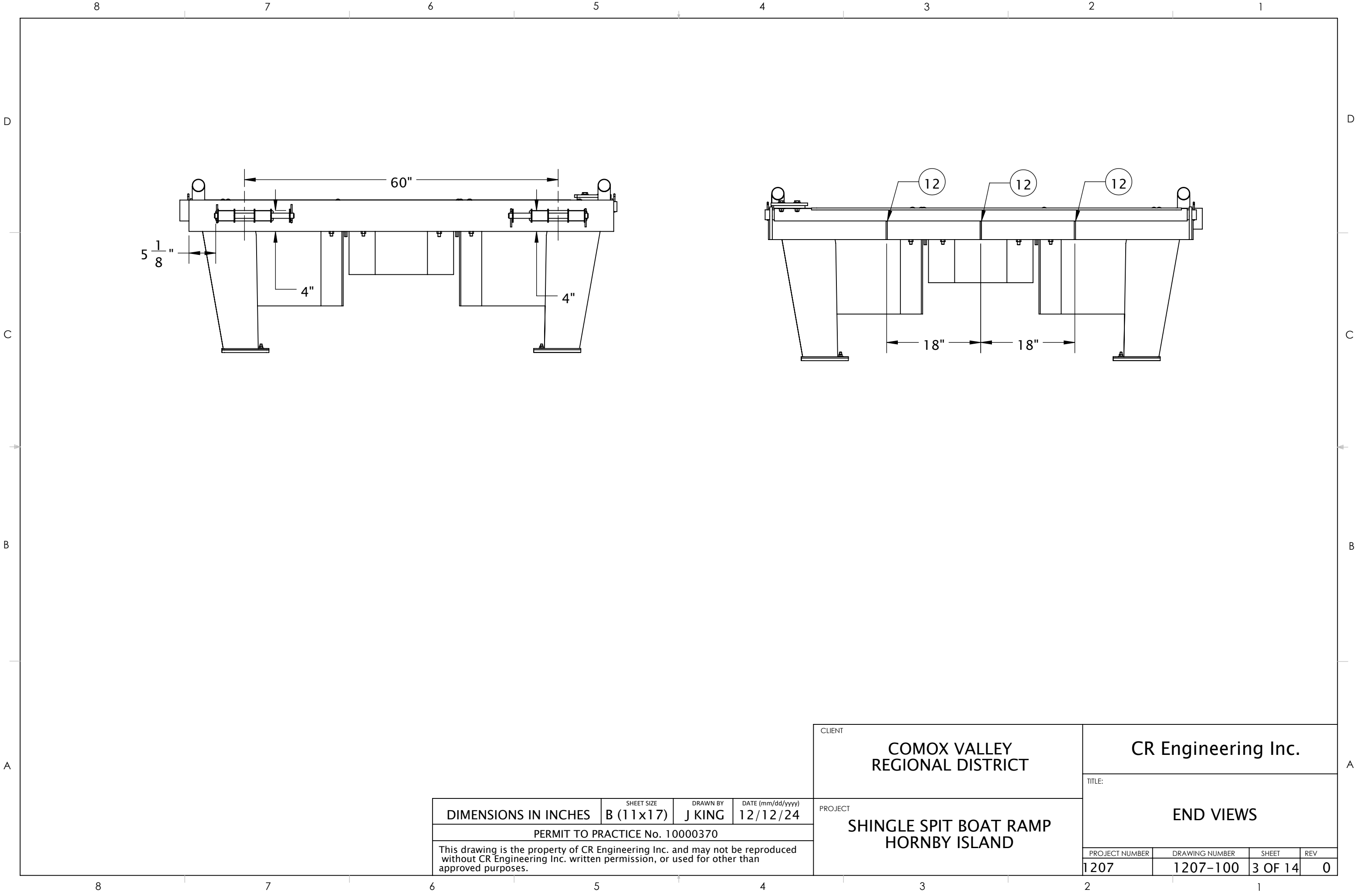
- 1. DESIGN TO OREGON BOAT LAUNCH FACILITIES 2011  
CSA S157-2022 STRENGTH DESIGN IN ALUMINUM
- 2. DESIGN LOADS:  
LIVE LOAD 1.0 kPa (21 psf), POINT LOAD 1.8 kN (400 lbs)  
WAVE LOAD 0.2 kN/m (14 plf)
- 3. MATERIALS SHAPES: 6061-T6, PLATE 5052-H32
- 4. GRATING: FRP MINIMESH 1" THICK, FASTEN WITH SIX CARRIAGE BOLTS PER PANEL
- 5. WELDING TO CONFORM TO CSA W59.2 WELDED ALUMINUM
- 6. WELDS 1/4" FILLET AND FLARE GROOVE UNO, FILLER 5356

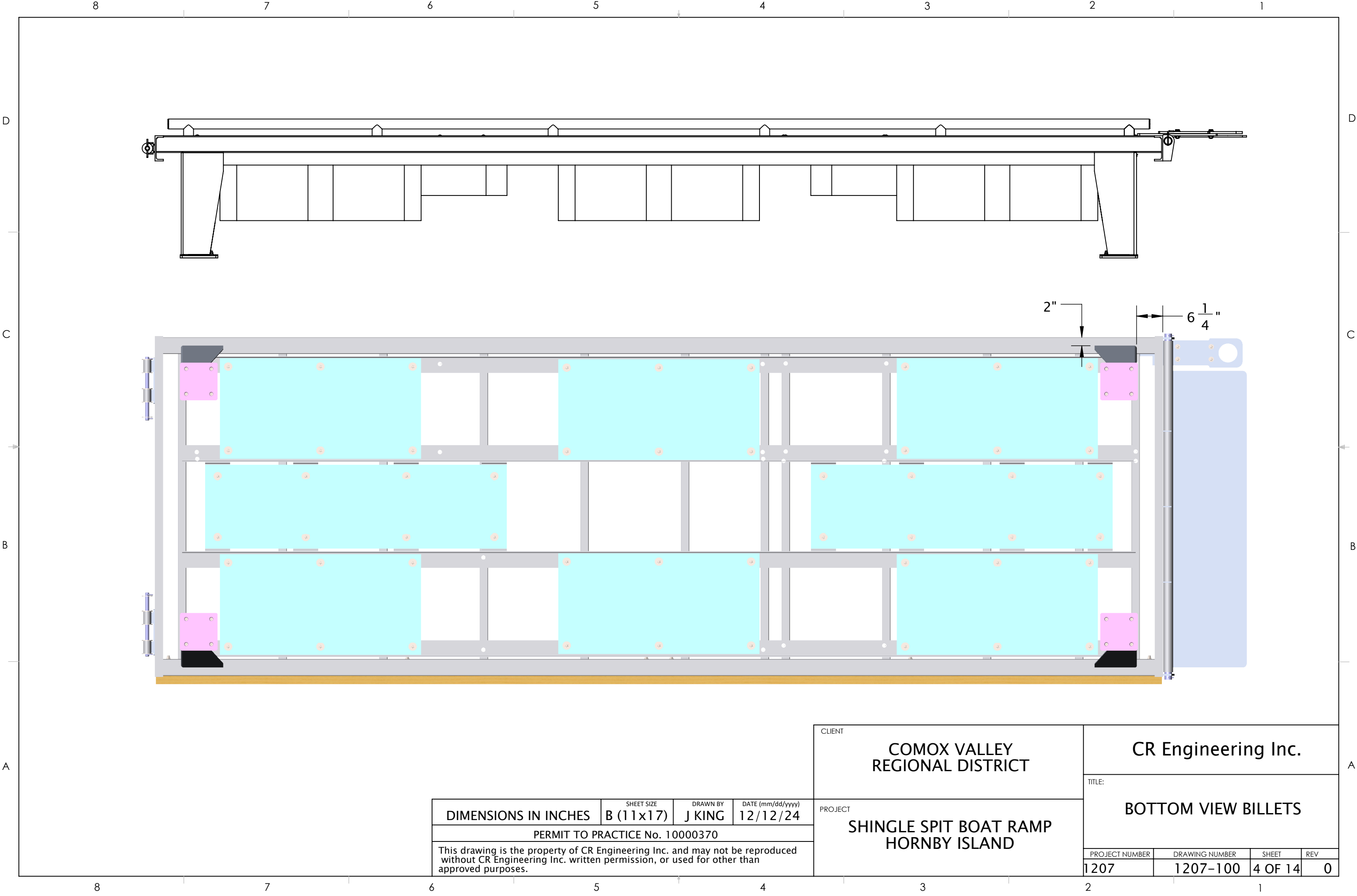


|                                                                                                                                                                         |                      |                 |                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------|----------------------------|
| 0                                                                                                                                                                       | FOR CONSTRUCTION     | 12/17/24        | JK                         |
| REV.                                                                                                                                                                    | DESCRIPTION          | DATE            | APPROVED                   |
| REVISIONS                                                                                                                                                               |                      |                 |                            |
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE B (11x17) | DRAWN BY J KING | DATE (mm/dd/yyyy) 12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                      |                 |                            |
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|                                                    |                            |                                                 |          |
|----------------------------------------------------|----------------------------|-------------------------------------------------|----------|
| CLIENT<br>COMOX VALLEY<br>REGIONAL DISTRICT        |                            | CR Engineering Inc.                             |          |
| PROJECT<br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                            | TITLE:<br>GENERAL ARRANGEMENT<br>FLOAT AT SHORE |          |
| PROJECT NUMBER<br>1207                             | DRAWING NUMBER<br>1207-100 | SHEET<br>1 OF 14                                | REV<br>0 |



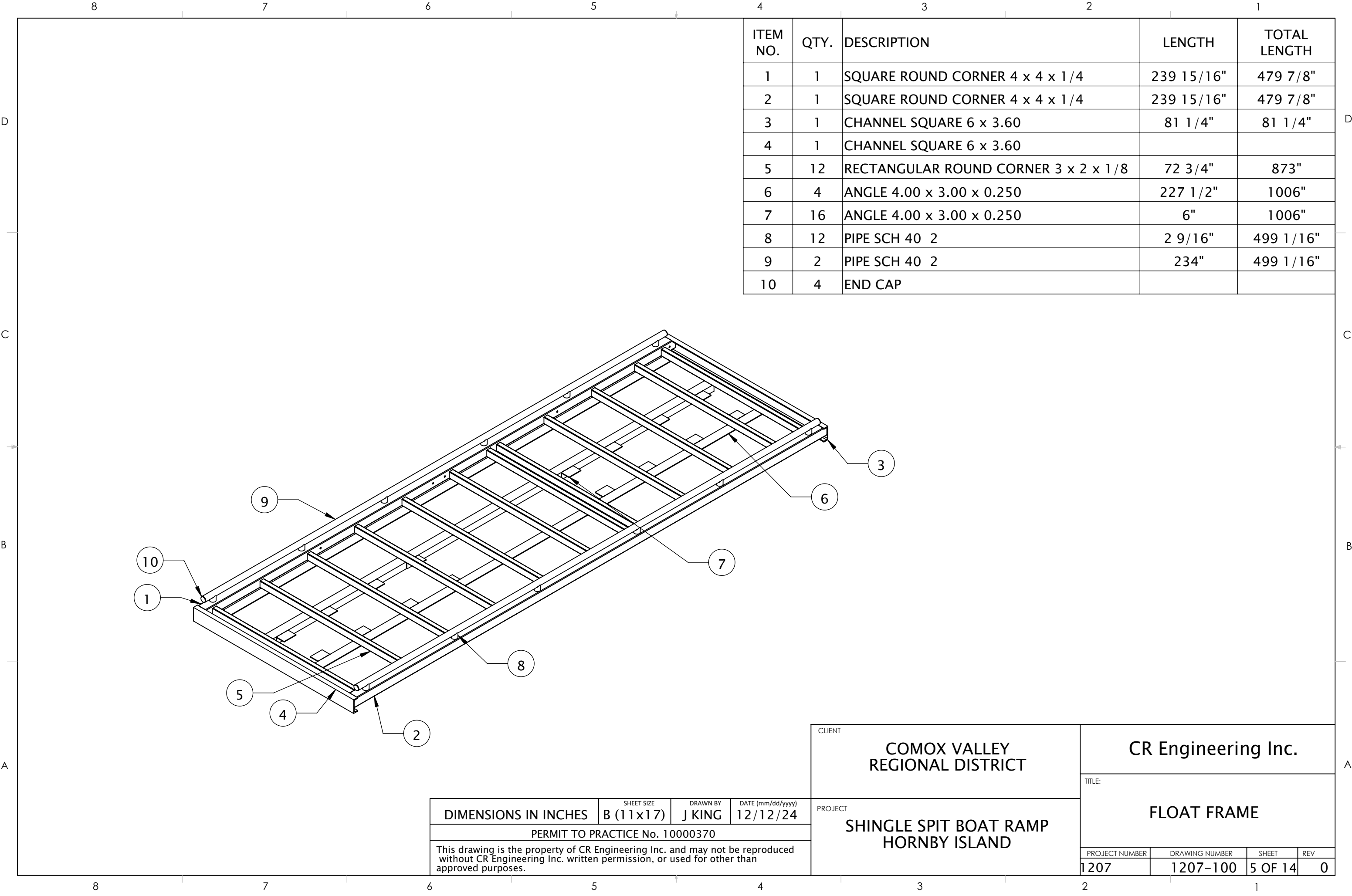


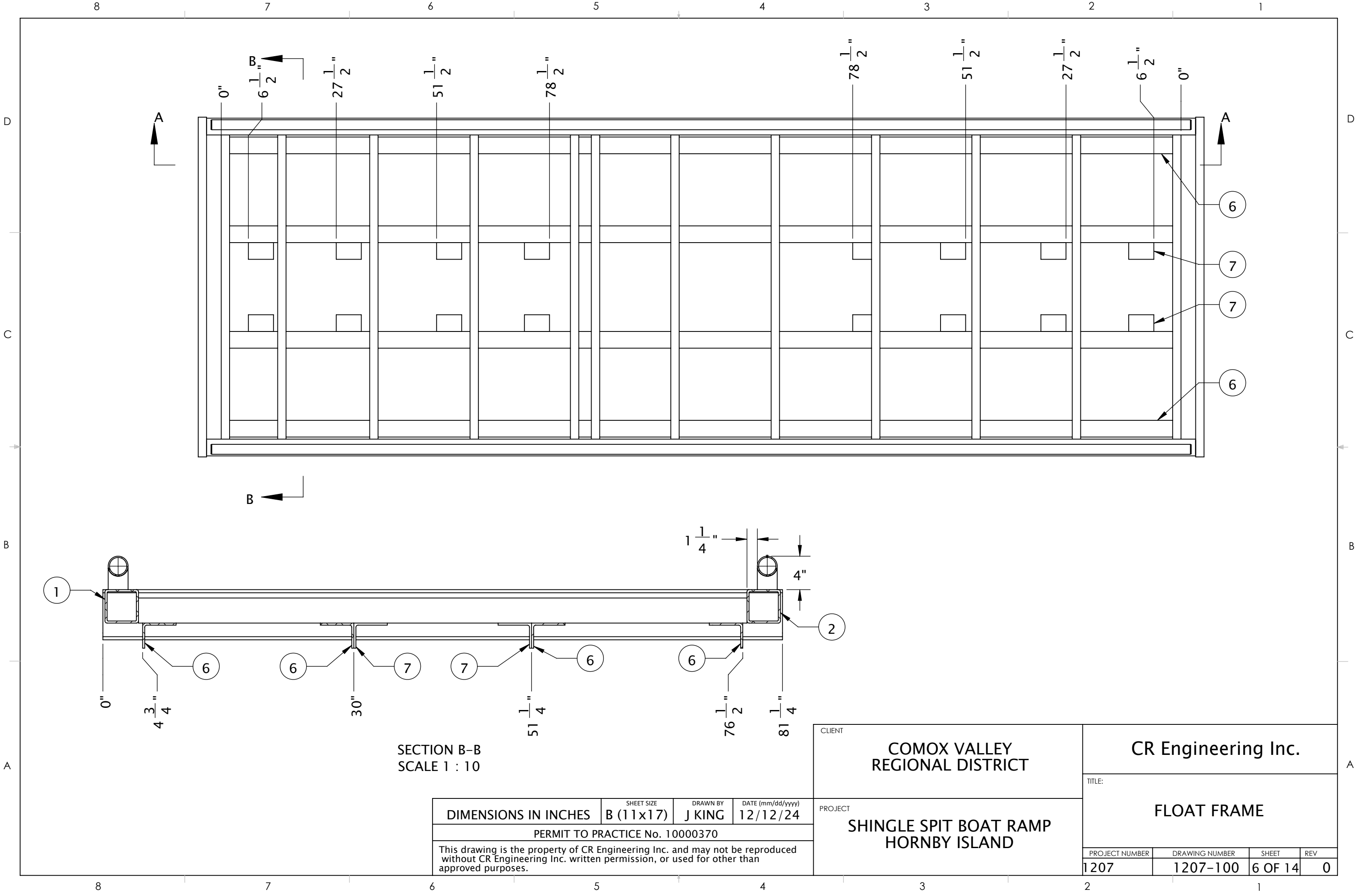


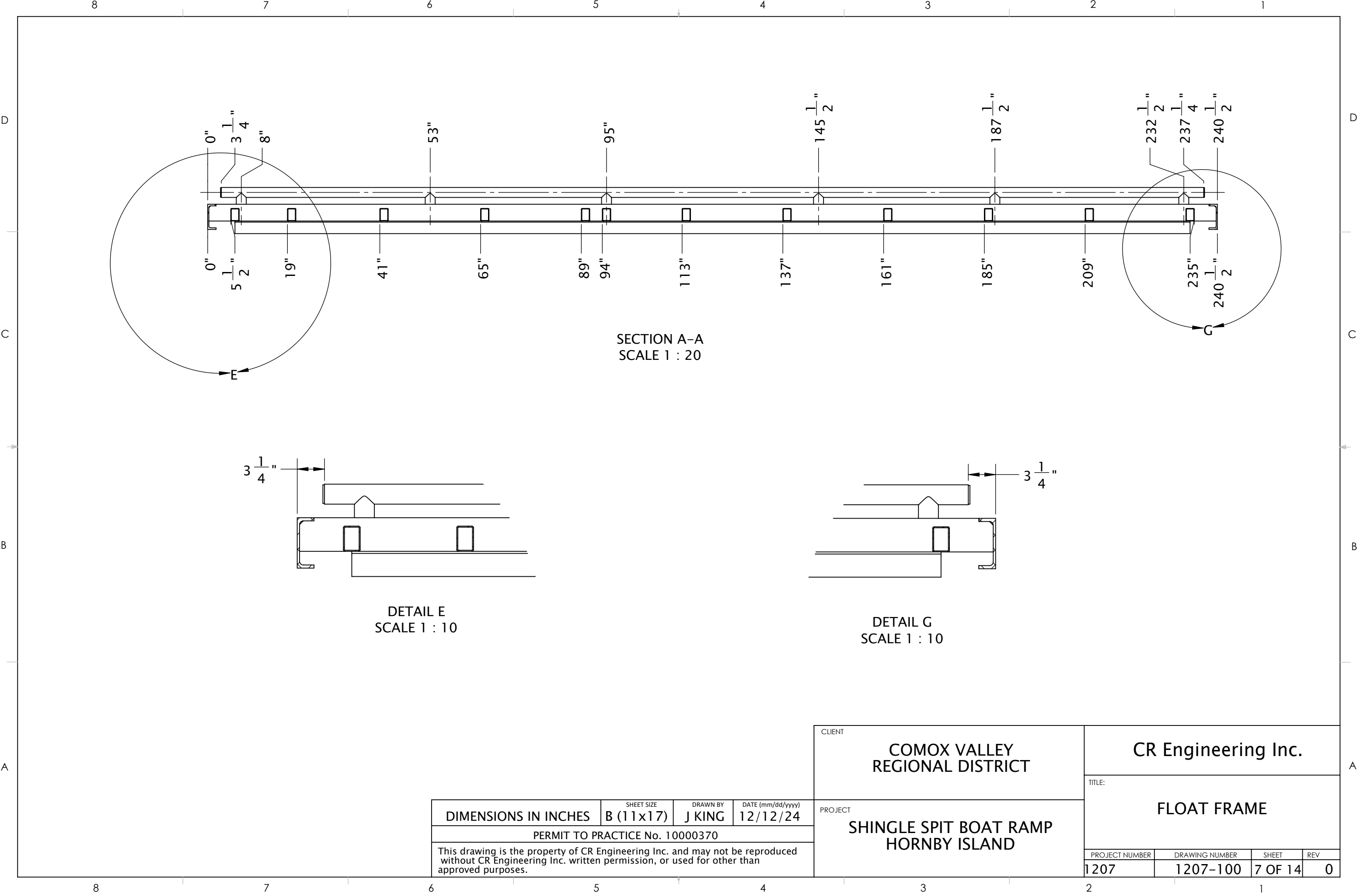
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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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|         |                                         |
|---------|-----------------------------------------|
| CLIENT  | COMOX VALLEY<br>REGIONAL DISTRICT       |
| PROJECT | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |

|                               |                |         |     |
|-------------------------------|----------------|---------|-----|
| CR Engineering Inc.           |                |         |     |
| TITLE:<br>BOTTOM VIEW BILLETS |                |         |     |
| PROJECT NUMBER                | DRAWING NUMBER | SHEET   | REV |
| 1207                          | 1207-100       | 4 OF 14 | 0   |





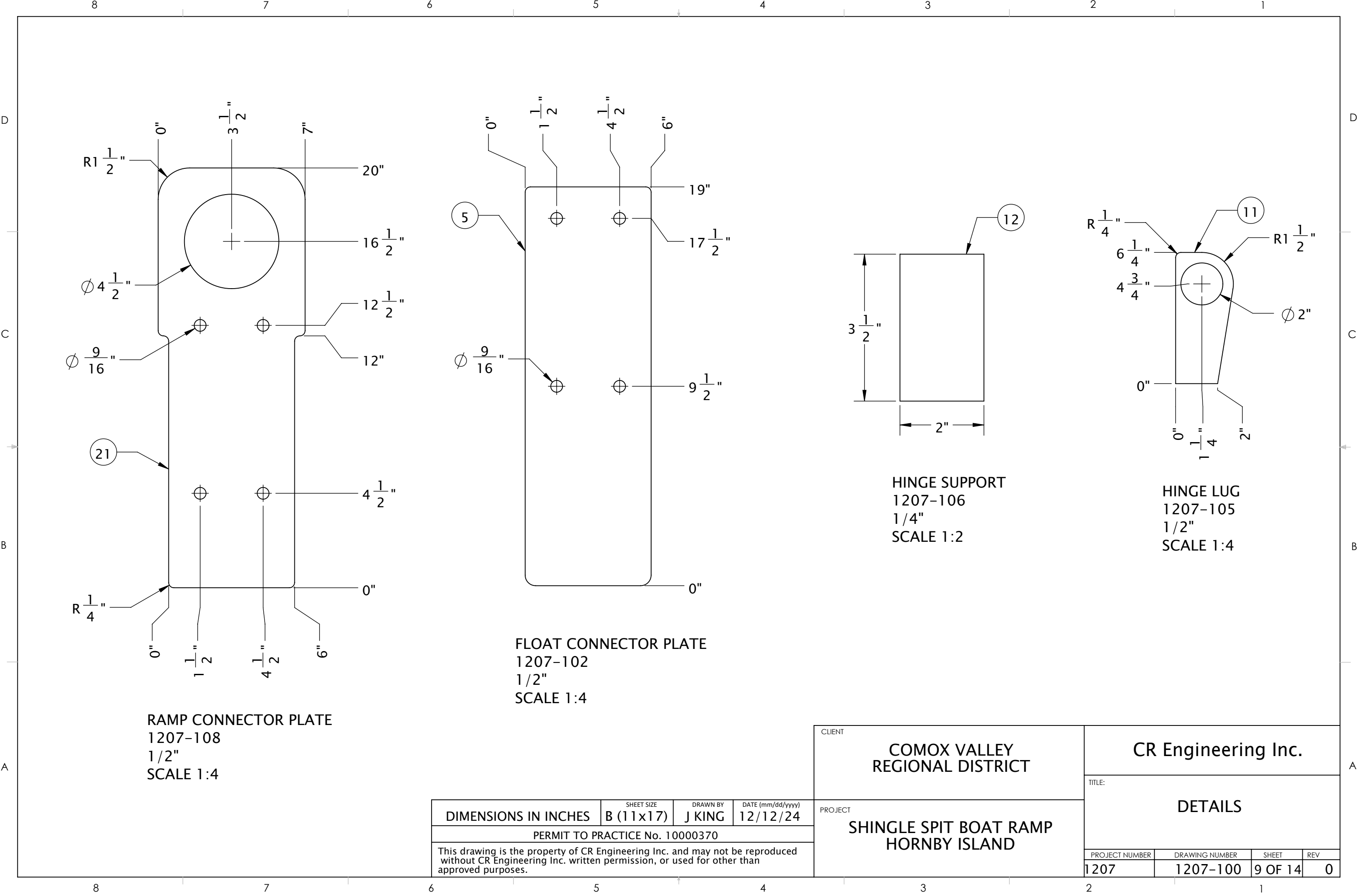


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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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|---------|-----------------------------------------|
| CLIENT  | COMOX VALLEY<br>REGIONAL DISTRICT       |
| PROJECT | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |

|                        |                            |                  |          |
|------------------------|----------------------------|------------------|----------|
| CR Engineering Inc.    |                            |                  |          |
| TITLE:<br>FLOAT FRAME  |                            |                  |          |
| PROJECT NUMBER<br>1207 | DRAWING NUMBER<br>1207-100 | SHEET<br>7 OF 14 | REV<br>0 |





RAMP CONNECTOR PLATE  
1207-108  
1/2"  
SCALE 1:4

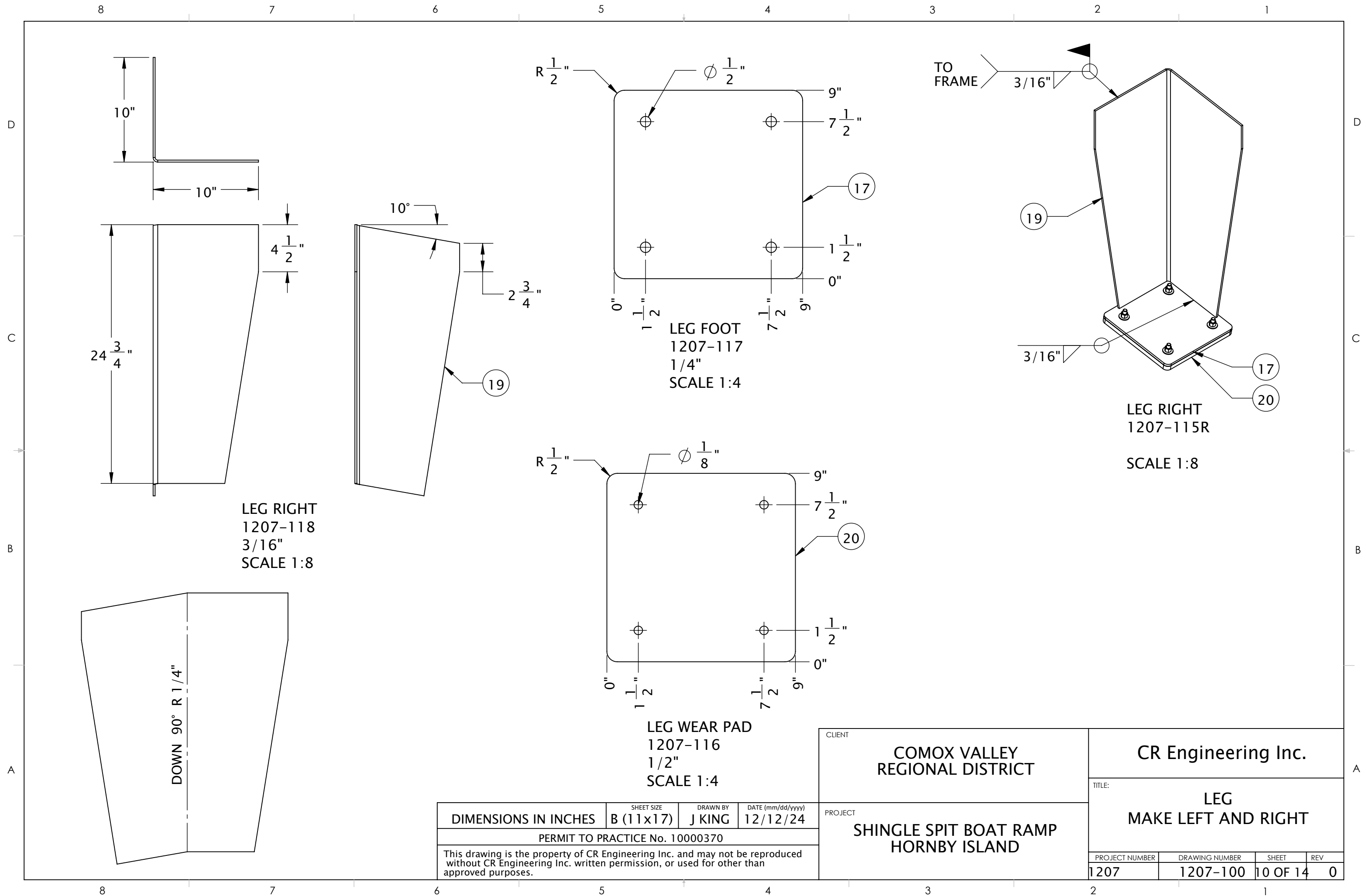
FLOAT CONNECTOR PLATE  
1207-102  
1/2"  
SCALE 1:4

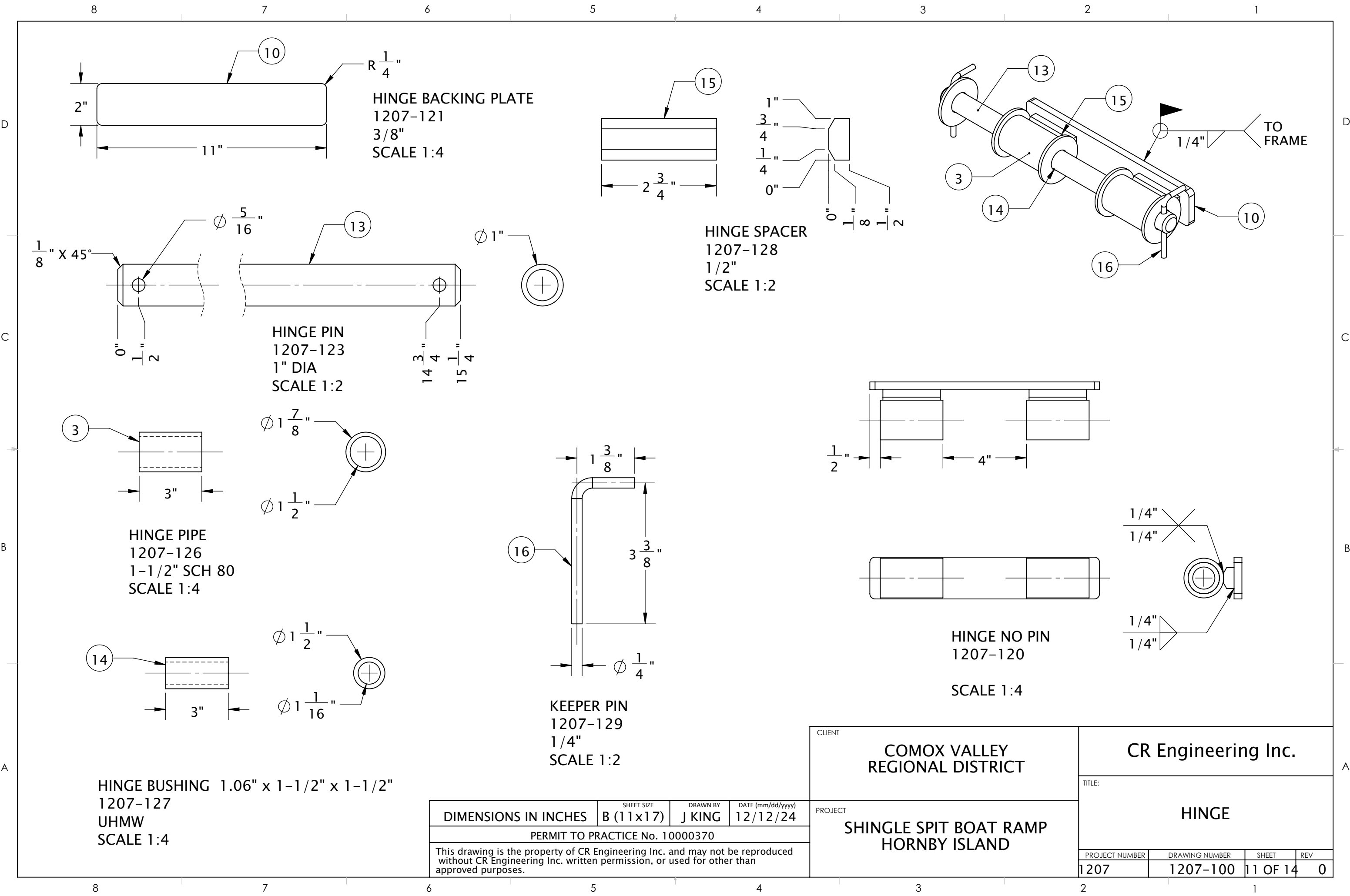
HINGE SUPPORT  
1207-106  
1/4"  
SCALE 1:2

HINGE LUG  
1207-105  
1/2"  
SCALE 1:4

|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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|                |                                         |                |  |                     |     |  |  |
|----------------|-----------------------------------------|----------------|--|---------------------|-----|--|--|
| CLIENT         | COMOX VALLEY<br>REGIONAL DISTRICT       |                |  | CR Engineering Inc. |     |  |  |
|                | PROJECT                                 |                |  | TITLE:              |     |  |  |
|                | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                |  | DETAILS             |     |  |  |
| PROJECT NUMBER |                                         | DRAWING NUMBER |  | SHEET               | REV |  |  |
| 1207           |                                         | 1207-100       |  | 9 OF 14             | 0   |  |  |

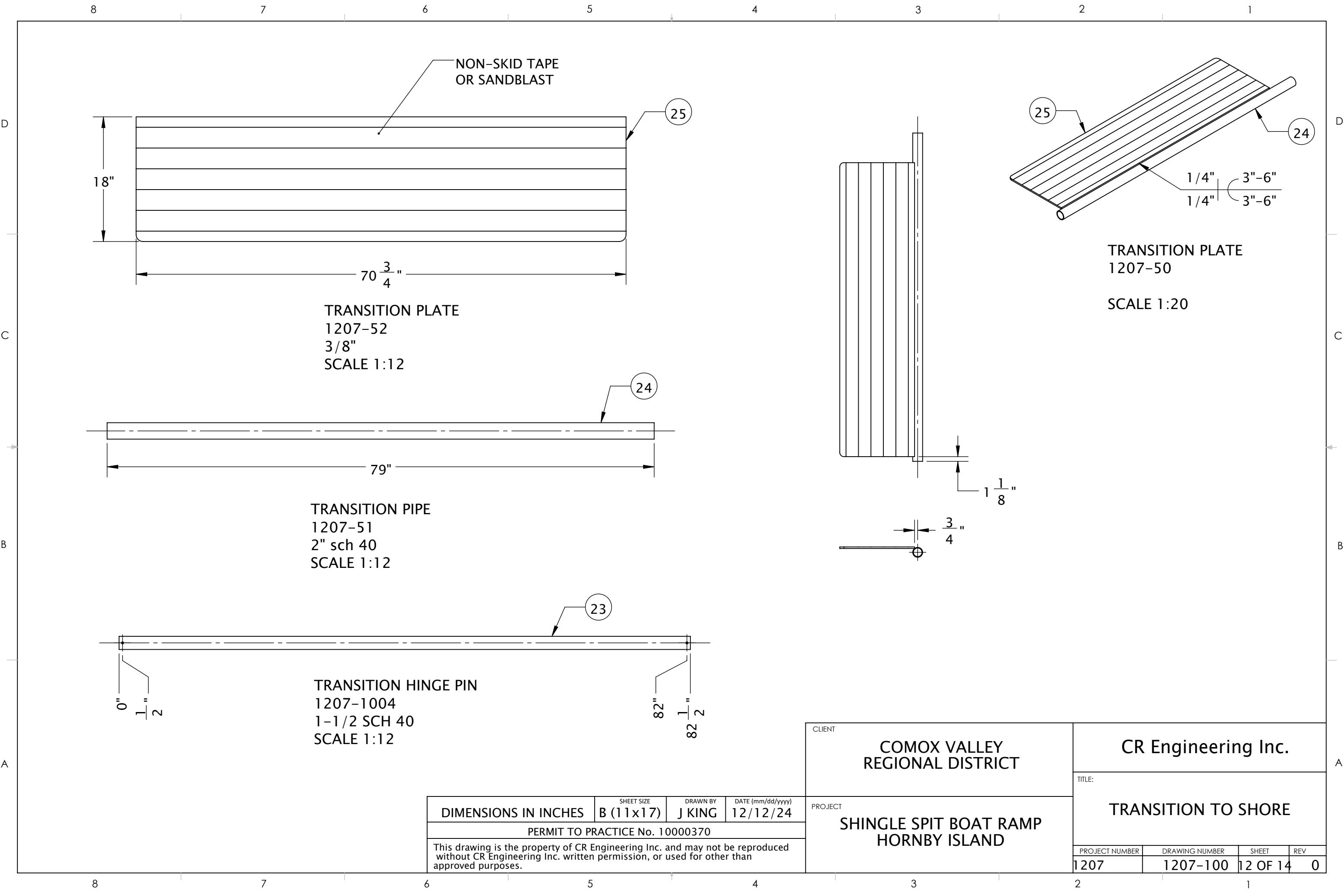




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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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|         |                                         |
|---------|-----------------------------------------|
| CLIENT  | COMOX VALLEY<br>REGIONAL DISTRICT       |
| PROJECT | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |

|                        |                            |                   |          |
|------------------------|----------------------------|-------------------|----------|
| CR Engineering Inc.    |                            |                   |          |
| TITLE:<br><br>HINGE    |                            |                   |          |
| PROJECT NUMBER<br>1207 | DRAWING NUMBER<br>1207-100 | SHEET<br>11 OF 14 | REV<br>0 |

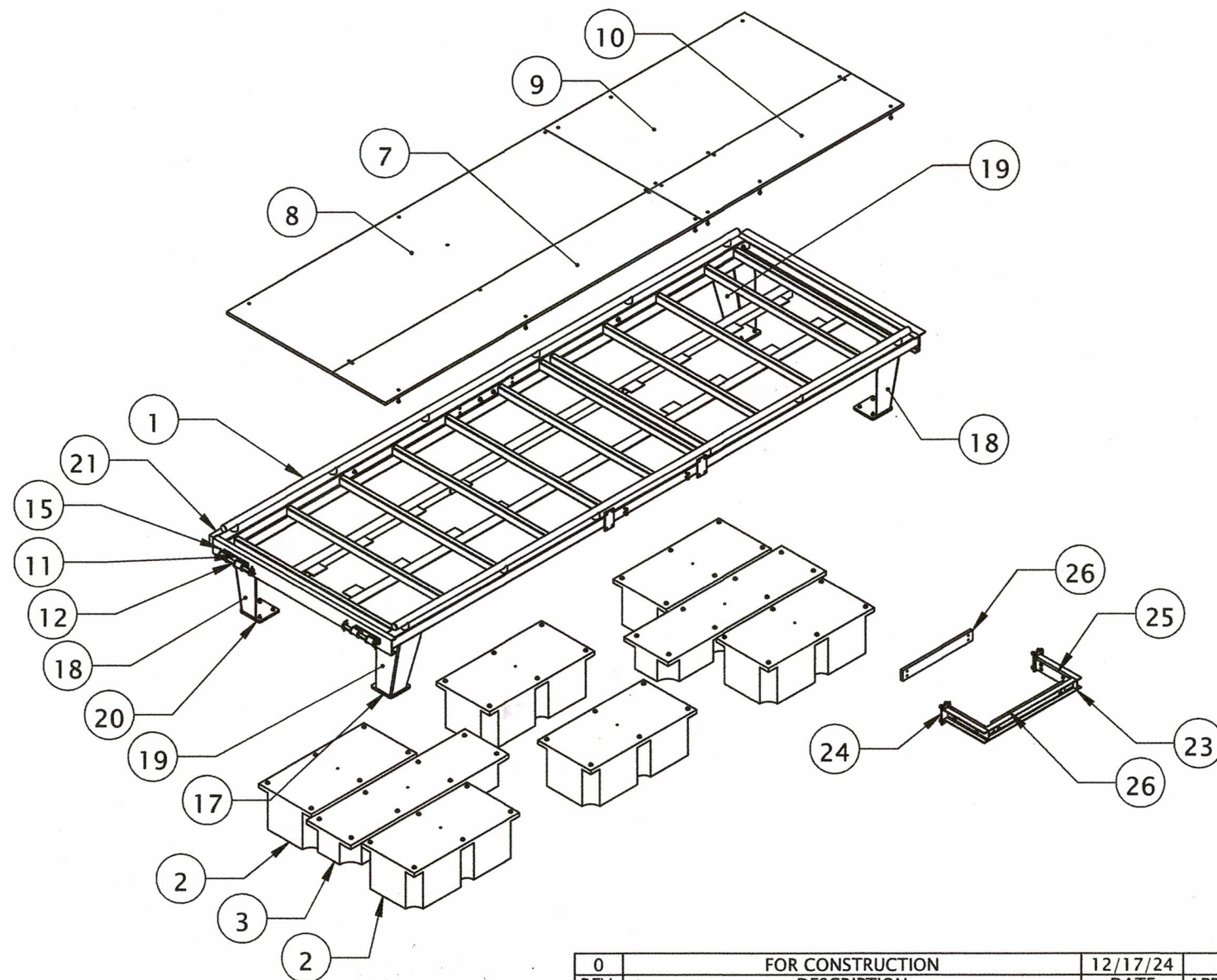


|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|----------|--|-------------|--|-----|---------------------------------------|---|--|------|---------------|---------|----------|---------------|-----|---|--|
| 8        |  | 7           |  | 6   |                                       | 5 |  | 4    |               | 3       |          | 2             |     | 1 |  |
| ITEM NO. |  | PART NUMBER |  | REV | DESCRIPTION                           |   |  | QTY. | MATERIAL      | WIDTH   | LENGTH   | THICKNESS     | LBS |   |  |
| 1        |  | 1207-115    |  | 0   | BARR FLOAT 24" x 48" x 16"            |   |  | 6    |               | 24"     | 48"      | 16"           | 39  |   |  |
| 2        |  | 1207-142    |  | 0   | BARR FLOAT 20" x 72" x 10"            |   |  | 2    |               | 20"     | 72"      | 10"           | 34  |   |  |
| 3        |  | 1207-126    |  | 0   | HINGE PIPE                            |   |  | 4    | 6061-T6       |         | 3"       | 1-1/2" SCH 80 | 0   |   |  |
| 4        |  | 1207-101    |  | 0   | FLOAT FRAME SHORE                     |   |  | 1    | 6061-T6       | 81 1/4" | 240 1/2" |               | 539 |   |  |
| 5        |  | 1207-102    |  | 0   | FLOAT CONNECTOR PLATE                 |   |  | 1    | 5052-H32      | 6"      | 19"      | 1/2"          | 5   |   |  |
| 6        |  | 1207-111    |  | 0   | MICROMESH ONE                         |   |  | 1    | FIBERGLASS    | 48 1/4" | 144 1/4" | 1"            | 140 |   |  |
| 7        |  | 1207-112    |  | 0   | MICROMESH TWO                         |   |  | 1    | FIBERGLASS    | 23 7/8" | 144 1/4" | 1"            | 69  |   |  |
| 8        |  | 1207-113    |  | 0   | MICROMESH THREE                       |   |  | 1    | FIBERGLASS    | 48 1/4" | 91 3/4"  | 1"            | 89  |   |  |
| 9        |  | 1207-114    |  | 0   | MICROMESH FOUR                        |   |  | 1    | FIBERGLASS    | 23 3/4" | 91 3/4"  | 1"            | 44  |   |  |
| 10       |  | 1207-121    |  | 0   | HINGE BACKING PLATE                   |   |  | 2    | 5052-H32      | 2"      | 11"      | 3/8"          | 1   |   |  |
| 11       |  | 1207-105    |  | 0   | HINGE LUG                             |   |  | 2    | 5052-H32      |         | 6 1/4"   | 1/2"          | 1   |   |  |
| 12       |  | 1207-106    |  | 0   | HINGE SUPPORT                         |   |  | 4    | 5052-H32      | 3 1/2"  | 2"       | 1/4"          | 0   |   |  |
| 13       |  | 1207-123    |  | 0   | HINGE PIN                             |   |  | 2    | 316L          |         | 15 1/4"  | 1" DIA        | 3   |   |  |
| 14       |  | 1207-127    |  | 0   | HINGE BUSHING 1.06" x 1-1/2" x 1-1/2" |   |  | 4    | UHMW          |         |          | UHMW          |     |   |  |
| 15       |  | 1207-128    |  | 0   | HINGE SPACER                          |   |  | 4    | 5052-H32      | 2 3/4"  | 1"       | 1/2"          | 0   |   |  |
| 16       |  | 1207-129    |  | 0   | KEEPER PIN                            |   |  | 6    | 304 SS        |         | 5        | 1/4"          |     |   |  |
| 17       |  | 1207-117    |  | 0   | LEG FOOT                              |   |  | 4    | 5052-H32      | 9"      | 9"       | 1/4"          | 2   |   |  |
| 18       |  | 1207-119    |  | 0   | LEG LEFT                              |   |  | 2    | 5052-H32      |         | 26 9/16" | 1/4"          | 10  |   |  |
| 19       |  | 1207-118    |  | 0   | LEG RIGHT                             |   |  | 2    | 5052-H32      |         | 26 1/2"  | 3/16"         | 8   |   |  |
| 20       |  | 1207-116    |  | 0   | LEG WEAR PAD                          |   |  | 4    | UHMW          | 9"      | 9"       | 1/2"          | 1   |   |  |
| 21       |  | 1207-108    |  | 0   | RAMP CONNECTOR PLATE                  |   |  | 1    | 5052-H32      | 7"      | 20"      | 1/2"          | 5   |   |  |
| 22       |  | 1207-104    |  | 0   | RUB BOARD                             |   |  | 2    | ROUGH CUT FIR | 4"      | 120"     | 2"            | 18  |   |  |
| 23       |  | 1207-1004   |  | 0   | TRANSITION HINGE PIN                  |   |  | 1    | 304L          |         |          | 1-1/2 SCH 40  | 19  |   |  |
| 24       |  | 1207-51     |  | 0   | TRANSITION PIPE                       |   |  | 1    | 6061-T6       |         |          | 2" sch 40     | 8   |   |  |
| 25       |  | 1207-52     |  | 0   | TRANSITION PLATE                      |   |  | 1    | 5052-H32      | 18"     | 70 3/4"  | 3/8"          | 46  |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
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|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
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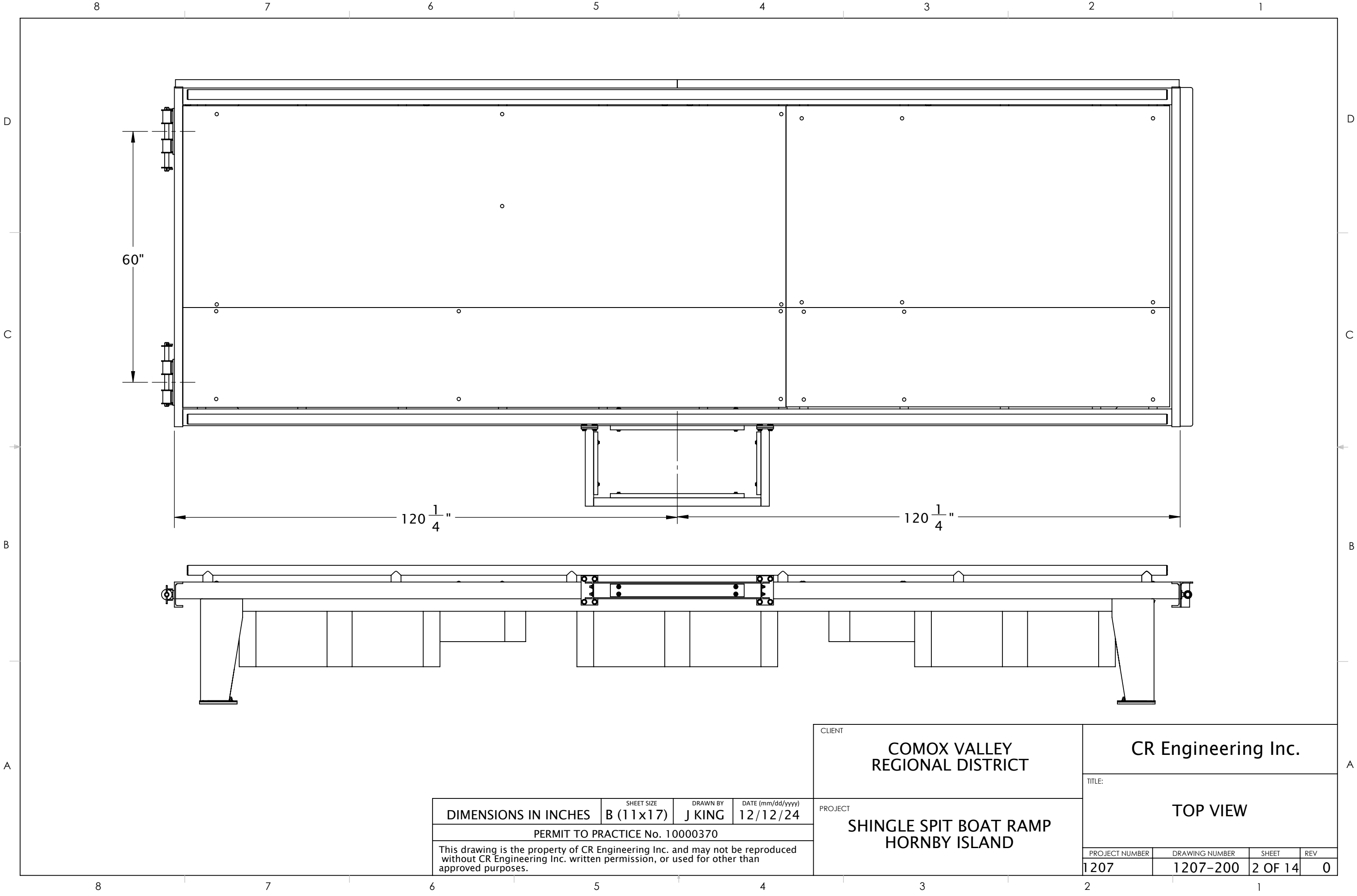
## NOTES

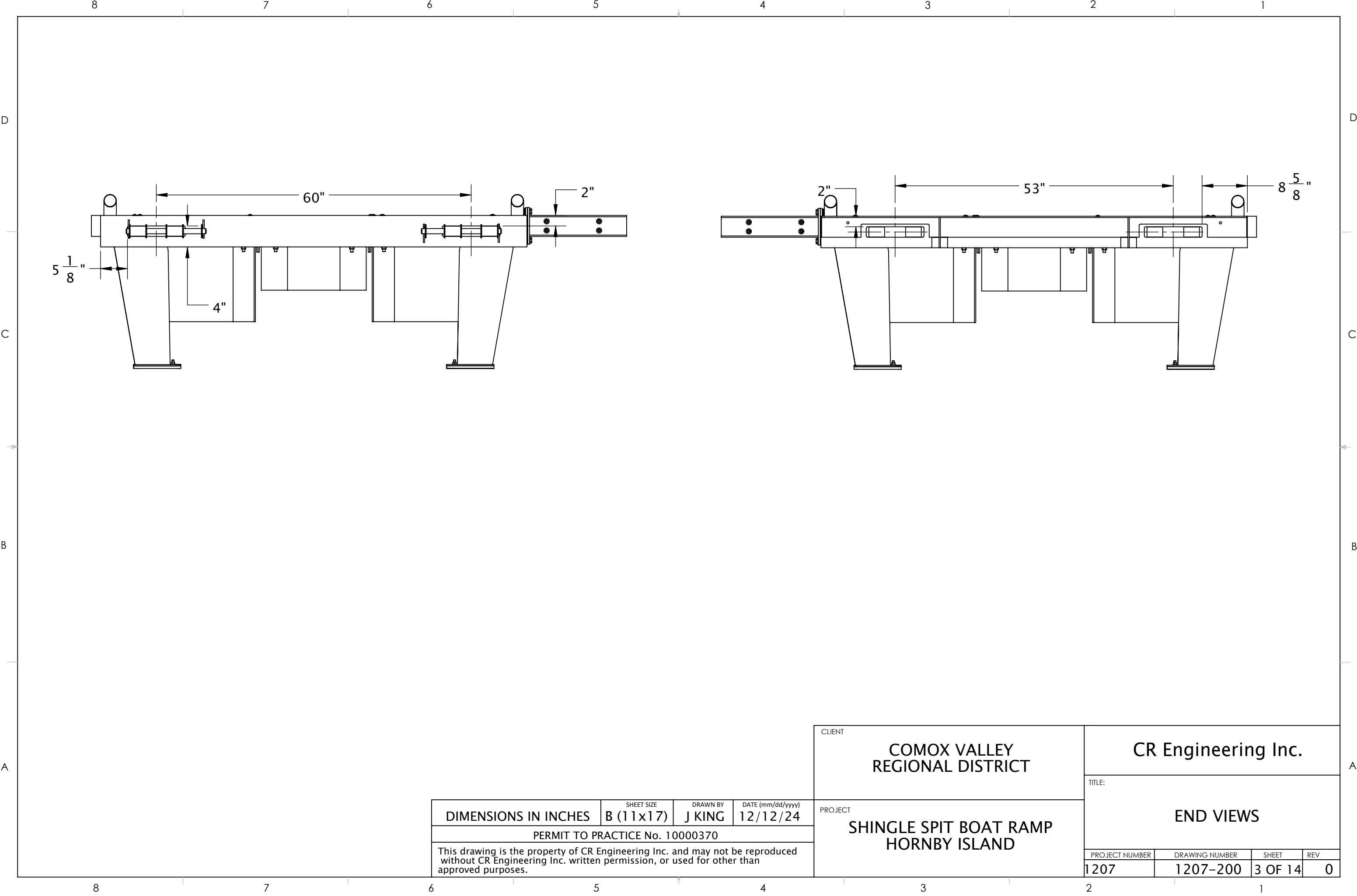
1. DESIGN TO OREGON BOAT LAUNCH FACILITIES 2011  
CSA S157-2022 STRENGTH DESIGN IN ALUMINUM
2. DESIGN LOADS:  
LIVE LOAD 1.0 kPa (21 psf), POINT LOAD 1.8 kN (400 lbs)  
WAVE LOAD 0.2 kN/m (14 plf)
3. MATERIALS SHAPES: 6061-T6, PLATE 5052-H32
4. GRATING: FRP MINIMESH 1" THICK, FASTEN WITH SIX CARRIAGE BOLTS PER PANEL
5. WELDING TO CONFORM TO CSA W59.2 WELDED ALUMINUM
6. WELDS 1/4" FILLET AND FLARE GROOVE UNO, FILLER 5356



|                                                                                                                                                                         |                  |                   |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|----------|
| 0                                                                                                                                                                       | FOR CONSTRUCTION | 12/17/24          | JK       |
| REV.                                                                                                                                                                    | DESCRIPTION      | DATE              | APPROVED |
| REVISIONS                                                                                                                                                               |                  |                   |          |
| DIMENSIONS IN INCHES                                                                                                                                                    |                  | SHEET SIZE        | DRAWN BY |
|                                                                                                                                                                         |                  | B (11x17)         | J KING   |
|                                                                                                                                                                         |                  | DATE (mm/dd/yyyy) | 12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                  |                   |          |
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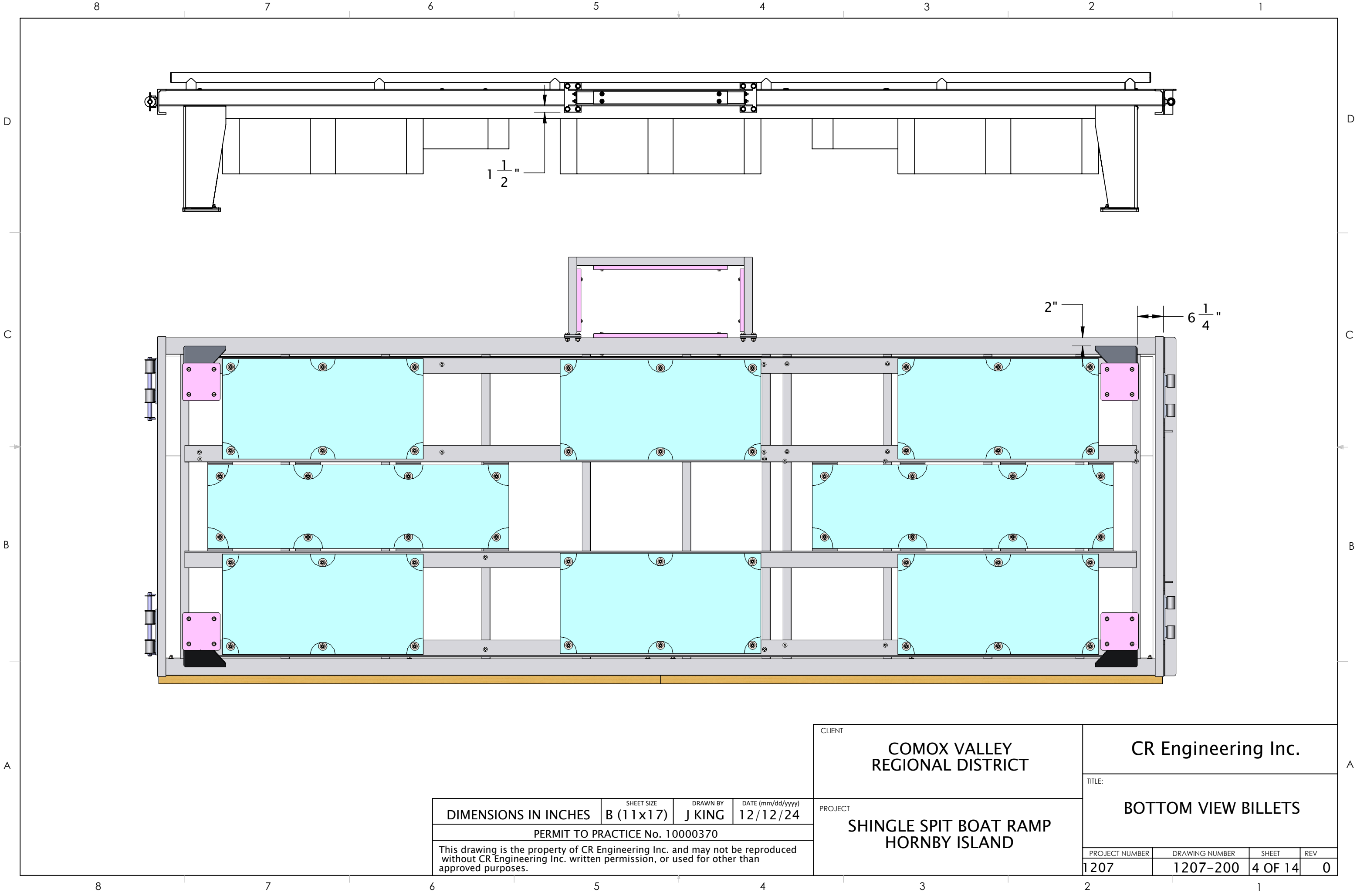
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| CLIENT         |                | COMOX VALLEY<br>REGIONAL DISTRICT       |     | CR Engineering Inc.                              |  |
| PROJECT        |                | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |     | TITLE:<br>GENERAL ARRANGEMENT<br>FLOAT WITH PILE |  |
| PROJECT NUMBER | DRAWING NUMBER | SHEET                                   | REV |                                                  |  |
| 1207           | 1207-200       | 1 OF 14                                 | 0   |                                                  |  |





|                                                                                                                                                                         |                         |                    |                               |
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| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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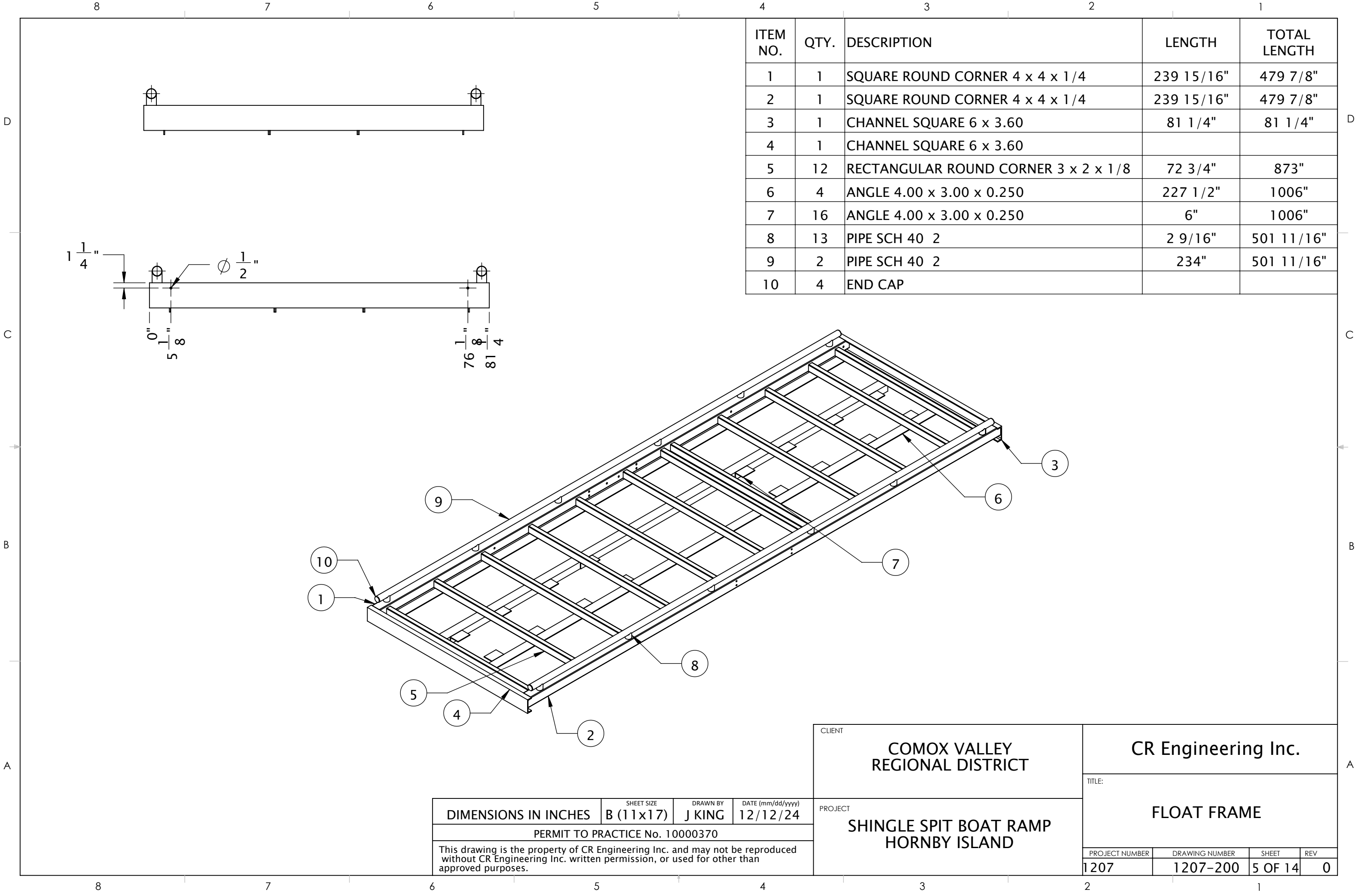
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| CLIENT         | COMOX VALLEY<br>REGIONAL DISTRICT       |                |  | CR Engineering Inc.     |     |
| PROJECT        | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                |  | TITLE:<br><br>END VIEWS |     |
| PROJECT NUMBER |                                         | DRAWING NUMBER |  | SHEET                   | REV |
| 1207           |                                         | 1207-200       |  | 3 OF 14                 | 0   |



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| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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| CLIENT  | COMOX VALLEY<br>REGIONAL DISTRICT       |
| PROJECT | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |

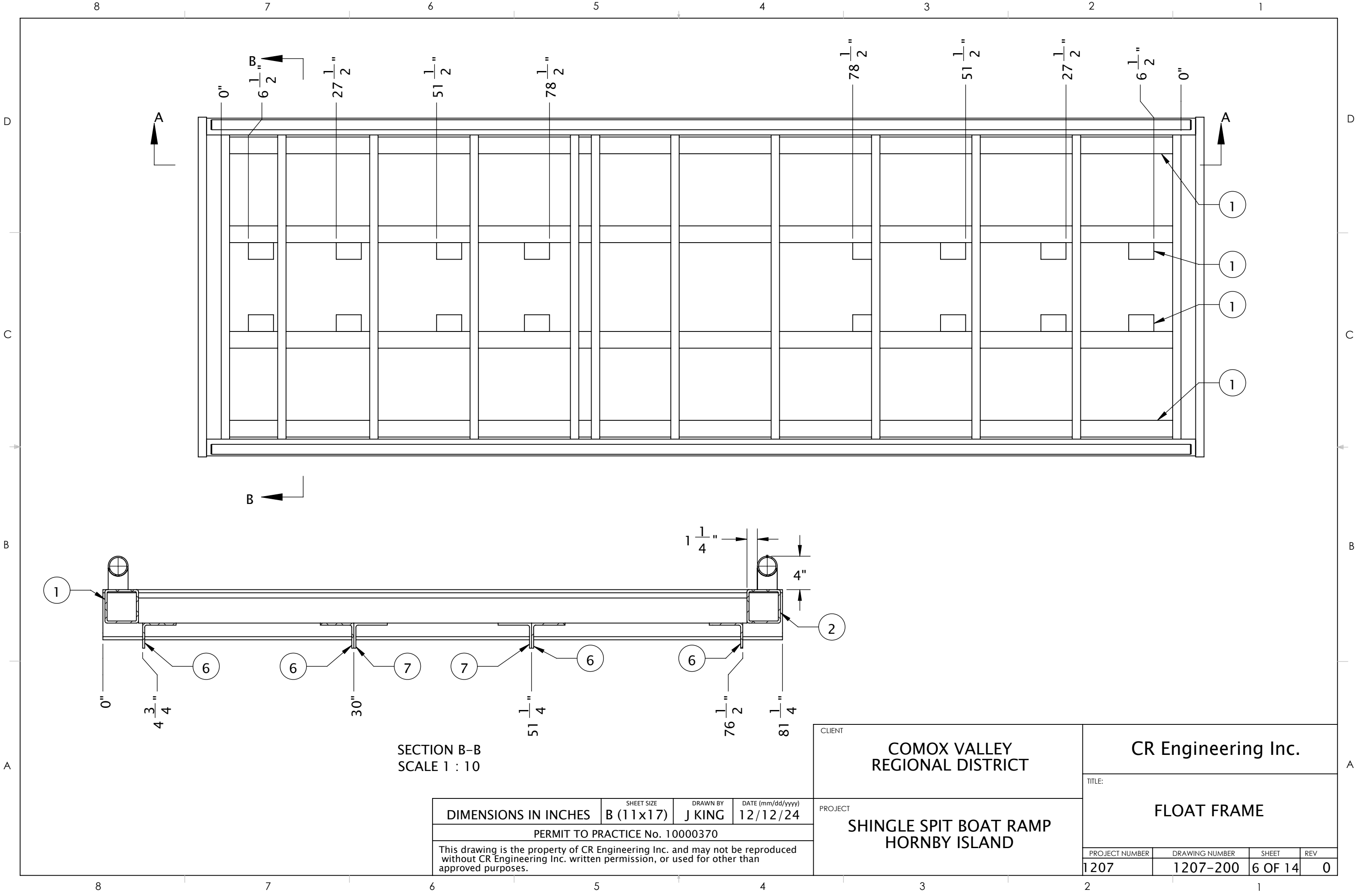
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| CR Engineering Inc.           |                |         |     |
| TITLE:<br>BOTTOM VIEW BILLETS |                |         |     |
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| 1207                          | 1207-200       | 4 OF 14 | 0   |

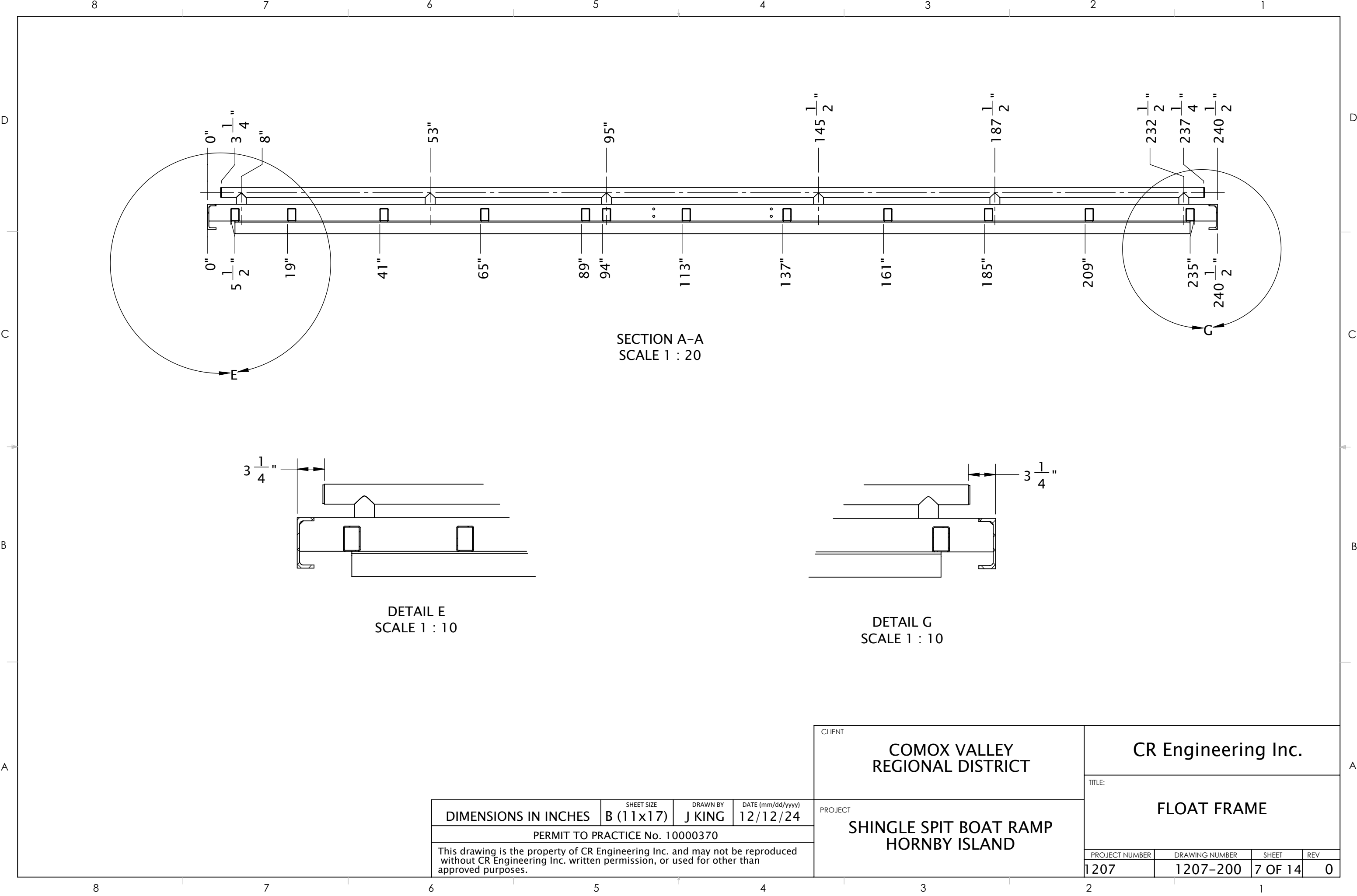


| ITEM NO. | QTY. | DESCRIPTION                          | LENGTH     | TOTAL LENGTH |
|----------|------|--------------------------------------|------------|--------------|
| 1        | 1    | SQUARE ROUND CORNER 4 x 4 x 1/4      | 239 15/16" | 479 7/8"     |
| 2        | 1    | SQUARE ROUND CORNER 4 x 4 x 1/4      | 239 15/16" | 479 7/8"     |
| 3        | 1    | CHANNEL SQUARE 6 x 3.60              | 81 1/4"    | 81 1/4"      |
| 4        | 1    | CHANNEL SQUARE 6 x 3.60              |            |              |
| 5        | 12   | RECTANGULAR ROUND CORNER 3 x 2 x 1/8 | 72 3/4"    | 873"         |
| 6        | 4    | ANGLE 4.00 x 3.00 x 0.250            | 227 1/2"   | 1006"        |
| 7        | 16   | ANGLE 4.00 x 3.00 x 0.250            | 6"         | 1006"        |
| 8        | 13   | PIPE SCH 40 2                        | 2 9/16"    | 501 11/16"   |
| 9        | 2    | PIPE SCH 40 2                        | 234"       | 501 11/16"   |
| 10       | 4    | END CAP                              |            |              |

|                                                                                                                                                                         |                         |                    |                               |
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| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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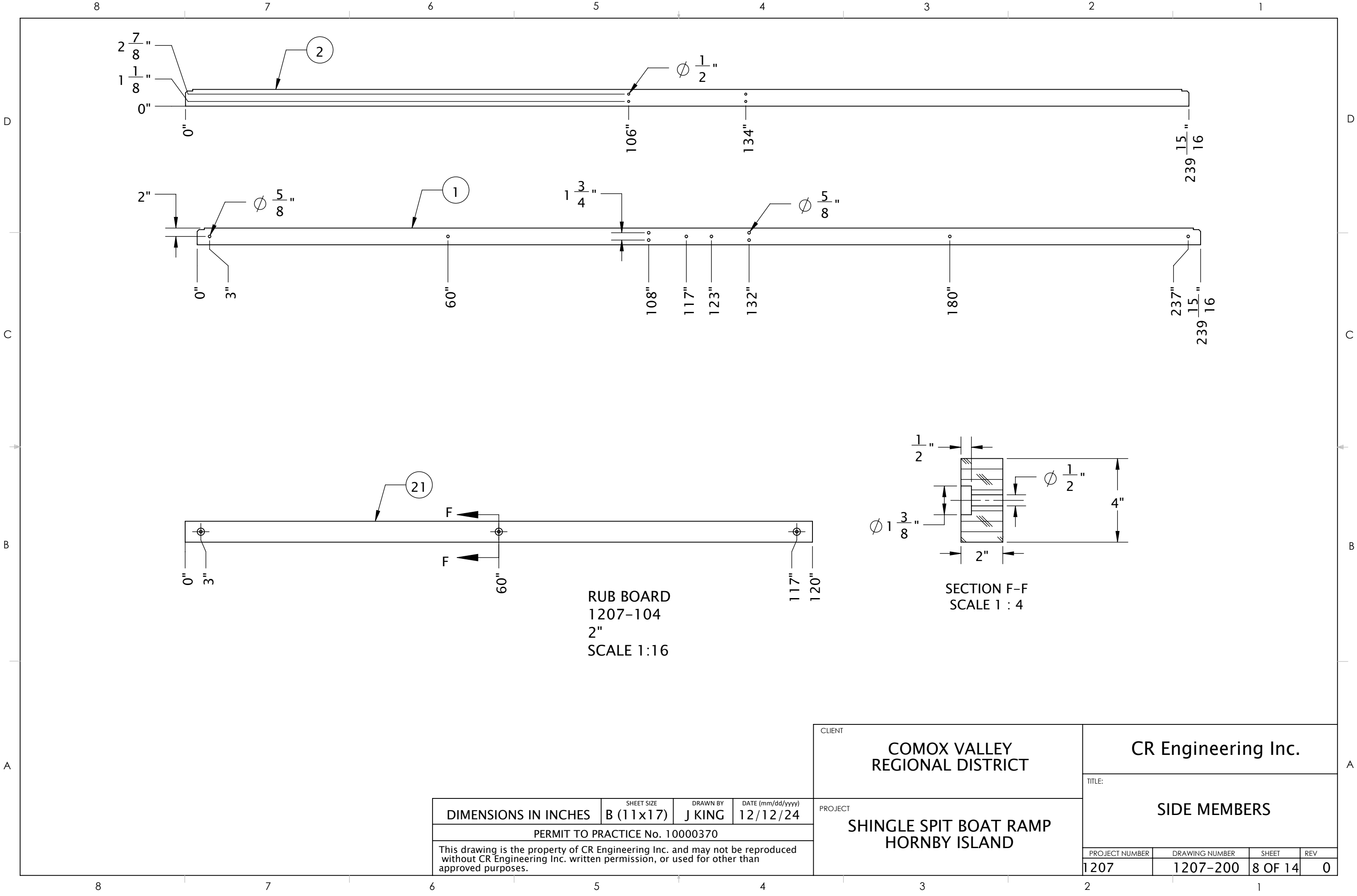
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| CLIENT<br><br>COMOX VALLEY<br>REGIONAL DISTRICT        |                            | CR Engineering Inc.       |          |
| PROJECT<br><br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                            | TITLE:<br><br>FLOAT FRAME |          |
| PROJECT NUMBER<br>1207                                 | DRAWING NUMBER<br>1207-200 | SHEET<br>5 OF 14          | REV<br>0 |





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| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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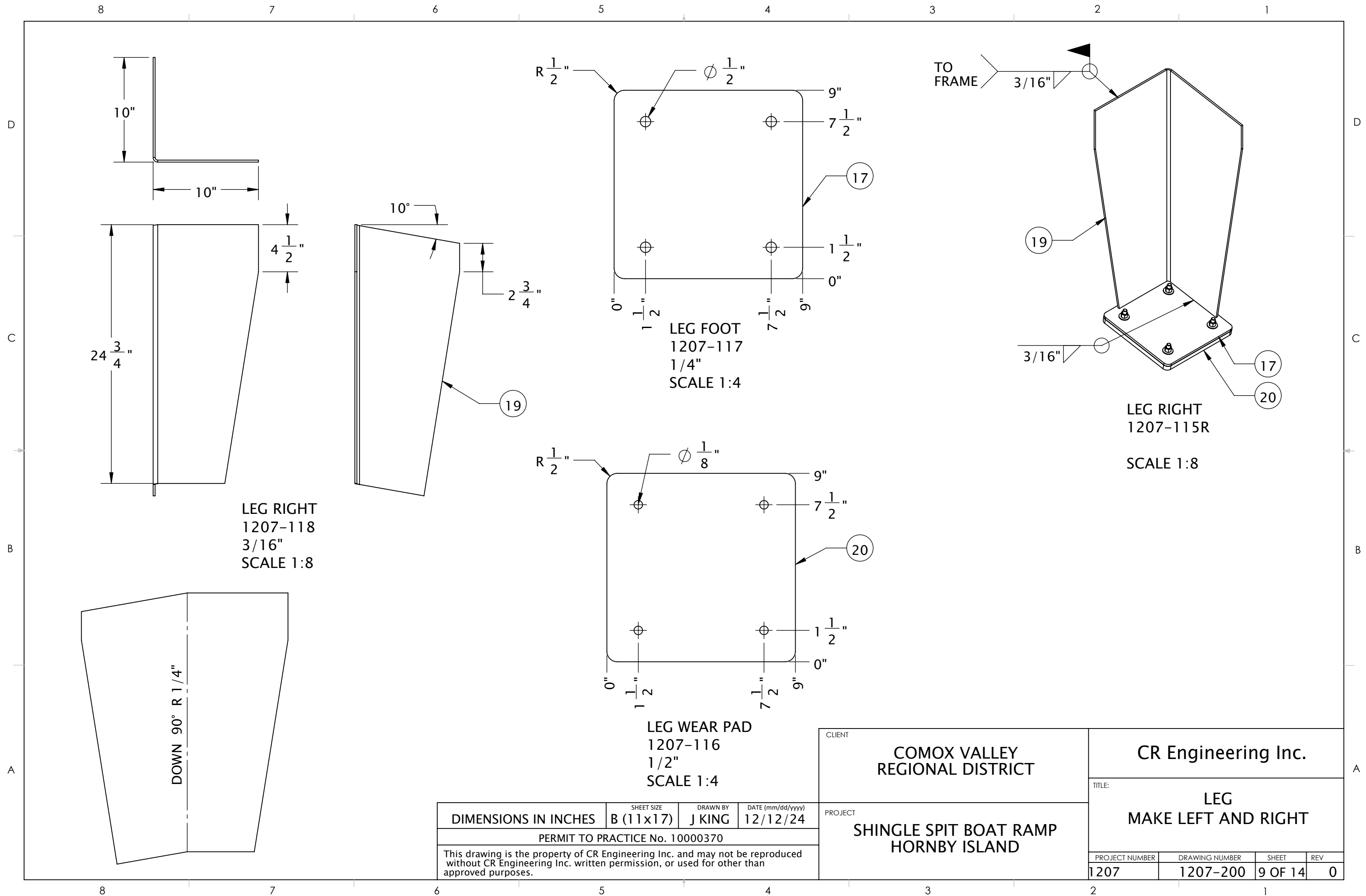
|                |                                   |                                         |                           |         |     |  |
|----------------|-----------------------------------|-----------------------------------------|---------------------------|---------|-----|--|
| CLIENT         | COMOX VALLEY<br>REGIONAL DISTRICT |                                         | CR Engineering Inc.       |         |     |  |
|                | PROJECT                           | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND | TITLE:<br><br>FLOAT FRAME |         |     |  |
| PROJECT NUMBER |                                   |                                         | DRAWING NUMBER            | SHEET   | REV |  |
| 1207           |                                   |                                         | 1207-200                  | 7 OF 14 | 0   |  |

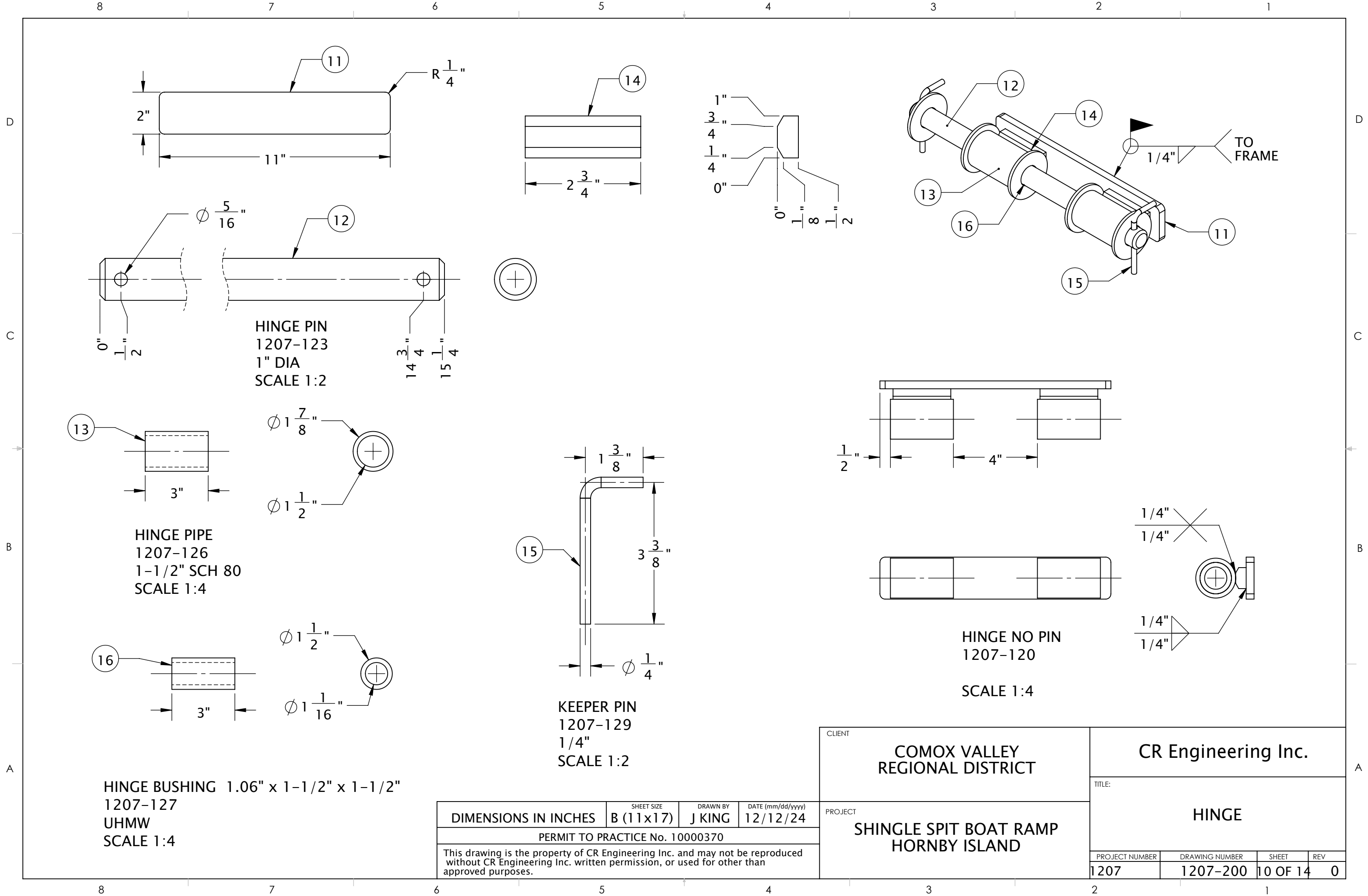


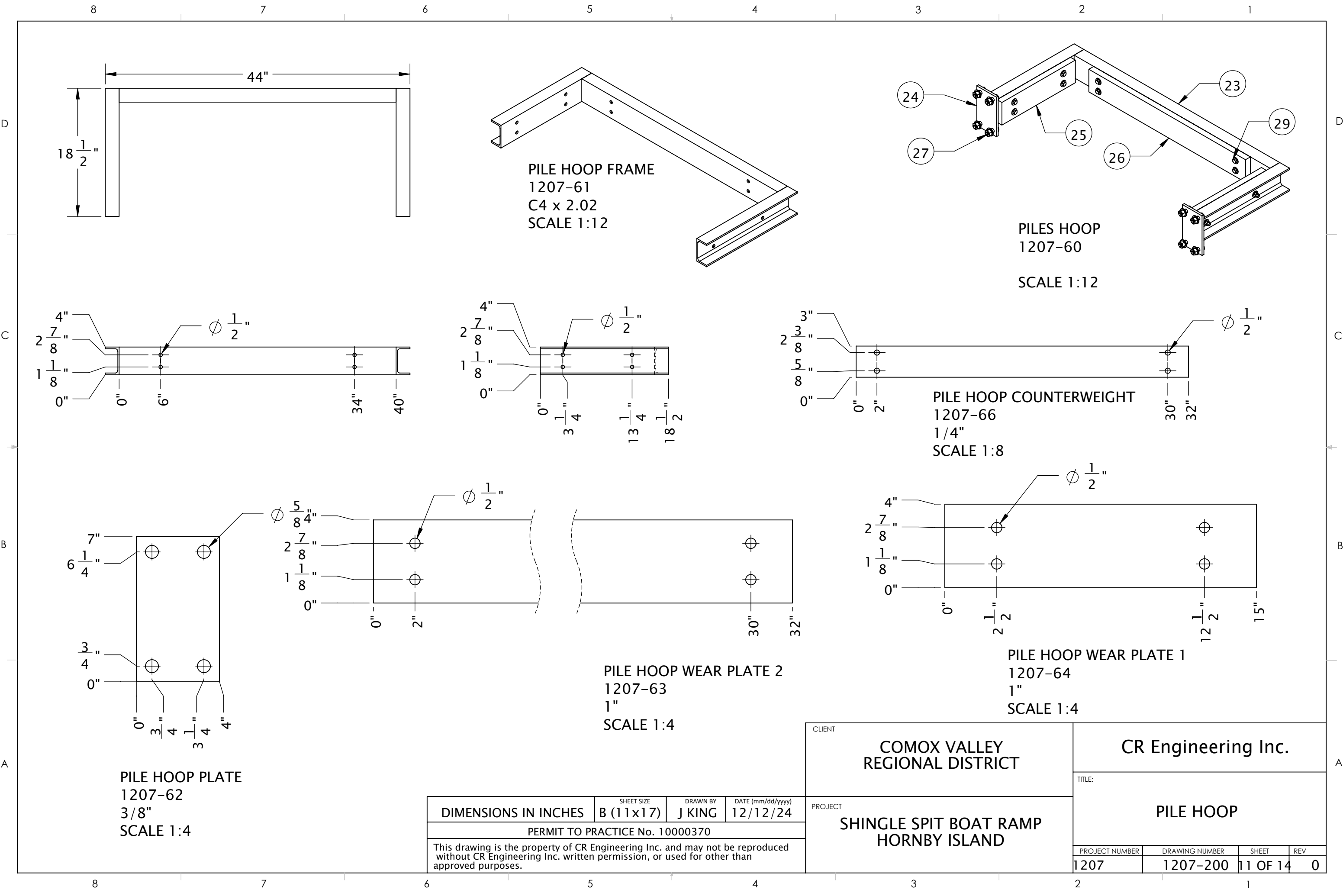
RUB BOARD  
1207-104  
2"  
SCALE 1:16

|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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|                                                            |                                   |                               |                 |
|------------------------------------------------------------|-----------------------------------|-------------------------------|-----------------|
| CLIENT<br><b>COMOX VALLEY<br/>REGIONAL DISTRICT</b>        |                                   | CR Engineering Inc.           |                 |
| PROJECT<br><b>SHINGLE SPIT BOAT RAMP<br/>HORNBY ISLAND</b> |                                   | TITLE:<br><b>SIDE MEMBERS</b> |                 |
| PROJECT NUMBER<br><b>1207</b>                              | DRAWING NUMBER<br><b>1207-200</b> | SHEET<br><b>8 OF 14</b>       | REV<br><b>0</b> |

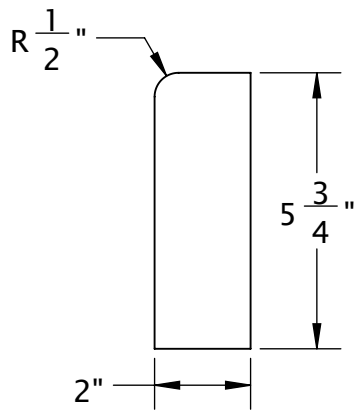




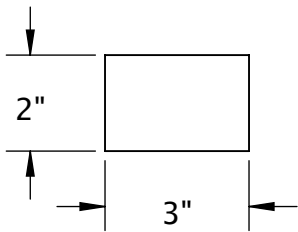


|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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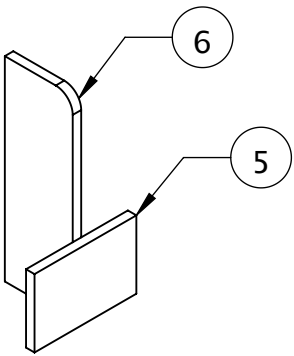
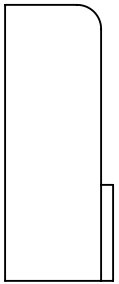
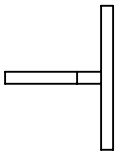
|                |                                                    |                |  |                         |     |  |  |
|----------------|----------------------------------------------------|----------------|--|-------------------------|-----|--|--|
| CLIENT         | COMOX VALLEY<br>REGIONAL DISTRICT                  |                |  | CR Engineering Inc.     |     |  |  |
|                | PROJECT<br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                |  | TITLE:<br><br>PILE HOOP |     |  |  |
| PROJECT NUMBER |                                                    | DRAWING NUMBER |  | SHEET                   | REV |  |  |
| 1207           |                                                    | 1207-200       |  | 11 OF 14                | 0   |  |  |



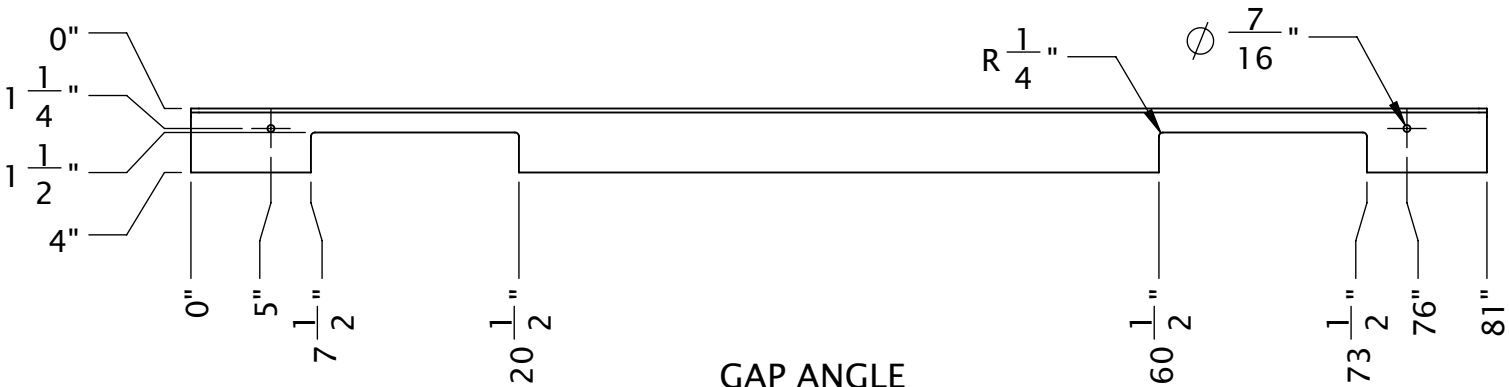
GAP ANGLE SUPPORT  
1207-23  
1/4"  
SCALE 1:4



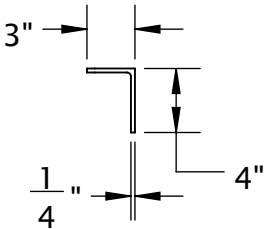
GAP ANGLE SUPPORT BASE  
1207-24  
1/4"  
SCALE 1:4



GAP ANGLE SUPPORT  
1207-25  
  
SCALE 1:4



GAP ANGLE  
1207-139  
L4x3 x 1/4  
SCALE 1:12



|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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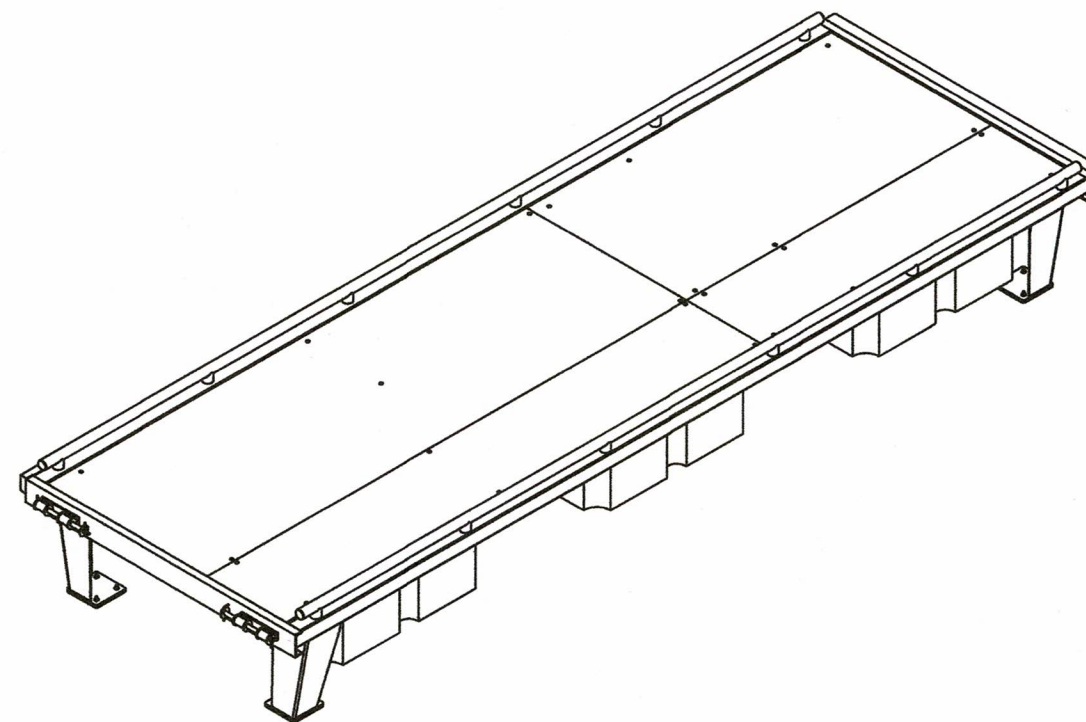
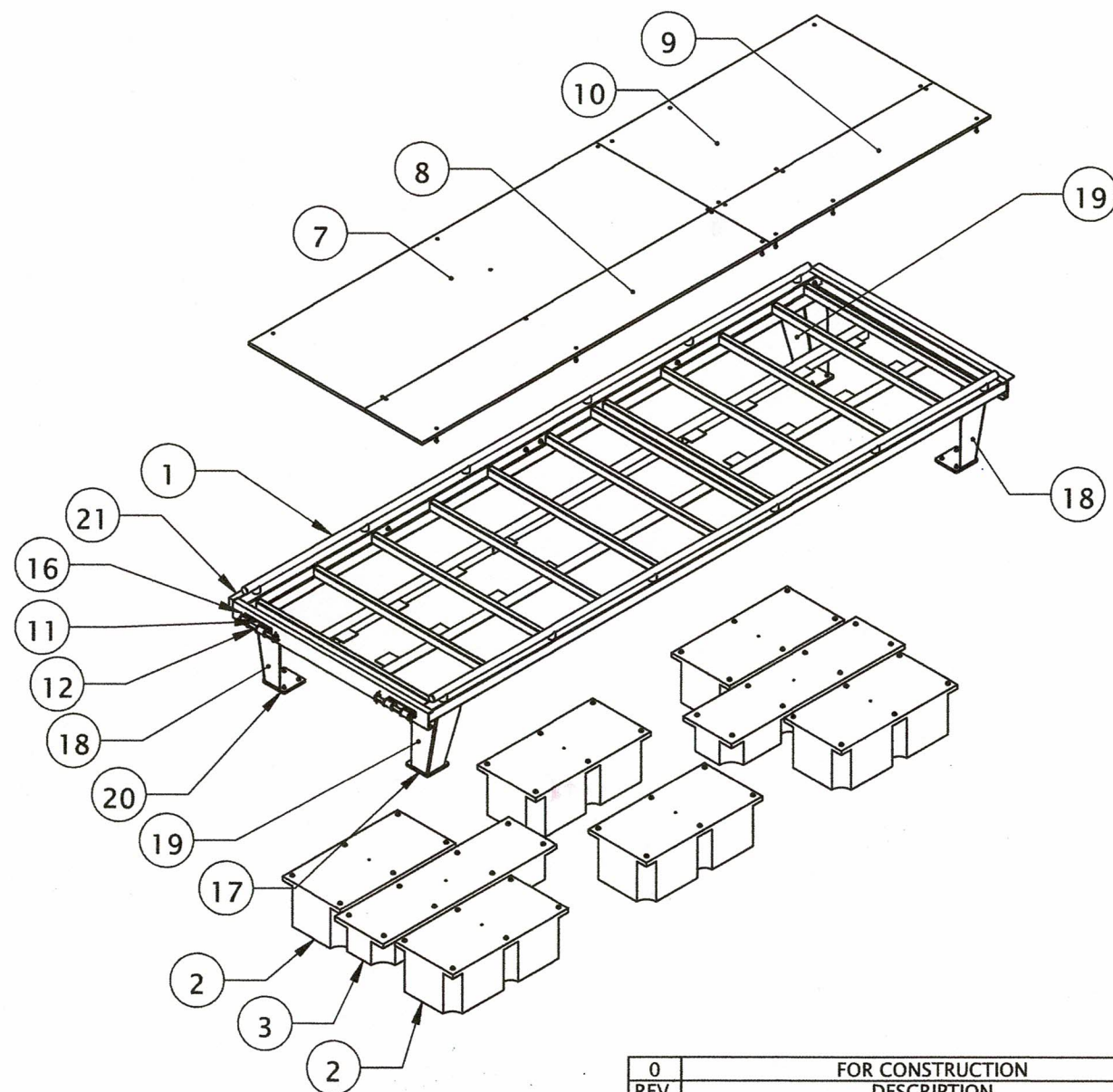
|                                                        |                            |                         |          |
|--------------------------------------------------------|----------------------------|-------------------------|----------|
| CLIENT<br><br>COMOX VALLEY<br>REGIONAL DISTRICT        |                            | CR Engineering Inc.     |          |
| PROJECT<br><br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                            | TITLE:<br><br>GAP ANGLE |          |
| PROJECT NUMBER<br>1207                                 | DRAWING NUMBER<br>1207-200 | SHEET<br>12 OF 14       | REV<br>0 |

|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|----------|--|-------------|--|-----|---------------------------------------|---|--|------|---------------|---------|----------|---------------|-----|---|--|
| 8        |  | 7           |  | 6   |                                       | 5 |  | 4    |               | 3       |          | 2             |     | 1 |  |
| ITEM NO. |  | PART NUMBER |  | REV | DESCRIPTION                           |   |  | QTY. | MATERIAL      | WIDTH   | LENGTH   | THICKNESS     | LBS |   |  |
| 1        |  | 1207-101    |  | 0   | FLOAT FRAME WITH PILE                 |   |  | 1    | 6061-T6       | 81"     | 240 1/2" |               | 539 |   |  |
| 2        |  | 1207-115    |  | 0   | BARR FLOAT 24" x 48" x 16"            |   |  | 6    |               | 24"     | 48"      | 16"           | 39  |   |  |
| 3        |  | 1207-142    |  | 0   | BARR FLOAT 20" x 72" x 10"            |   |  | 2    |               | 20"     | 72"      | 10"           | 34  |   |  |
| 4        |  | 1207-139    |  | 0   | GAP ANGLE                             |   |  | 1    | 6061-T6       |         | 81"      | L4x3 x 1/4    | 12  |   |  |
| 5        |  | 1207-24     |  | 0   | GAP ANGLE SUPPORT BASE                |   |  | 2    | 6061-T6       | 2"      | 3"       | 1/4"          | 0   |   |  |
| 6        |  | 1207-23     |  | 0   | GAP ANGLE SUPPORT                     |   |  | 2    | 6061-T6       | 2"      | 5 3/4"   | 1/4"          | 0   |   |  |
| 7        |  | 1207-112    |  | 0   | MICROMESH TWO                         |   |  | 1    | FIBERGLASS    | 23 7/8" | 144 1/4" | 1"            | 69  |   |  |
| 8        |  | 1207-111    |  | 0   | MICROMESH ONE                         |   |  | 1    | FIBERGLASS    | 48 1/4" | 144 1/4" | 1"            | 140 |   |  |
| 9        |  | 1207-113    |  | 0   | MICROMESH THREE                       |   |  | 1    | FIBERGLASS    | 48 1/4" | 91 3/4"  | 1"            | 89  |   |  |
| 10       |  | 1207-114    |  | 0   | MICROMESH FOUR                        |   |  | 1    | FIBERGLASS    | 23 3/4" | 91 3/4"  | 1"            | 44  |   |  |
| 11       |  | 1207-121    |  | 0   | HINGE BACKING PLATE                   |   |  | 4    | 5052-H32      | 2"      | 11"      | 3/8"          | 1   |   |  |
| 12       |  | 1207-123    |  | 0   | HINGE PIN                             |   |  | 2    | 316L          |         | 15 1/4"  | 1" DIA        | 3   |   |  |
| 13       |  | 1207-126    |  | 0   | HINGE PIPE                            |   |  | 8    | 6061-T6       |         | 3"       | 1-1/2" SCH 80 | 0   |   |  |
| 14       |  | 1207-128    |  | 0   | HINGE SPACER                          |   |  | 8    | 5052-H32      | 2 3/4"  | 1"       | 1/2"          | 0   |   |  |
| 15       |  | 1207-129    |  | 0   | KEEPER PIN                            |   |  | 4    | 304 SS        |         | 5        | 1/4"          |     |   |  |
| 16       |  | 1207-127    |  | 0   | HINGE BUSHING 1.06" x 1-1/2" x 1-1/2" |   |  | 8    | UHMW          |         |          | UHMW          |     |   |  |
| 17       |  | 1207-117    |  | 0   | LEG FOOT                              |   |  | 4    | 5052-H32      | 9"      | 9"       | 1/4"          | 2   |   |  |
| 18       |  | 1207-119    |  | 0   | LEG LEFT                              |   |  | 2    | 5052-H32      |         | 26 9/16" | 1/4"          | 10  |   |  |
| 19       |  | 1207-118    |  | 0   | LEG RIGHT                             |   |  | 2    | 5052-H32      |         | 26 1/2"  | 3/16"         | 8   |   |  |
| 20       |  | 1207-116    |  | 0   | LEG WEAR PAD                          |   |  | 4    | UHMW          | 9"      | 9"       | 1/2"          | 1   |   |  |
| 21       |  | 1207-104    |  | 0   | RUB BOARD                             |   |  | 2    | ROUGH CUT FIR | 4"      | 120"     | 2"            | 18  |   |  |
| 22       |  | 1207-66     |  | 0   | PILE HOOP COUNTERWEIGHT               |   |  | 1    | 304L          | 3"      | 32"      | 1/4"          | 7   |   |  |
| 23       |  | 1207-61     |  | 0   | PILE HOOP FRAME                       |   |  | 1    | 6061-T6       |         |          | C4 x 2.02     | 13  |   |  |
| 24       |  | 1207-62     |  | 0   | PILE HOOP PLATE                       |   |  | 4    | 6061-T6       | 4"      | 7"       | 3/8"          | 1   |   |  |
| 25       |  | 1207-64     |  | 0   | PILE HOOP WEAR PLATE 1                |   |  | 2    | BLACK UHMW    | 4"      | 15"      | 1"            | 2   |   |  |
| 26       |  | 1207-63     |  | 0   | PILE HOOP WEAR PLATE 2                |   |  | 2    | BLACK UHMW    | 4"      | 32"      | 1"            | 4   |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |                                 |     |                                 |                                                                 |            |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------|-----|---------------------------------|-----------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------|-----|---|
| D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ITEM NO. | PART NUMBER                     | REV | DESCRIPTION                     | QTY.                                                            | MATERIAL   | WIDTH                                                                                                                                                                                                                                                                                  | LENGTH | THICKNESS | LBS | D |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 27       | HHSBOLT 0.5000-13x1.75x1-N      |     | BOLT A307 1/2" x 1-3/4"         | 8                                                               | GALVANIZED |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 28       | HHNUT 0.5000-13-D-N             |     | NUT A307 1/2"                   | 8                                                               | GALVANIZED |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 29       | HBOLT 0.3750-16x2x1-N           |     | BOLT 3/8" x 2"                  | 12                                                              | GALVANIZED |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30       | HBOLT 0.3750-16x6x1-N           |     | BOLT 3/8" x 6"                  | 4                                                               | GALVANIZED |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 31       | HBOLT 0.5000-13x3x1.25-N        |     | BOLT 1/2" x 3"                  | 52                                                              | GALVANIZED |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 32       | HBOLT 0.5000-13x6.5x1.375-N     |     | BOLT 1/2" x 6-1/2"              | 6                                                               | GALVANIZED |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 33       | HNUT 0.3750-16-D-N              |     | NUT 3/8"                        | 16                                                              | GALVANIZED |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 34       | HNUT 0.5000-13-D-N              |     | NUT 1/2"                        | 58                                                              | GALVANIZED |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 35       | SCHCSCREW 0.375-16x1.5x1.5-HX-N |     | COUNTERSUNK SCREW 3/8" x 1-1/2" | 16                                                              | 304 SS     |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 36       | Regular FW 0.375                |     | FLAT WASHER 3/8"                | 72                                                              | 304 SS     |                                                                                                                                                                                                                                                                                        |        |           |     |   |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 37       | Regular FW 0.5                  |     | FLAT WASHER 1/2"                | 132                                                             | 304 SS     |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 38       | Regular FW 0.75                 |     | FLAT WASHER 3/4"                | 52                                                              | 304 SS     |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 39       | Regular FW 1                    |     | FLAT WASHER 1"                  | 10                                                              | 304 SS     |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 40       | RHSNBOLT 0.375-16x5x1-N         |     | CARRIAGE BOLT 3/8" x 5"         | 24                                                              | 304 SS     |                                                                                                                                                                                                                                                                                        |        |           |     |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 41       | HTNUT 0.3750-16-D-N             |     | NYLOCK NUT 3/8"                 | 40                                                              | 304 SS     |                                                                                                                                                                                                                                                                                        |        |           |     |   |
| <div>NOTE - BLUE LOCKTITE ON NUTS FOR BILLETS, GRATING AND RUB BOARDS<br/>DO NOT USE LOCK WASHERS</div>                                                                                                                                                                                                                                                                                                                                                                                                |          |                                 |     |                                 |                                                                 |            |                                                                                                                                                                                                                                                                                        |        |           |     |   |
| <div><div><div><div><div></div><div></div><div></div><div></div></div><div><div>DIMENSIONS IN INCHES</div><div>B (11x17)</div></div><div><div>DRAWN BY</div><div>J KING</div></div><div><div>DATE (mm/dd/yyyy)</div><div>12/12/24</div></div></div><div><div>PERMIT TO PRACTICE No. 10000370</div><div>This drawing is the property of CR Engineering Inc. and may not be reproduced without CR Engineering Inc. written permission, or used for other than approved purposes.</div></div></div></div> |          |                                 |     |                                 | <div>CLIENT</div> <div>COMOX VALLEY<br/>REGIONAL DISTRICT</div> |            | <div>CR Engineering Inc.</div> <div>TITLE:</div> <div>BILL OF MATERIALS</div> <div><div><div>PROJECT NUMBER</div><div>1207</div></div><div><div>DRAWING NUMBER</div><div>1207-200</div></div><div><div>SHEET</div><div>14 OF 14</div></div><div><div>REV</div><div>0</div></div></div> |        |           |     |   |

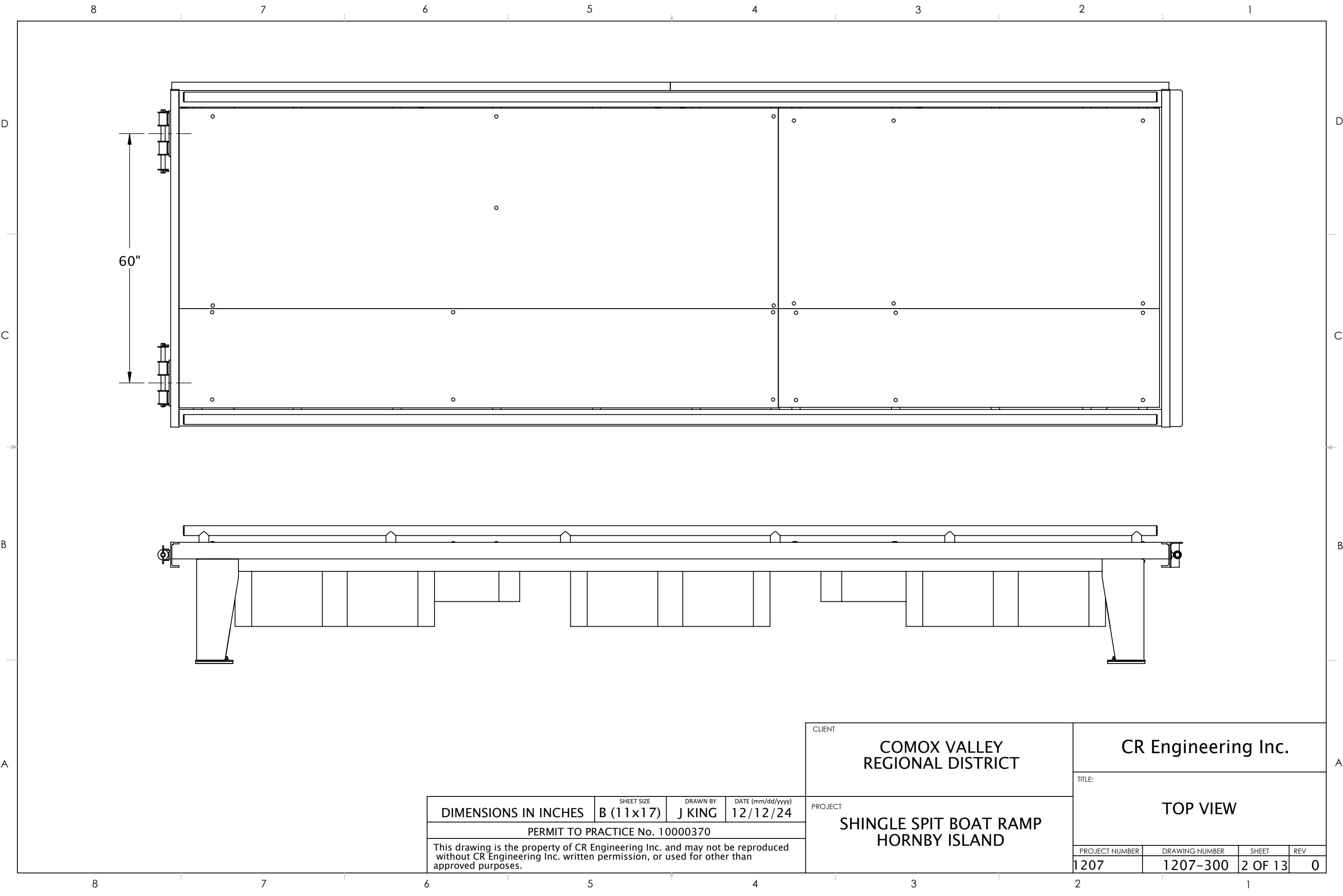
## NOTES

1. DESIGN TO OREGON BOAT LAUNCH FACILITIES 2011  
CSA S157-2022 STRENGTH DESIGN IN ALUMINUM
2. DESIGN LOADS:  
LIVE LOAD 1.0 kPa (21 psf), POINT LOAD 1.8 kN (400 lbs)  
WAVE LOAD 0.2 kN/m (14 plf)
3. MATERIALS SHAPES: 6061-T6, PLATE 5052-H32
4. GRATING: FRP MINIMESH 1" THICK, FASTEN WITH SIX CARRIAGE BOLTS PER PANEL
5. WELDING TO CONFORM TO CSA W59.2 WELDED ALUMINUM
6. WELDS 1/4" FILLET AND FLARE GROOVE UNO, FILLER 5356



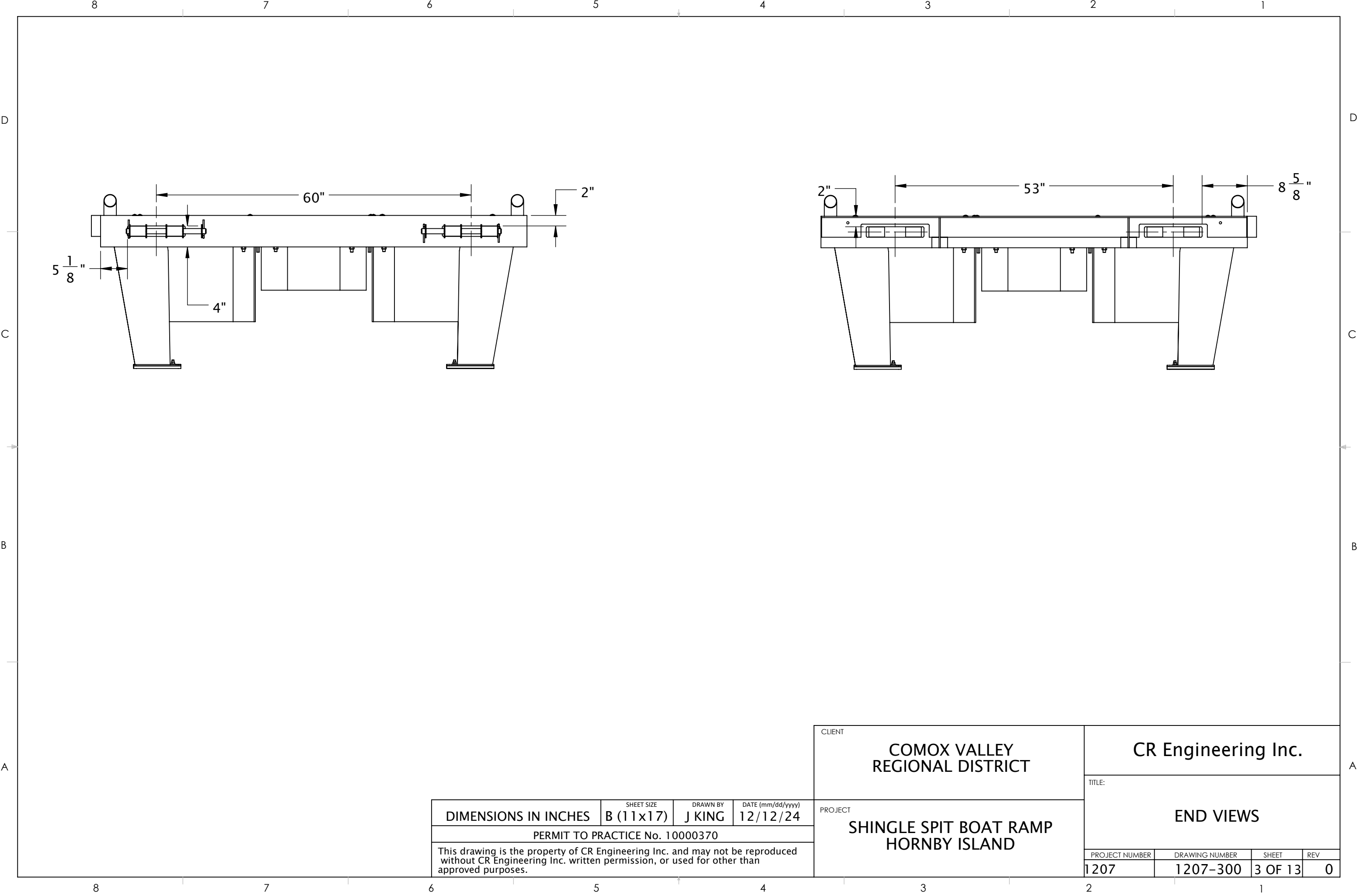
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| REVISIONS                                                                                                                                                               |                      |                 |                            |
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE B (11x17) | DRAWN BY J KING | DATE (mm/dd/yyyy) 12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                      |                 |                            |
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| CLIENT<br>COMOX VALLEY<br>REGIONAL DISTRICT        |                            | CR Engineering Inc.                            |          |
| PROJECT<br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                            | TITLE:<br>GENERAL ARRANGEMENT<br>FLOAT NO PILE |          |
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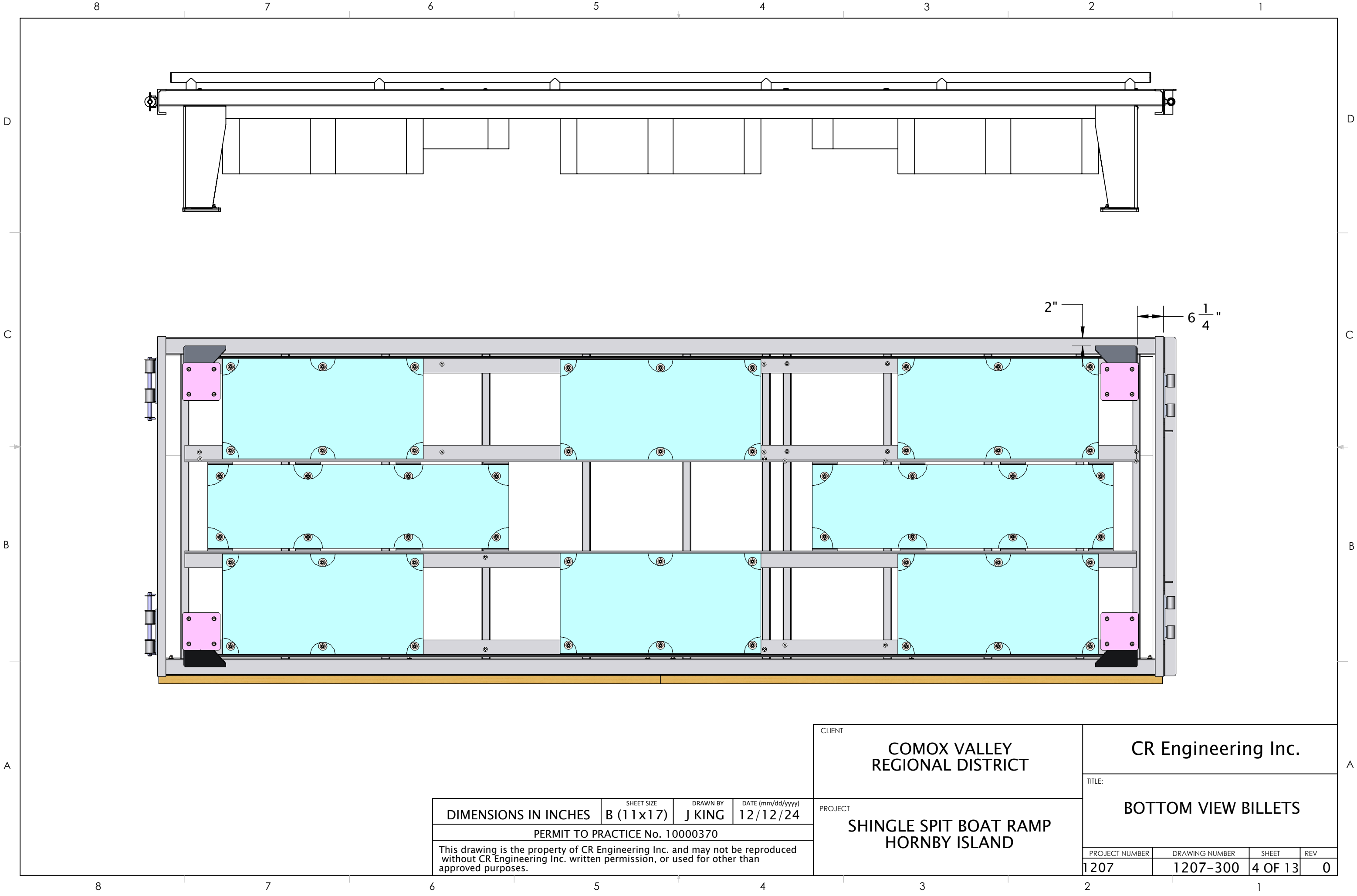
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| CLIENT<br><b>COMOX VALLEY<br/>REGIONAL DISTRICT</b>        |                                   | CR Engineering Inc.       |                 |
| PROJECT<br><b>SHINGLE SPIT BOAT RAMP<br/>HORNBY ISLAND</b> |                                   | TITLE:<br><b>TOP VIEW</b> |                 |
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| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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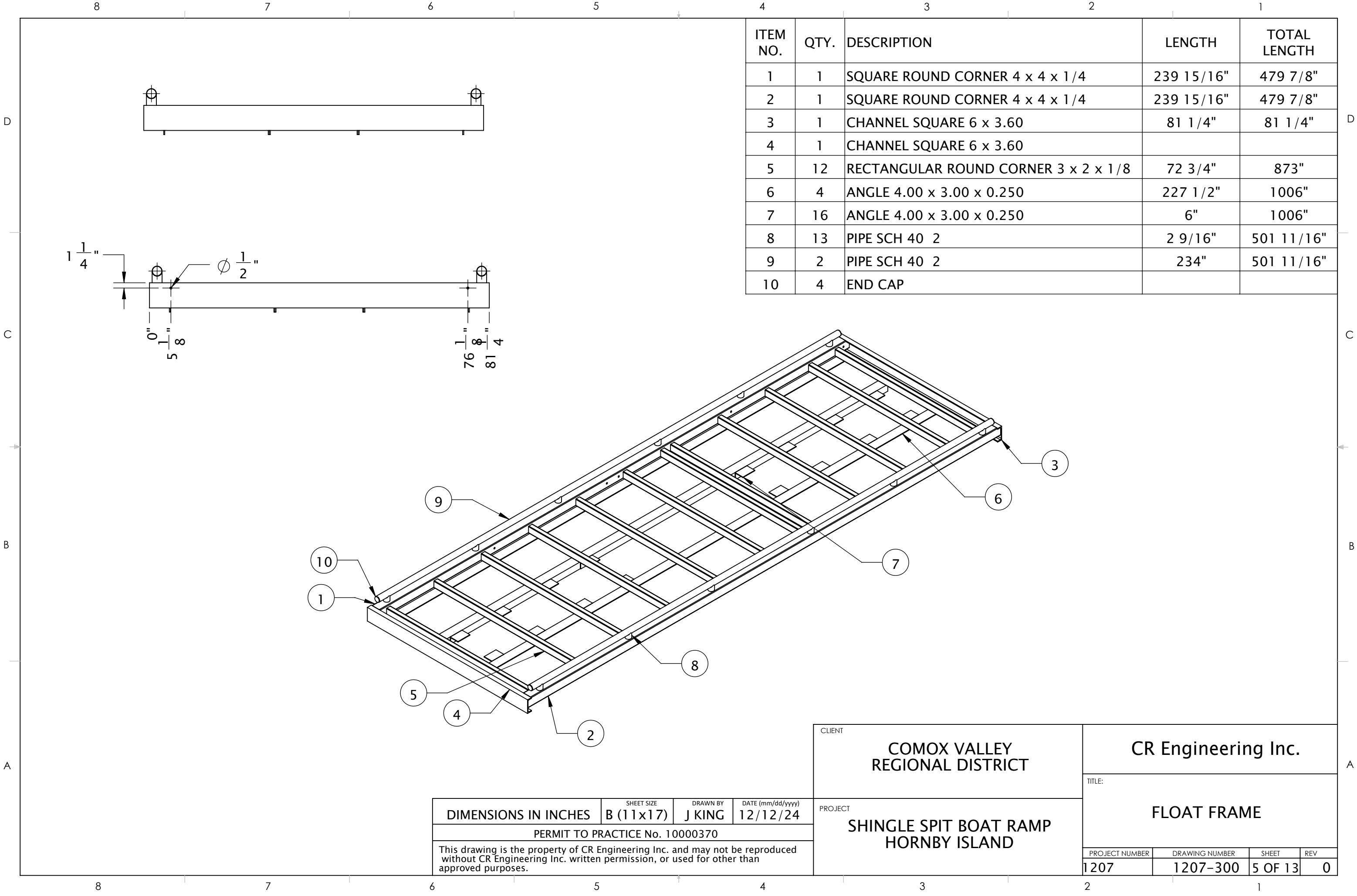
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| CLIENT         | COMOX VALLEY<br>REGIONAL DISTRICT       |                |  | CR Engineering Inc. |     |  |  |
|                | PROJECT                                 |                |  | TITLE:              |     |  |  |
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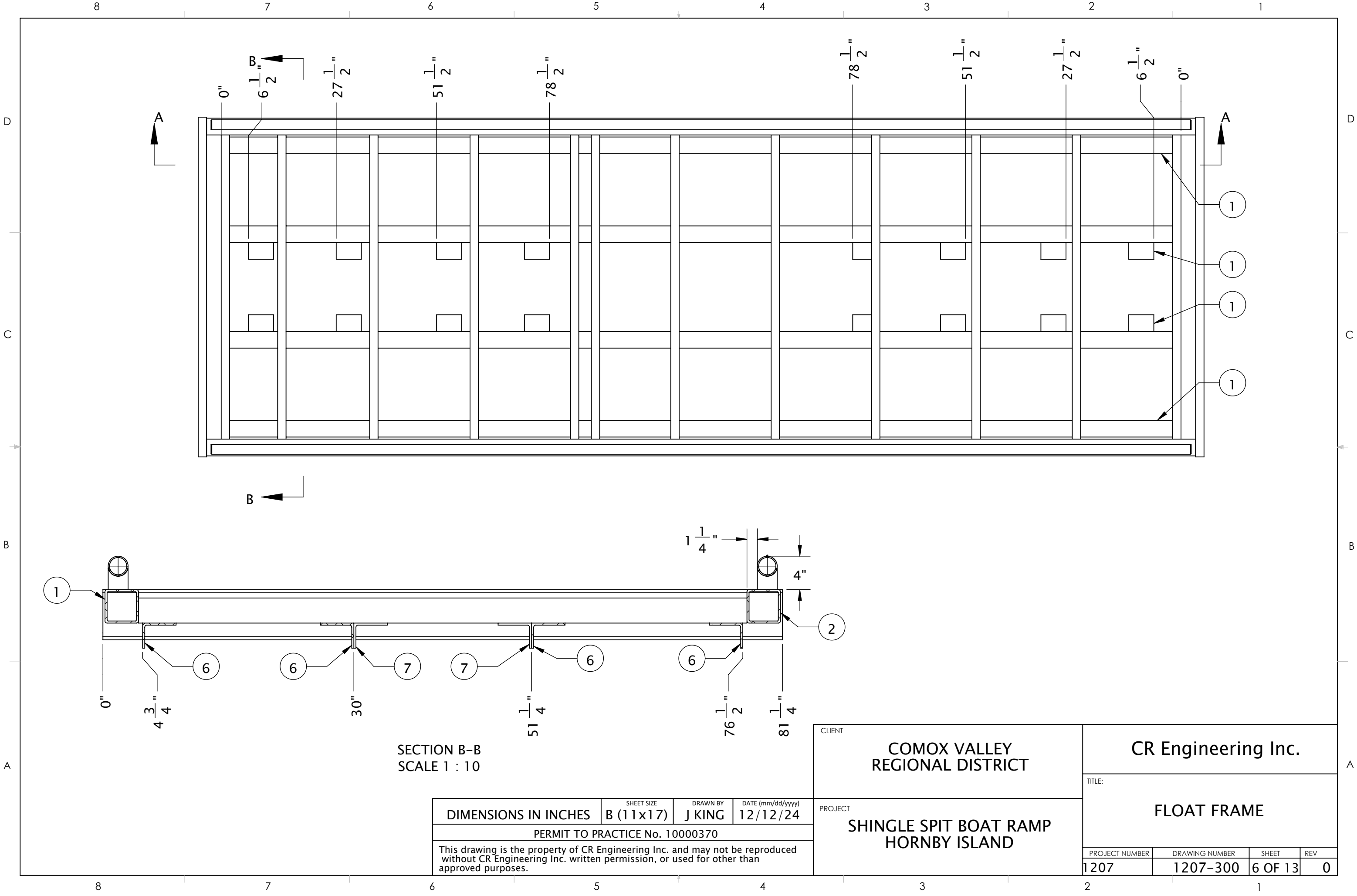


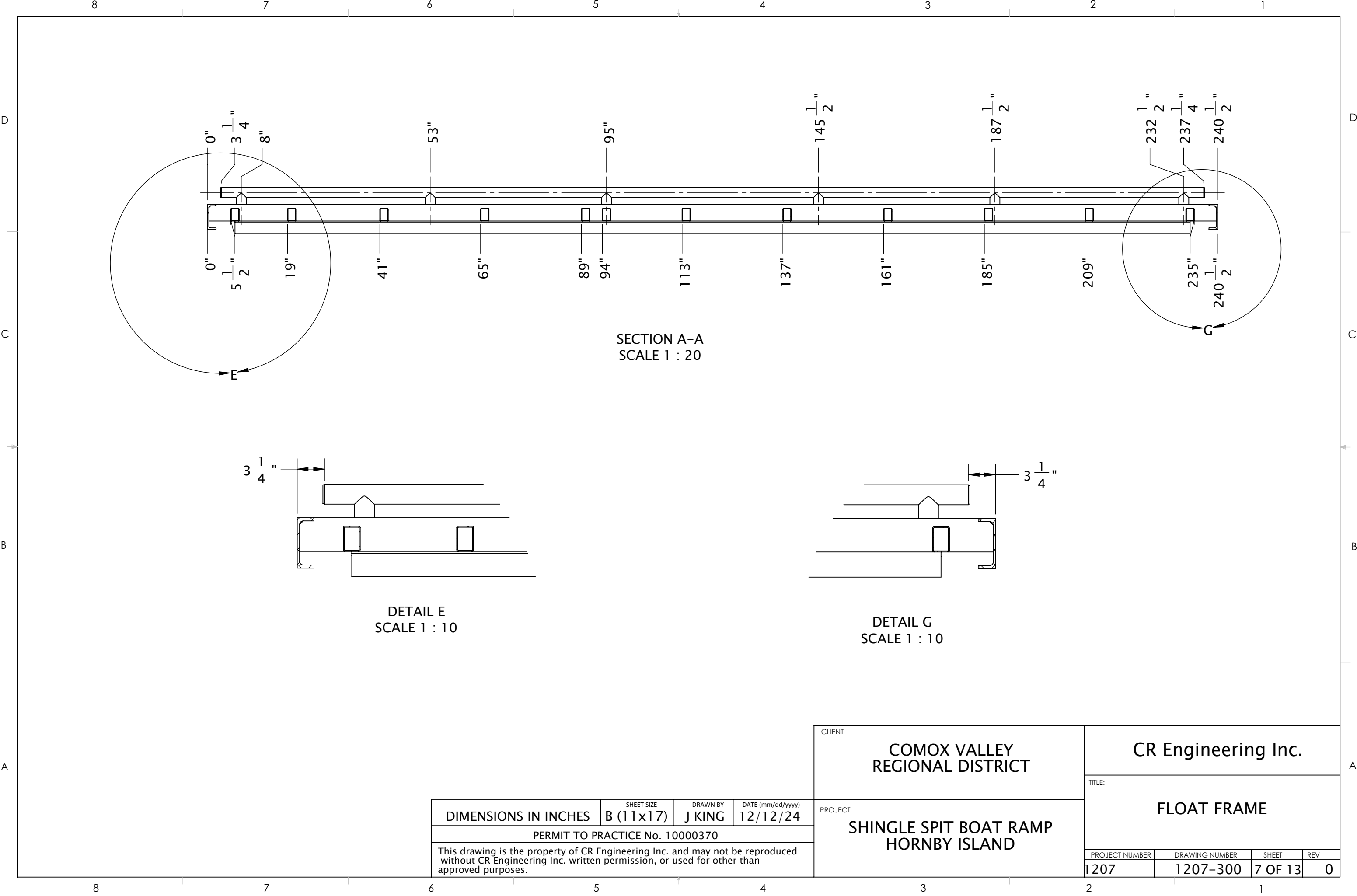
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| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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|         |                                         |
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| CLIENT  | COMOX VALLEY<br>REGIONAL DISTRICT       |
| PROJECT | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |

|                               |                            |                  |          |
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| CR Engineering Inc.           |                            |                  |          |
| TITLE:<br>BOTTOM VIEW BILLETS |                            |                  |          |
| PROJECT NUMBER<br>1207        | DRAWING NUMBER<br>1207-300 | SHEET<br>4 OF 13 | REV<br>0 |



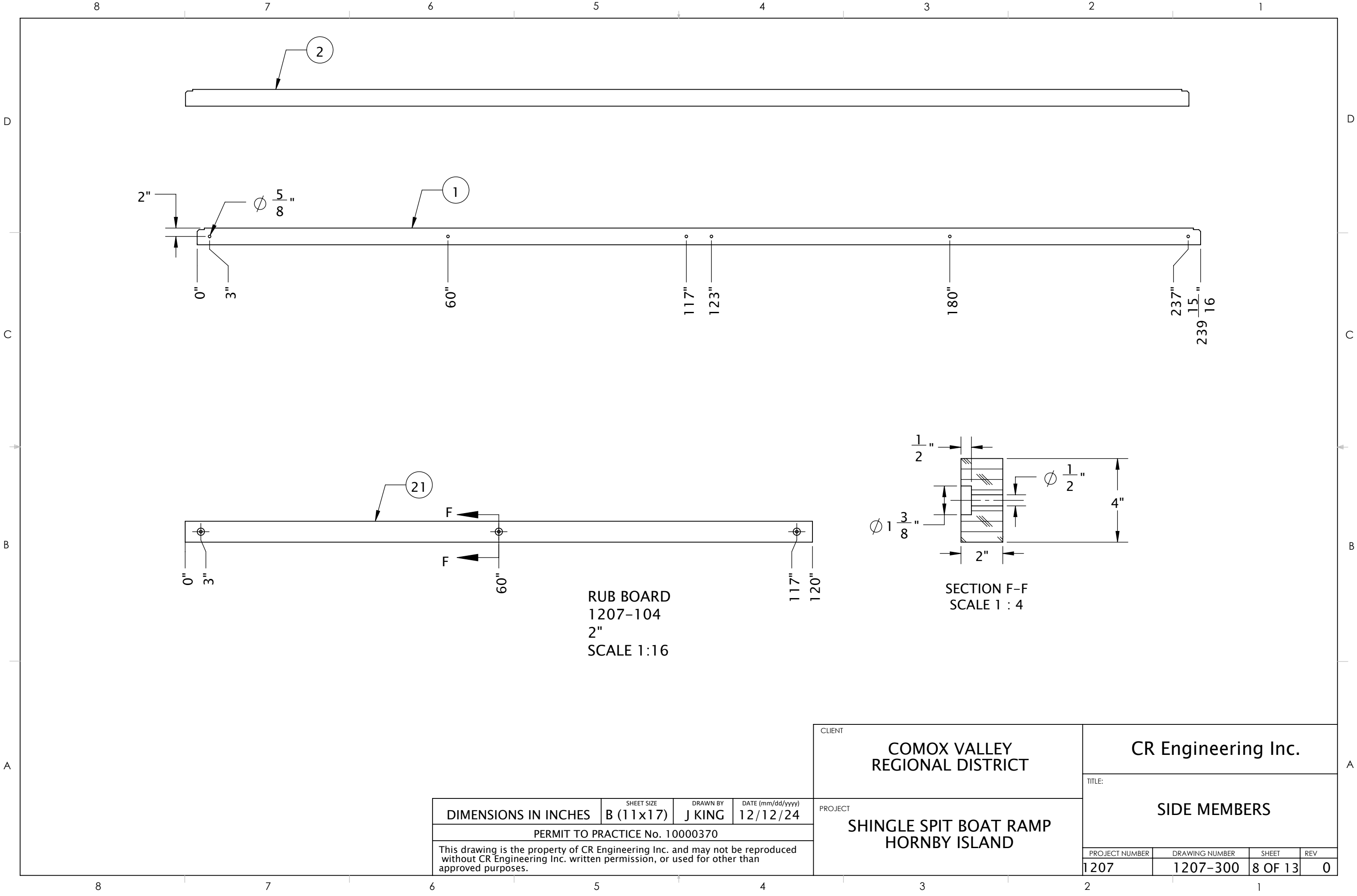




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| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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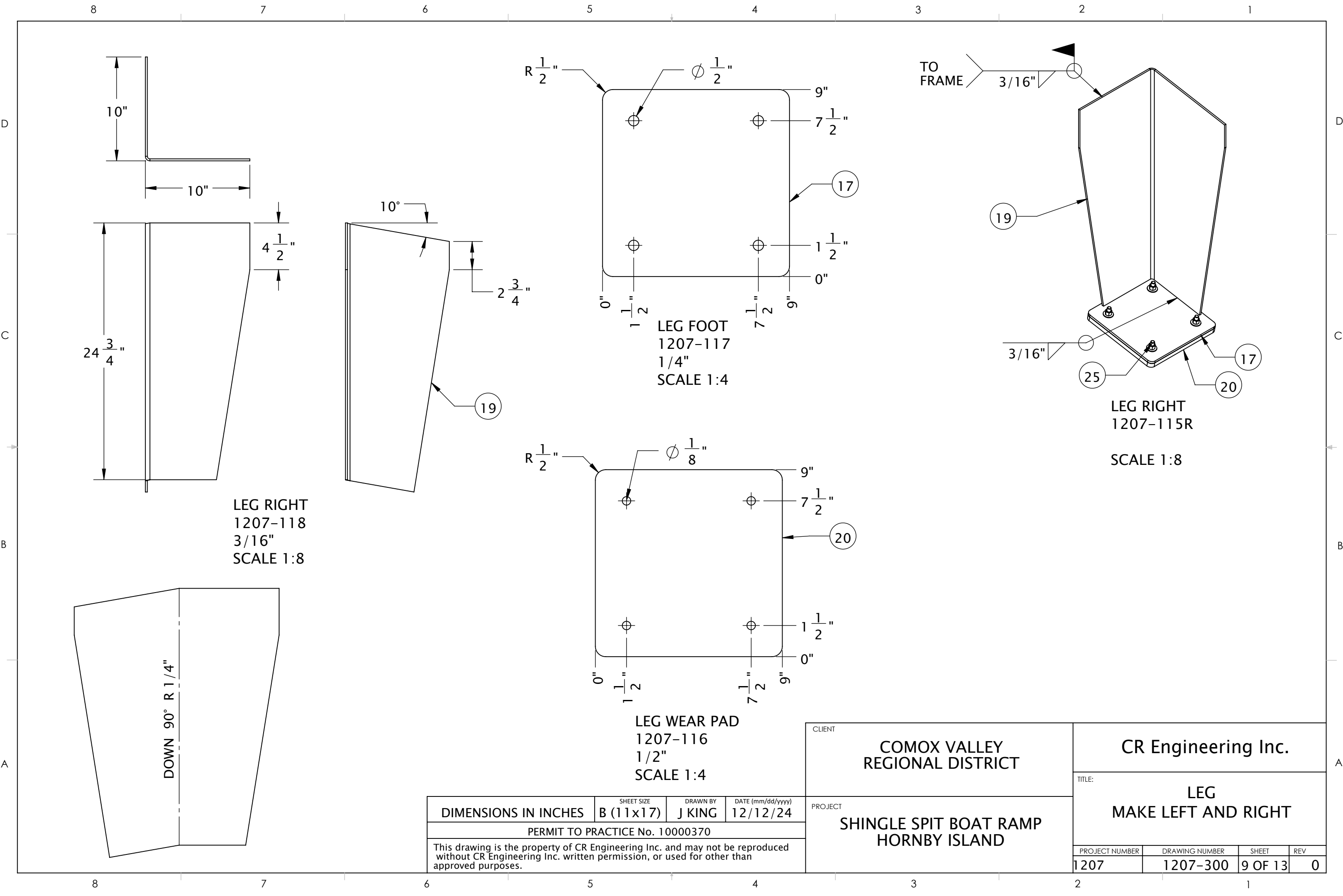
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| CLIENT  | COMOX VALLEY<br>REGIONAL DISTRICT       |
| PROJECT | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |

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| CR Engineering Inc.    |                            |                  |          |
| TITLE:<br>FLOAT FRAME  |                            |                  |          |
| PROJECT NUMBER<br>1207 | DRAWING NUMBER<br>1207-300 | SHEET<br>7 OF 13 | REV<br>0 |



|                                                                                                                                                                         |                         |                    |                               |
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| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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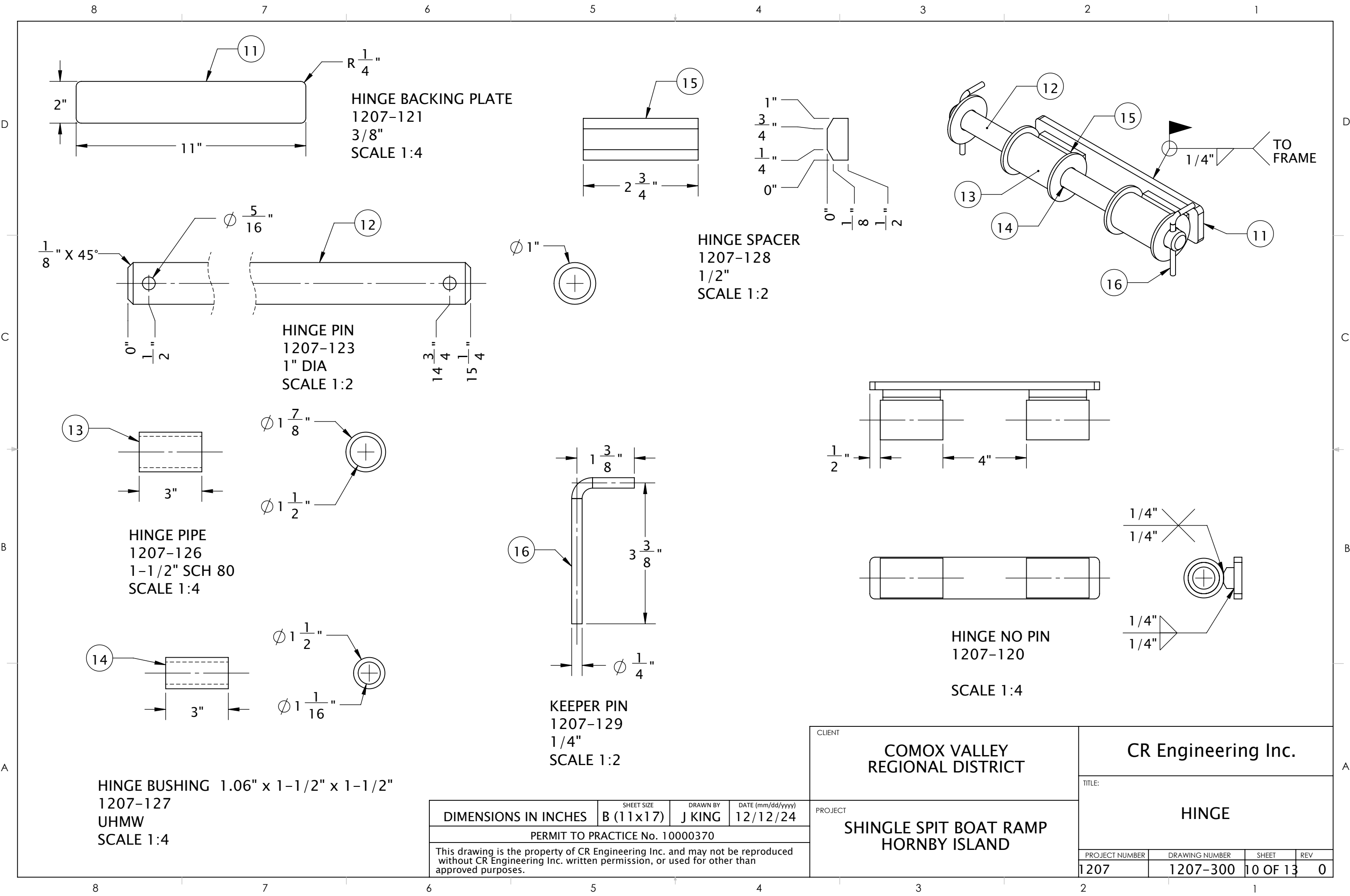
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| CLIENT<br>COMOX VALLEY<br>REGIONAL DISTRICT        |                            | CR Engineering Inc.    |          |
| PROJECT<br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                            | TITLE:<br>SIDE MEMBERS |          |
| PROJECT NUMBER<br>1207                             | DRAWING NUMBER<br>1207-300 | SHEET<br>8 OF 13       | REV<br>0 |



|                                                                                                                                                                         |                         |                    |                               |
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| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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| CLIENT  | COMOX VALLEY<br>REGIONAL DISTRICT       |
| PROJECT | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |

|                                      |                            |                  |          |
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| CR Engineering Inc.                  |                            |                  |          |
| TITLE:<br>LEG<br>MAKE LEFT AND RIGHT |                            |                  |          |
| PROJECT NUMBER<br>1207               | DRAWING NUMBER<br>1207-300 | SHEET<br>9 OF 13 | REV<br>0 |



HINGE BACKING PLATE  
1207-121  
3/8"  
SCALE 1:4

HINGE SPACER  
1207-128  
1/2"  
SCALE 1:2

HINGE PIN  
1207-123  
1" DIA  
SCALE 1:2

HINGE PIPE  
1207-126  
1-1/2" SCH 80  
SCALE 1:4

KEEPER PIN  
1207-129  
1/4"  
SCALE 1:2

HINGE NO PIN  
1207-120  
SCALE 1:4

HINGE BUSHING 1.06" x 1-1/2" x 1-1/2"  
1207-127  
UHMW  
SCALE 1:4

| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE | DRAWN BY | DATE (mm/dd/yyyy) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|-------------------|
| B (11x17)                                                                                                                                                               | J KING     | 12/12/24 |                   |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |            |          |                   |
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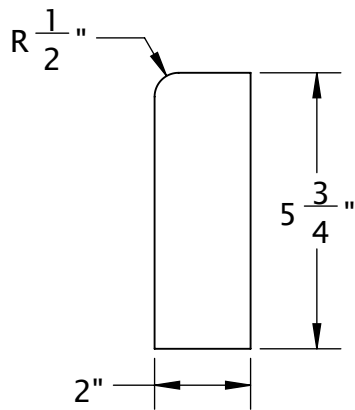
CLIENT  
COMOX VALLEY  
REGIONAL DISTRICT

PROJECT  
SHINGLE SPIT BOAT RAMP  
HORNBY ISLAND

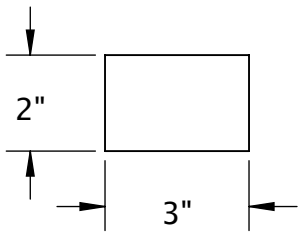
CR Engineering Inc.

TITLE:  
HINGE

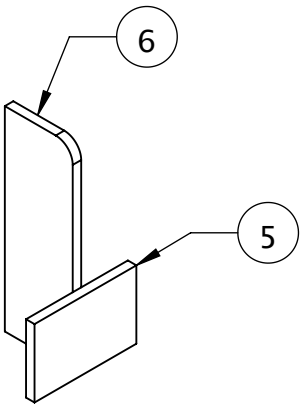
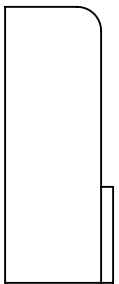
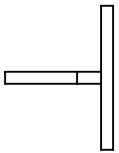
| PROJECT NUMBER | DRAWING NUMBER | SHEET    | REV |
|----------------|----------------|----------|-----|
| 1207           | 1207-300       | 10 OF 13 | 0   |



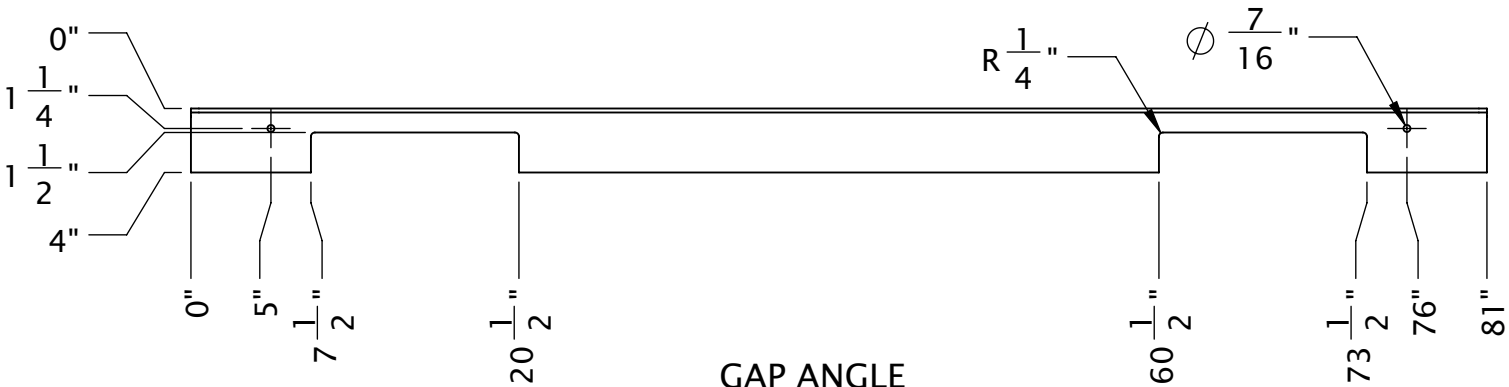
GAP ANGLE SUPPORT  
1207-23  
1/4"  
SCALE 1:4



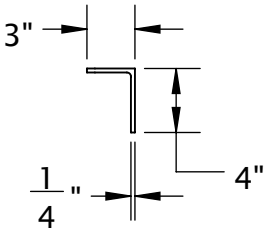
GAP ANGLE SUPPORT BASE  
1207-24  
1/4"  
SCALE 1:4



GAP ANGLE SUPPORT  
1207-25  
SCALE 1:4



GAP ANGLE  
1207-139  
L4x3 x 1/4  
SCALE 1:12



|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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|----------------------------------------------------|----------------------------|---------------------|----------|
| CLIENT<br>COMOX VALLEY<br>REGIONAL DISTRICT        |                            | CR Engineering Inc. |          |
| PROJECT<br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                            | TITLE:<br>GAP ANGLE |          |
| PROJECT NUMBER<br>1207                             | DRAWING NUMBER<br>1207-300 | SHEET<br>11 OF 13   | REV<br>0 |

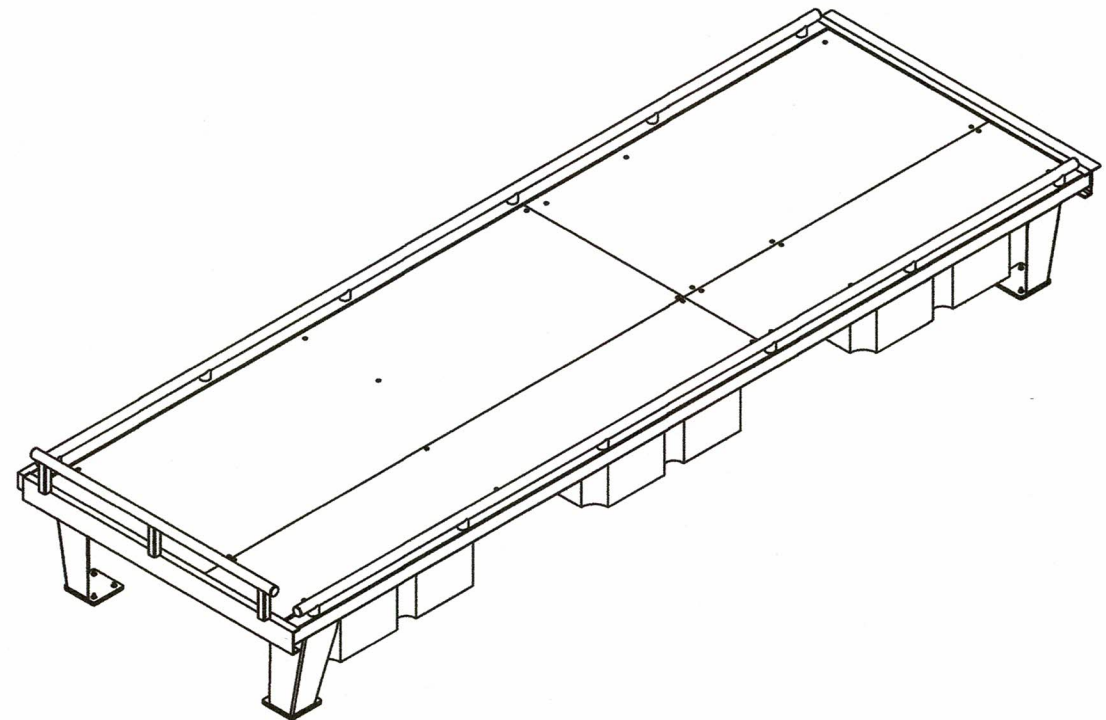
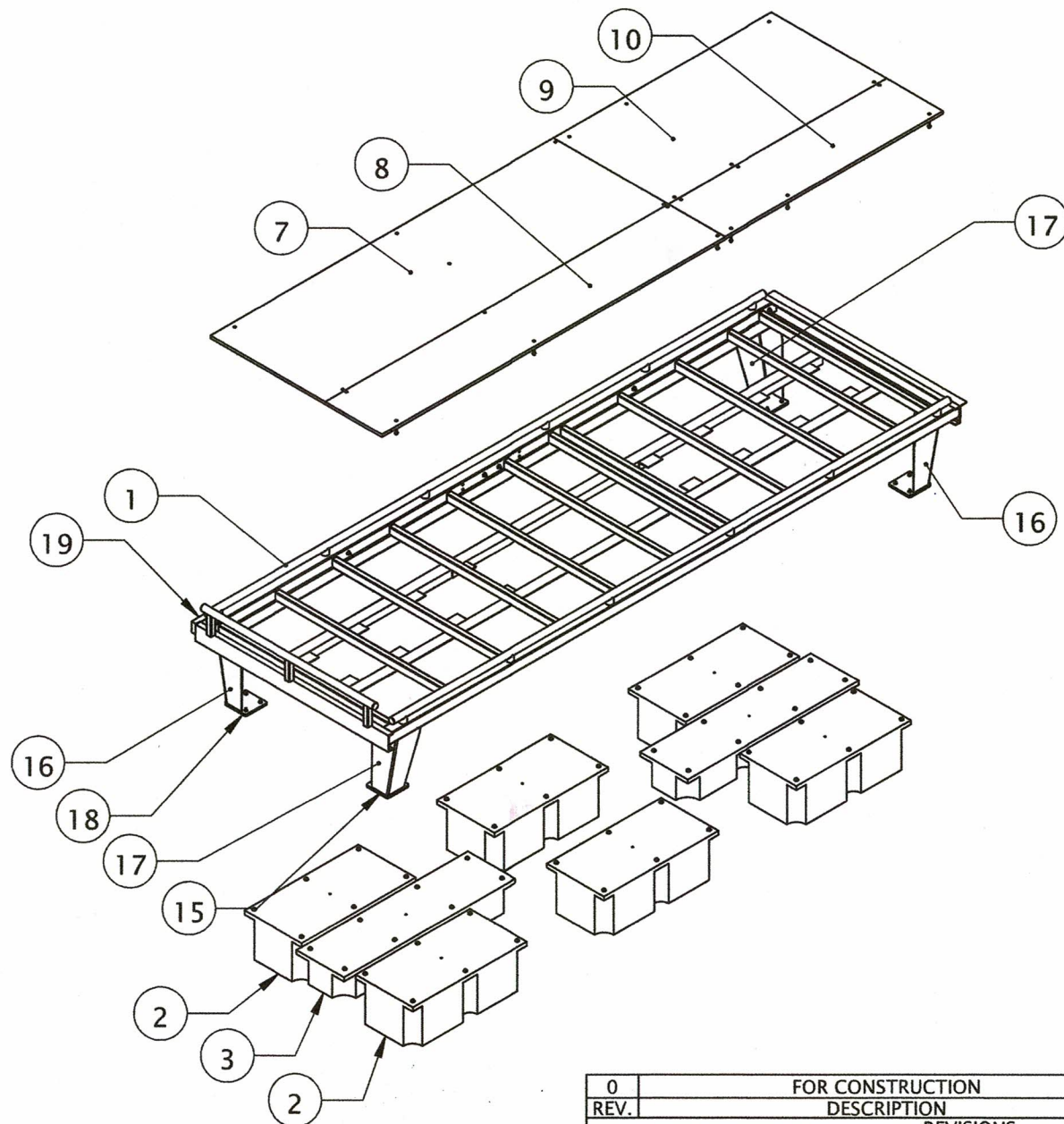
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
|----------|--|-------------|--|-----|---------------------------------------|---|--|------|---------------|---------|----------|---------------|-----|---|--|
| 8        |  | 7           |  | 6   |                                       | 5 |  | 4    |               | 3       |          | 2             |     | 1 |  |
| ITEM NO. |  | PART NUMBER |  | REV | DESCRIPTION                           |   |  | QTY. | MATERIAL      | WIDTH   | LENGTH   | THICKNESS     | LBS |   |  |
| 1        |  | 1207-101    |  | 0   | FLOAT FRAME NO PILE                   |   |  | 1    | 6061-T6       | 81"     | 240 1/2" |               | 539 |   |  |
| 2        |  | 1207-115    |  | 0   | BARR FLOAT 24" x 48" x 16"            |   |  | 6    |               | 24"     | 48"      | 16"           | 39  |   |  |
| 3        |  | 1207-142    |  | 0   | BARR FLOAT 20" x 72" x 10"            |   |  | 2    |               | 20"     | 72"      | 10"           | 34  |   |  |
| 4        |  | 1207-139    |  | 0   | GAP ANGLE                             |   |  | 1    | 6061-T6       |         | 81"      | L4x3 x 1/4    | 12  |   |  |
| 5        |  | 1207-24     |  | 0   | GAP ANGLE SUPPORT BASE                |   |  | 2    | 6061-T6       | 2"      | 3"       | 1/4"          | 0   |   |  |
| 6        |  | 1207-23     |  | 0   | GAP ANGLE SUPPORT                     |   |  | 2    | 6061-T6       | 2"      | 5 3/4"   | 1/4"          | 0   |   |  |
| 7        |  | 1207-111    |  | 0   | MICROMESH ONE                         |   |  | 1    | FIBERGLASS    | 48 1/4" | 144 1/4" | 1"            | 140 |   |  |
| 8        |  | 1207-112    |  | 0   | MICROMESH TWO                         |   |  | 1    | FIBERGLASS    | 23 7/8" | 144 1/4" | 1"            | 69  |   |  |
| 9        |  | 1207-114    |  | 0   | MICROMESH FOUR                        |   |  | 1    | FIBERGLASS    | 23 3/4" | 91 3/4"  | 1"            | 44  |   |  |
| 10       |  | 1207-113    |  | 0   | MICROMESH THREE                       |   |  | 1    | FIBERGLASS    | 48 1/4" | 91 3/4"  | 1"            | 89  |   |  |
| 11       |  | 1207-121    |  | 0   | HINGE BACKING PLATE                   |   |  | 4    | 5052-H32      | 2"      | 11"      | 3/8"          | 1   |   |  |
| 12       |  | 1207-123    |  | 0   | HINGE PIN                             |   |  | 2    | 316L          |         | 15 1/4"  | 1" DIA        | 3   |   |  |
| 13       |  | 1207-126    |  | 0   | HINGE PIPE                            |   |  | 8    | 6061-T6       |         | 3"       | 1-1/2" SCH 80 | 0   |   |  |
| 14       |  | 1207-127    |  | 0   | HINGE BUSHING 1.06" x 1-1/2" x 1-1/2" |   |  | 8    | UHMW          |         |          | UHMW          |     |   |  |
| 15       |  | 1207-128    |  | 0   | HINGE SPACER                          |   |  | 8    | 5052-H32      | 2 3/4"  | 1"       | 1/2"          | 0   |   |  |
| 16       |  | 1207-129    |  | 0   | KEEPER PIN                            |   |  | 4    | 304 SS        |         | 5        | 1/4"          |     |   |  |
| 17       |  | 1207-117    |  | 0   | LEG FOOT                              |   |  | 4    | 5052-H32      | 9"      | 9"       | 1/4"          | 2   |   |  |
| 18       |  | 1207-119    |  | 0   | LEG LEFT                              |   |  | 2    | 5052-H32      |         | 26 9/16" | 1/4"          | 10  |   |  |
| 19       |  | 1207-118    |  | 0   | LEG RIGHT                             |   |  | 2    | 5052-H32      |         | 26 1/2"  | 3/16"         | 8   |   |  |
| 20       |  | 1207-116    |  | 0   | LEG WEAR PAD                          |   |  | 4    | UHMW          | 9"      | 9"       | 1/2"          | 1   |   |  |
| 21       |  | 1207-104    |  | 0   | RUB BOARD                             |   |  | 2    | ROUGH CUT FIR | 4"      | 120"     | 2"            | 18  |   |  |
|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
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|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
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|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
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|          |  |             |  |     |                                       |   |  |      |               |         |          |               |     |   |  |
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|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|---|----------|---------------------------------------------------------------------------------------------|-----|---------------------------------|------|------------|-------|--------|-----------|-----|--|--|
| D | ITEM NO. | PART NUMBER                                                                                 | REV | DESCRIPTION                     | QTY. | MATERIAL   | WIDTH | LENGTH | THICKNESS | LBS |  |  |
|   | 22       | HBOLT 0.5000-13x3x1.25-N                                                                    |     | BOLT 1/2" x 3"                  | 52   | GALVANIZED |       |        |           |     |  |  |
|   | 23       | HBOLT 0.5000-13x6.5x1.375-N                                                                 |     | BOLT 1/2" x 6-1/2"              | 6    | GALVANIZED |       |        |           |     |  |  |
|   | 24       | HNUT 0.5000-13-D-N                                                                          |     | NUT 1/2"                        | 58   | GALVANIZED |       |        |           |     |  |  |
|   | 25       | SCHCSCREW 0.375-16x1.5x1.5-HX-N                                                             |     | COUNTERSUNK SCREW 3/8" x 1-1/2" | 16   | 304 SS     |       |        |           |     |  |  |
|   | 26       | Regular FW 0.375                                                                            |     | FLAT WASHER 3/8"                | 40   | 304 SS     |       |        |           |     |  |  |
|   | 27       | Regular FW 0.5                                                                              |     | FLAT WASHER 1/2"                | 116  | 304 SS     |       |        |           |     |  |  |
|   | 28       | Regular FW 0.75                                                                             |     | FLAT WASHER 3/4"                | 52   | 304 SS     |       |        |           |     |  |  |
|   | 29       | Regular FW 1                                                                                |     | FLAT WASHER 1"                  | 10   | 304 SS     |       |        |           |     |  |  |
|   | 30       | HTNUT 0.3750-16-D-N                                                                         |     | NYLOCK NUT 3/8"                 | 40   | 304 SS     |       |        |           |     |  |  |
|   | 31       | RHSNBOLT 0.375-16x5x1-N                                                                     |     | CARRIAGE BOLT 3/8" x 5"         | 24   | 304 SS     |       |        |           |     |  |  |
|   | C        | NOTE - BLUE LOCKTITE ON NUTS FOR BILLETS, GRATING AND RUB BOARDS<br>DO NOT USE LOCK WASHERS |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
| B |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   | A        |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |
|   |          |                                                                                             |     |                                 |      |            |       |        |           |     |  |  |

|  |  |  |  |                                                    |  |  |  |                     |  |  |  |
|--|--|--|--|----------------------------------------------------|--|--|--|---------------------|--|--|--|
|  |  |  |  | CLIENT<br>COMOX VALLEY<br>REGIONAL DISTRICT        |  |  |  | CR Engineering Inc. |  |  |  |
|  |  |  |  |                                                    |  |  |  | TITLE:              |  |  |  |
|  |  |  |  | PROJECT<br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |  |  |  | BILL OF MATERIALS   |  |  |  |
|  |  |  |  |                                                    |  |  |  |                     |  |  |  |
|  |  |  |  |                                                    |  |  |  |                     |  |  |  |
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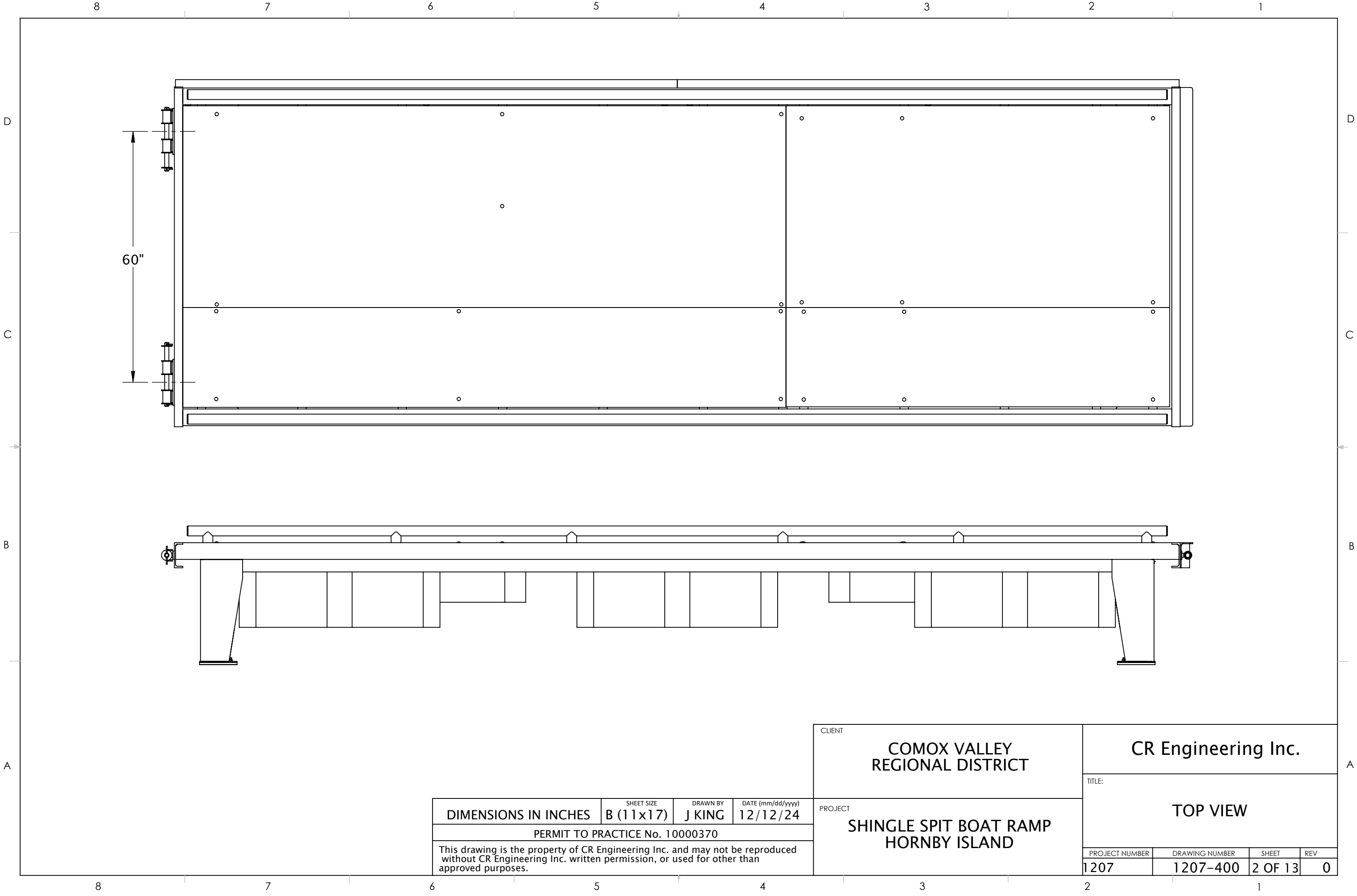
## NOTES

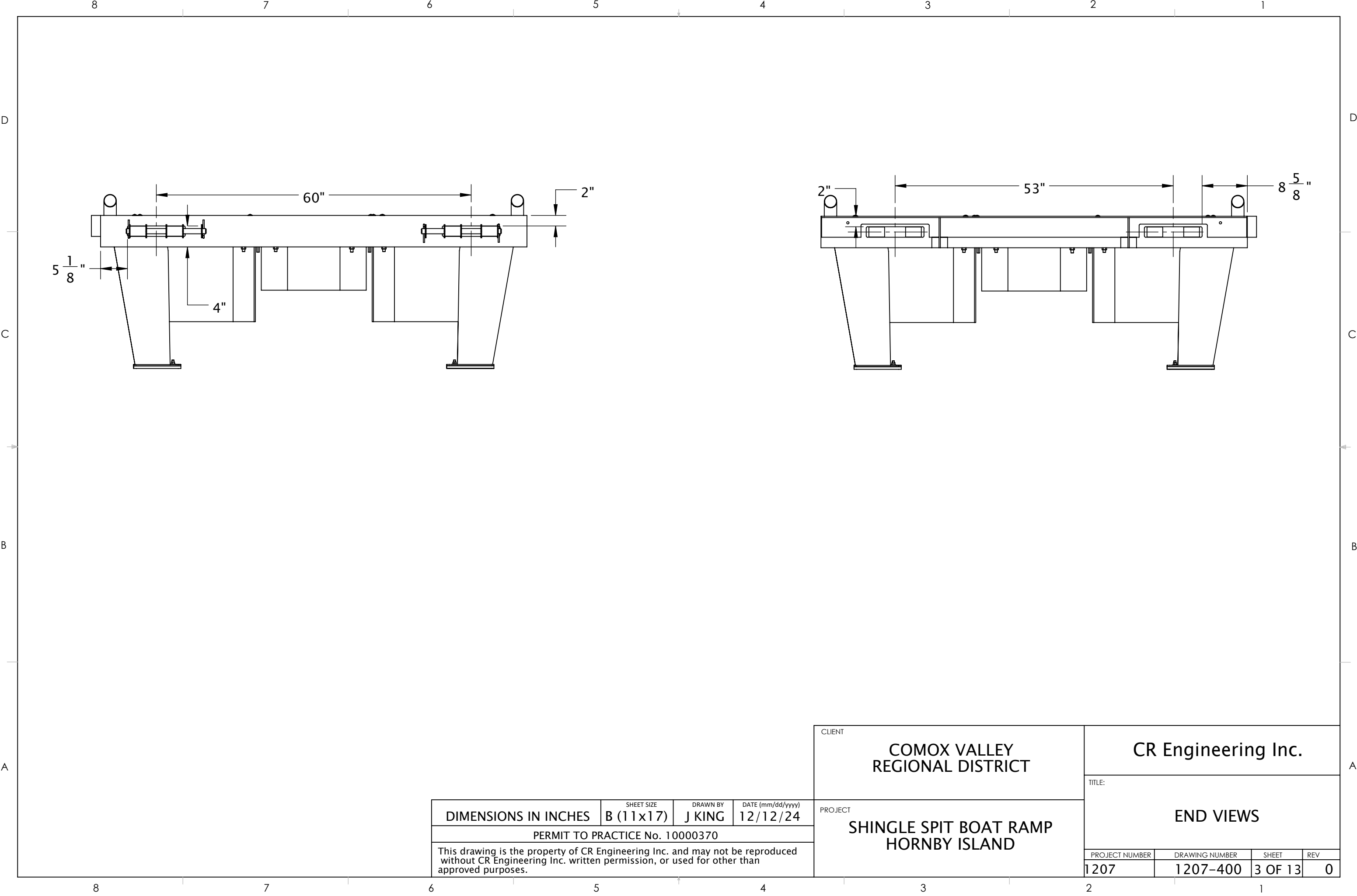
1. DESIGN TO OREGON BOAT LAUNCH FACILITIES 2011  
CSA S157-2022 STRENGTH DESIGN IN ALUMINUM
2. DESIGN LOADS:  
LIVE LOAD 1.0 kPa (21 psf), POINT LOAD 1.8 kN (400 lbs)  
WAVE LOAD 0.2 kN/m (14 plf)
3. MATERIALS SHAPES: 6061-T6, PLATE 5052-H32
4. GRATING: FRP MINIMESH 1" THICK, FASTEN WITH SIX CARRIAGE BOLTS PER PANEL
5. WELDING TO CONFORM TO CSA W59.2 WELDED ALUMINUM
6. WELDS 1/4" FILLET AND FLARE GROOVE UNO, FILLER 5356



|                                                                                                                                                                         |                  |          |                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------|-------------------|
| 0                                                                                                                                                                       | FOR CONSTRUCTION | 12/17/24 | JK                |
| REV.                                                                                                                                                                    | DESCRIPTION      | DATE     | APPROVED          |
| REVISIONS                                                                                                                                                               |                  |          |                   |
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE       | DRAWN BY | DATE (mm/dd/yyyy) |
| B (11x17)                                                                                                                                                               | J KING           | 12/12/24 |                   |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                  |          |                   |
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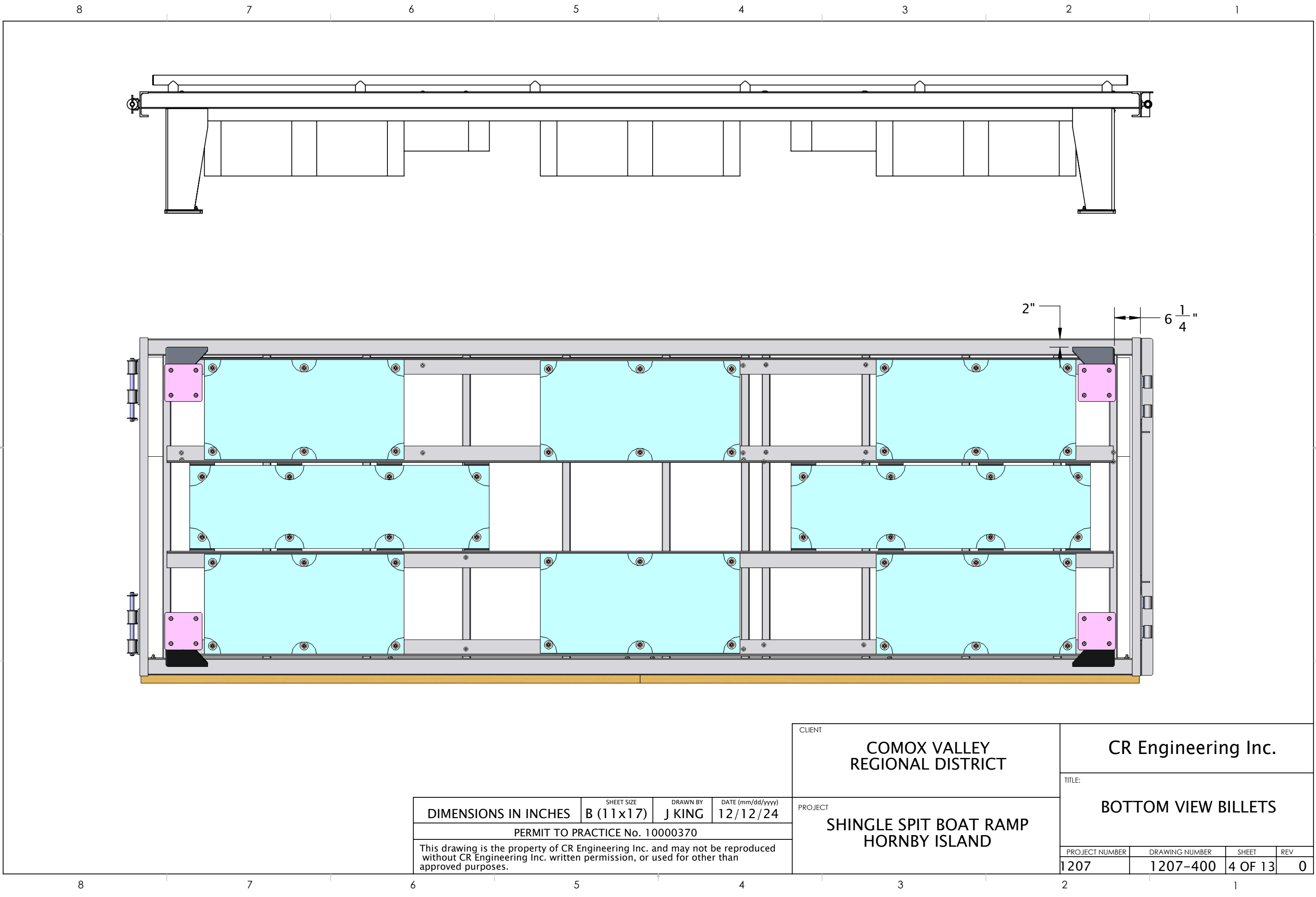
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|----------------|----------------|-----------------------------------------|-----|-----------------------------------------------|--|
| CLIENT         |                | COMOX VALLEY<br>REGIONAL DISTRICT       |     | CR Engineering Inc.                           |  |
| PROJECT        |                | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |     | TITLE:<br>GENERAL ARRANGEMENT<br>FLOAT AT END |  |
| PROJECT NUMBER | DRAWING NUMBER | SHEET                                   | REV |                                               |  |
| 1207           | 1207-400       | 1 OF 13                                 | 0   |                                               |  |





|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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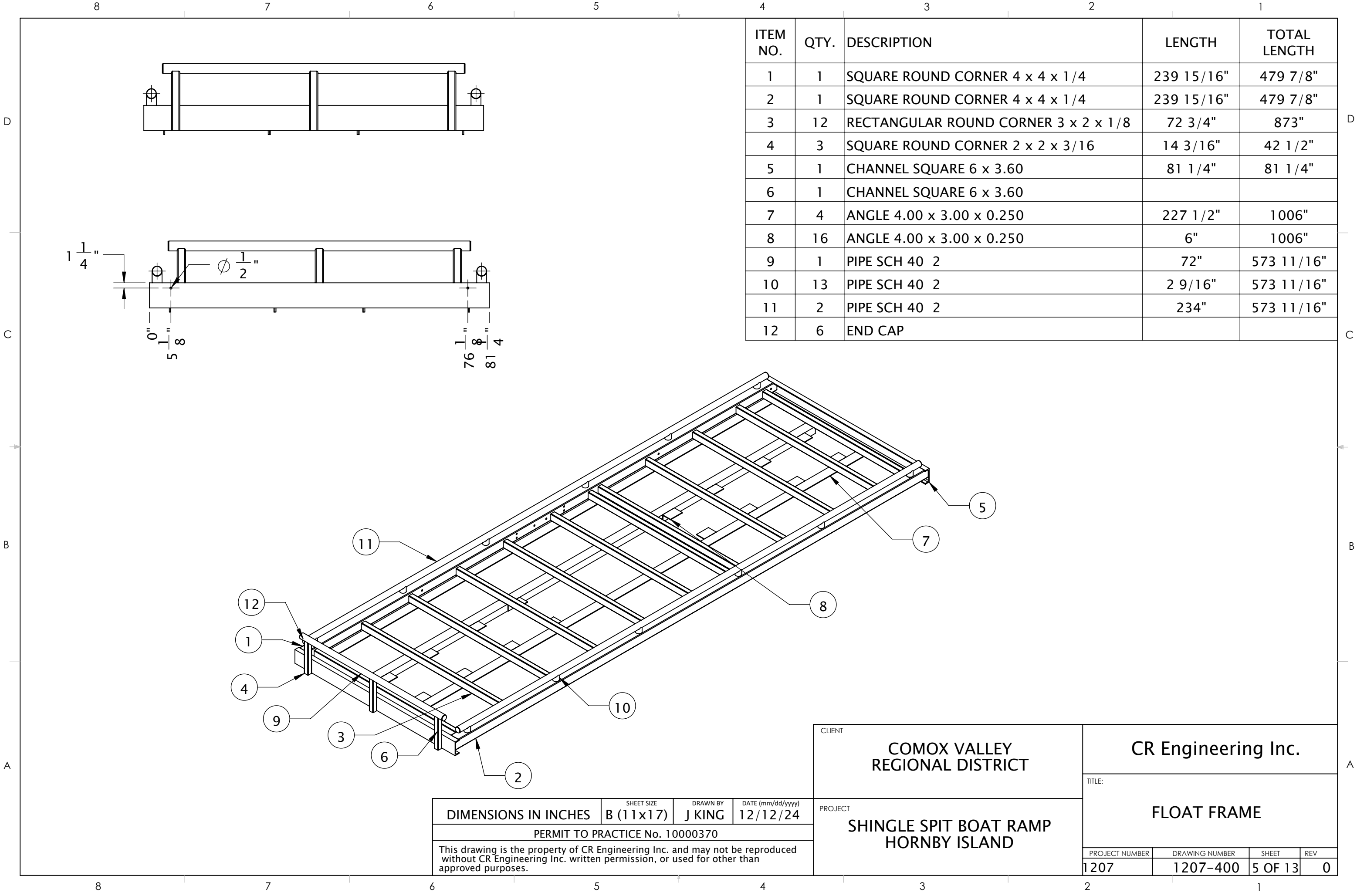
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|--------------------------------------------------------|----------------------------|-------------------------|----------|
| CLIENT<br><br>COMOX VALLEY<br>REGIONAL DISTRICT        |                            | CR Engineering Inc.     |          |
| PROJECT<br><br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                            | TITLE:<br><br>END VIEWS |          |
| PROJECT NUMBER<br>1207                                 | DRAWING NUMBER<br>1207-400 | SHEET<br>3 OF 13        | REV<br>0 |

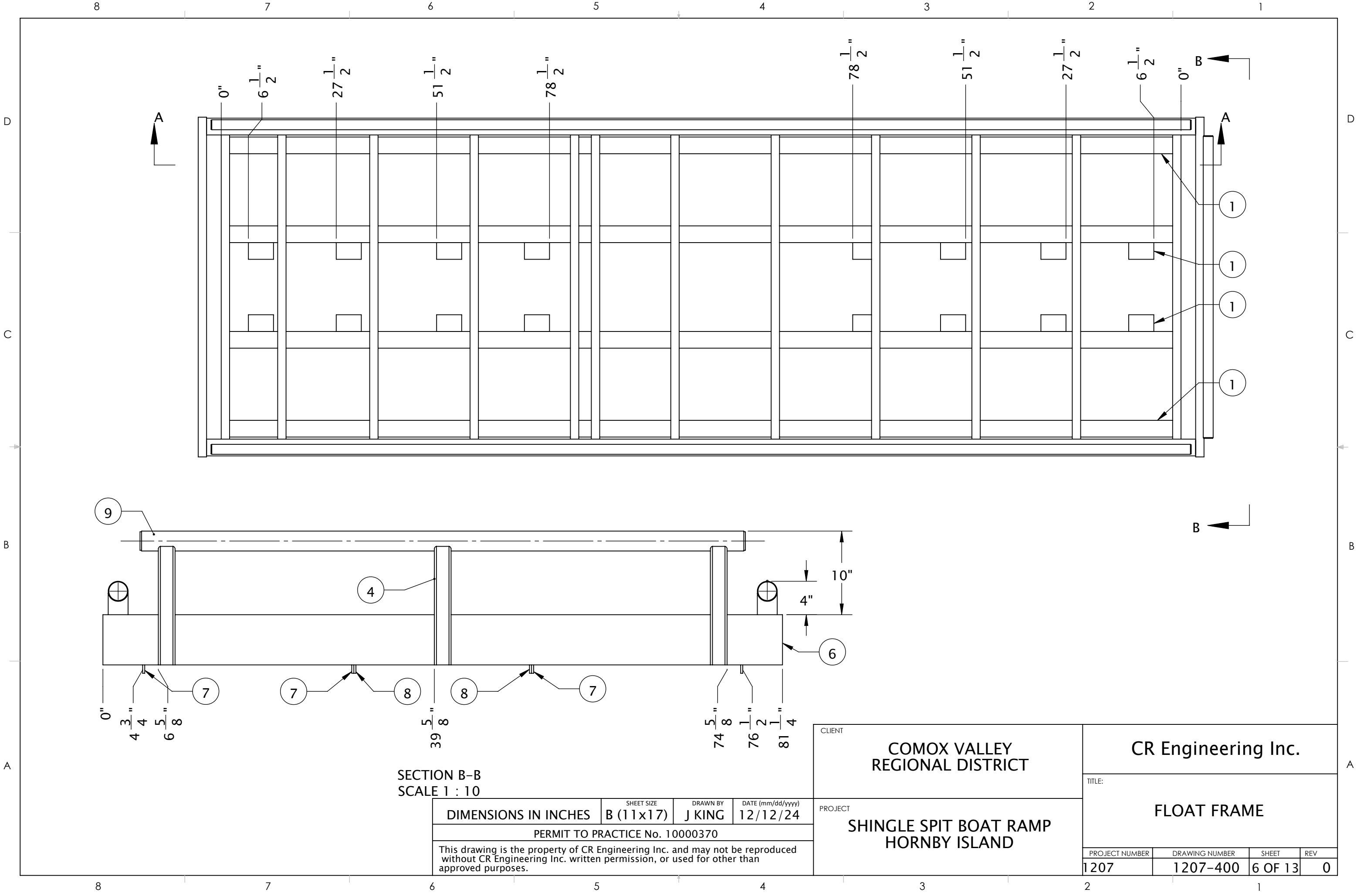


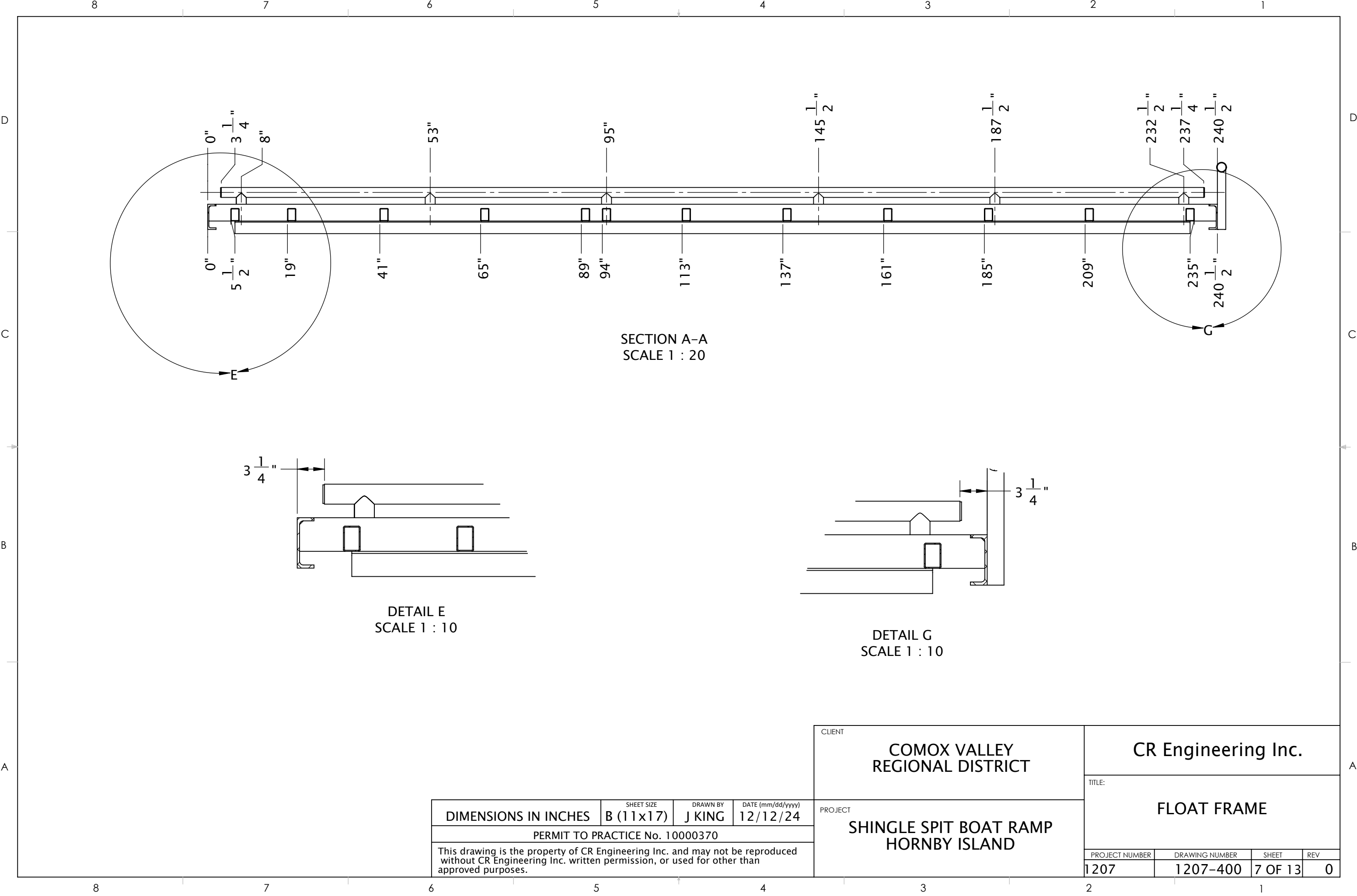
|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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|         |                                         |
|---------|-----------------------------------------|
| CLIENT  | COMOX VALLEY<br>REGIONAL DISTRICT       |
| PROJECT | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |

|                               |                |         |     |
|-------------------------------|----------------|---------|-----|
| CR Engineering Inc.           |                |         |     |
| TITLE:<br>BOTTOM VIEW BILLETS |                |         |     |
| PROJECT NUMBER                | DRAWING NUMBER | SHEET   | REV |
| 1207                          | 1207-400       | 4 OF 13 | 0   |

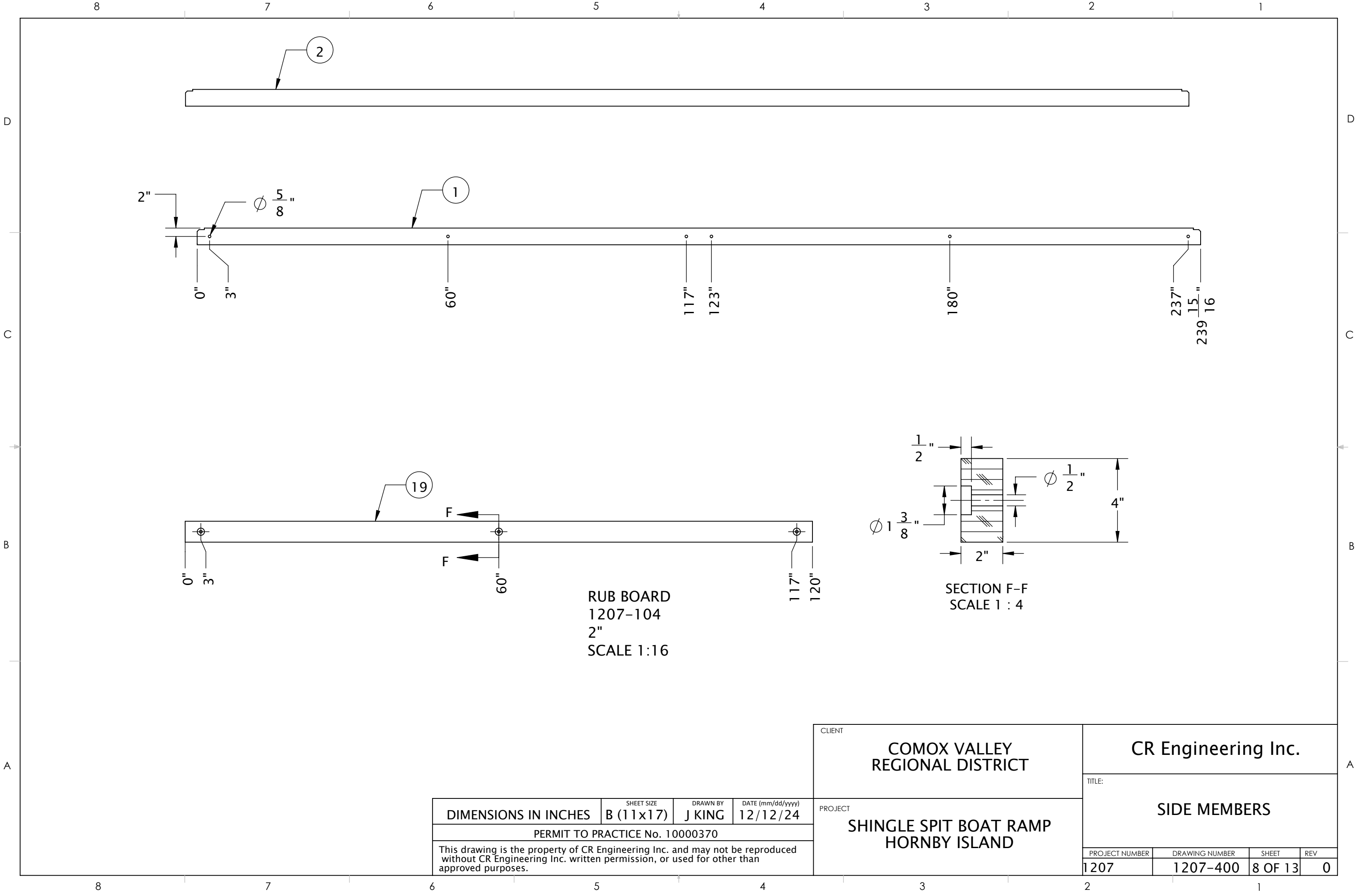


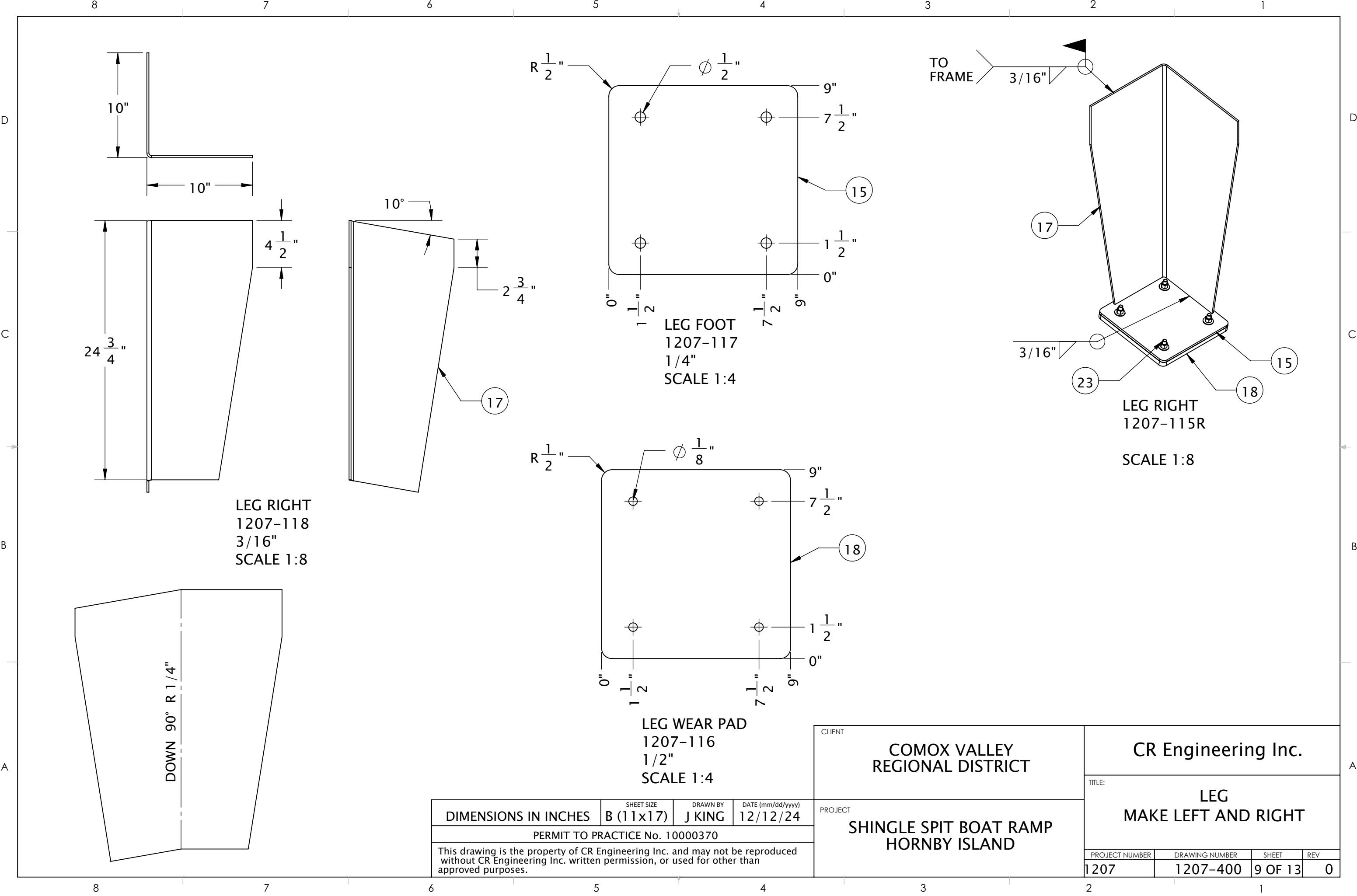




|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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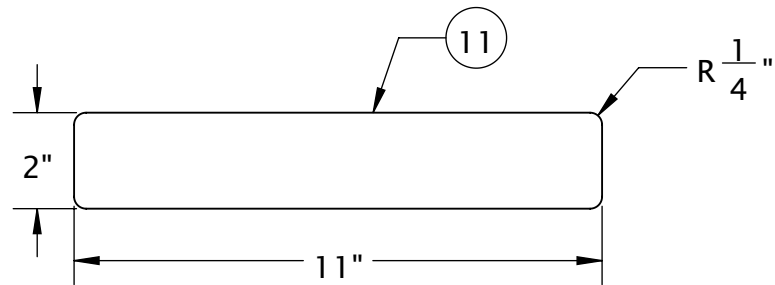
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|----------------|----------------------------------------------------|----------------|--|-----------------------|-----|--|--|
| CLIENT         | COMOX VALLEY<br>REGIONAL DISTRICT                  |                |  | CR Engineering Inc.   |     |  |  |
|                | PROJECT<br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                |  | TITLE:<br>FLOAT FRAME |     |  |  |
| PROJECT NUMBER |                                                    | DRAWING NUMBER |  | SHEET                 | REV |  |  |
| 1207           |                                                    | 1207-400       |  | 7 OF 13               | 0   |  |  |



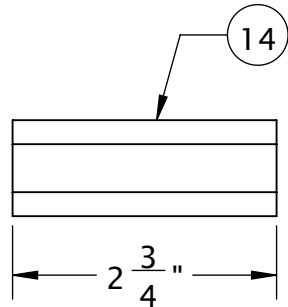


|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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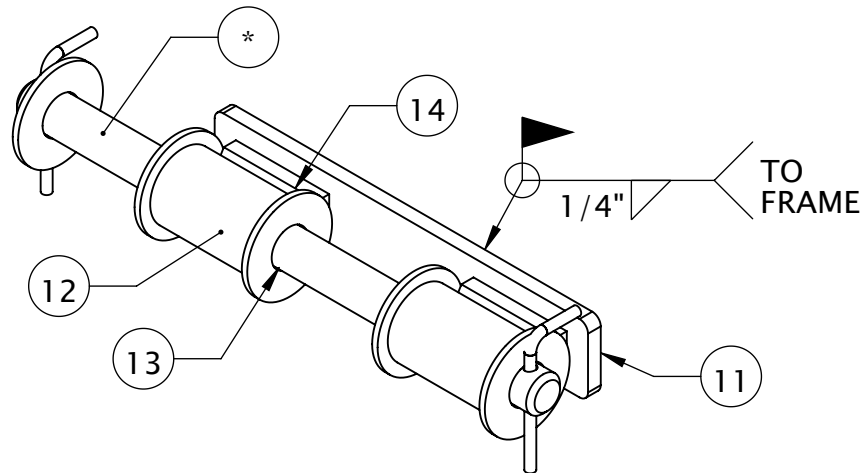
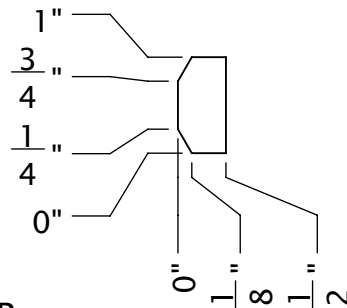
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|----------------------------------------------------|----------------------------|--------------------------------------|----------|--|--|
| CLIENT<br>COMOX VALLEY<br>REGIONAL DISTRICT        |                            | CR Engineering Inc.                  |          |  |  |
| PROJECT<br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                            | TITLE:<br>LEG<br>MAKE LEFT AND RIGHT |          |  |  |
| PROJECT NUMBER<br>1207                             | DRAWING NUMBER<br>1207-400 | SHEET<br>9 OF 13                     | REV<br>0 |  |  |



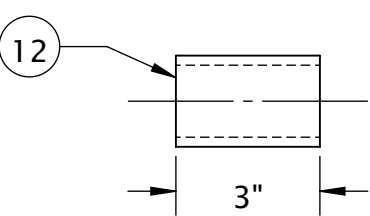
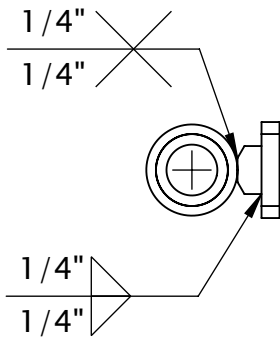
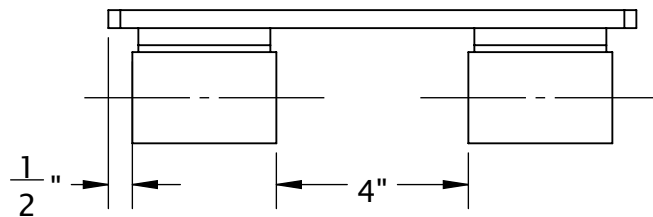
HINGE BACKING PLATE  
1207-121  
3/8"  
SCALE 1:4



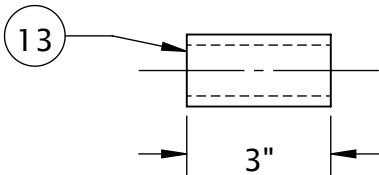
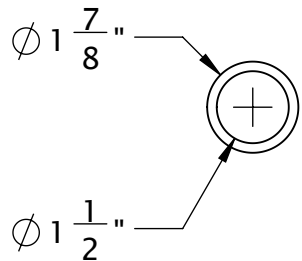
HINGE SPACER  
1207-128  
1/2"  
SCALE 1:2



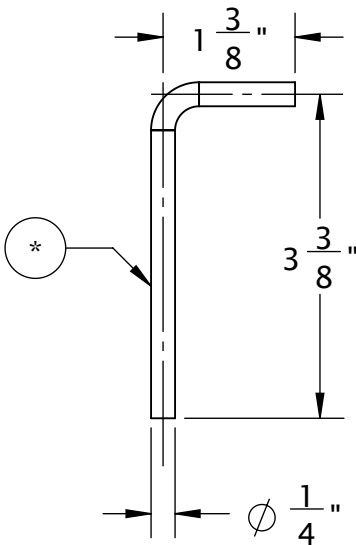
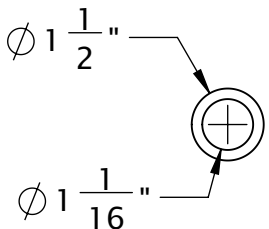
HINGE NO PIN  
1207-120  
SCALE 1:4



HINGE PIPE  
1207-126  
1-1/2" SCH 80  
SCALE 1:4



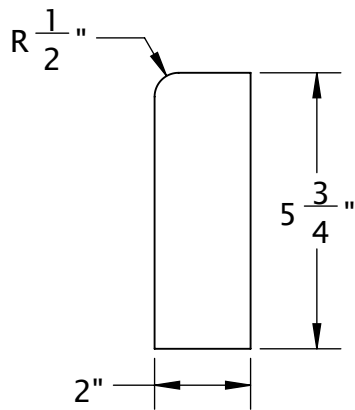
HINGE BUSHING 1.06" x 1-1/2" x 1-1/2"  
1207-127  
UHMW  
SCALE 1:4



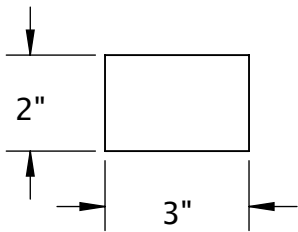
KEEPER PIN  
1207-129  
1/4"  
SCALE 1:2

| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE | DRAWN BY | DATE (mm/dd/yyyy) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|-------------------|
| B (11x17)                                                                                                                                                               | J KING     | 12/12/24 |                   |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |            |          |                   |
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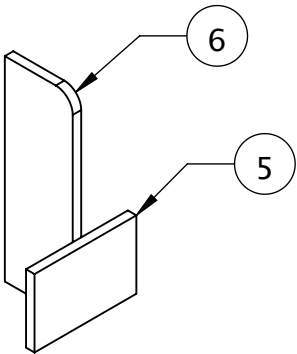
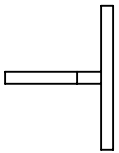
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|---------|-----------------------------------------|------|---------------------|----------------|-------|
| CLIENT  | COMOX VALLEY<br>REGIONAL DISTRICT       |      | CR Engineering Inc. |                |       |
| PROJECT | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |      | TITLE:              |                |       |
|         |                                         |      | HINGE               |                |       |
|         |                                         |      | PROJECT NUMBER      | DRAWING NUMBER | SHEET |
|         |                                         | 1207 | 1207-400            | 10 OF 13       | 0     |



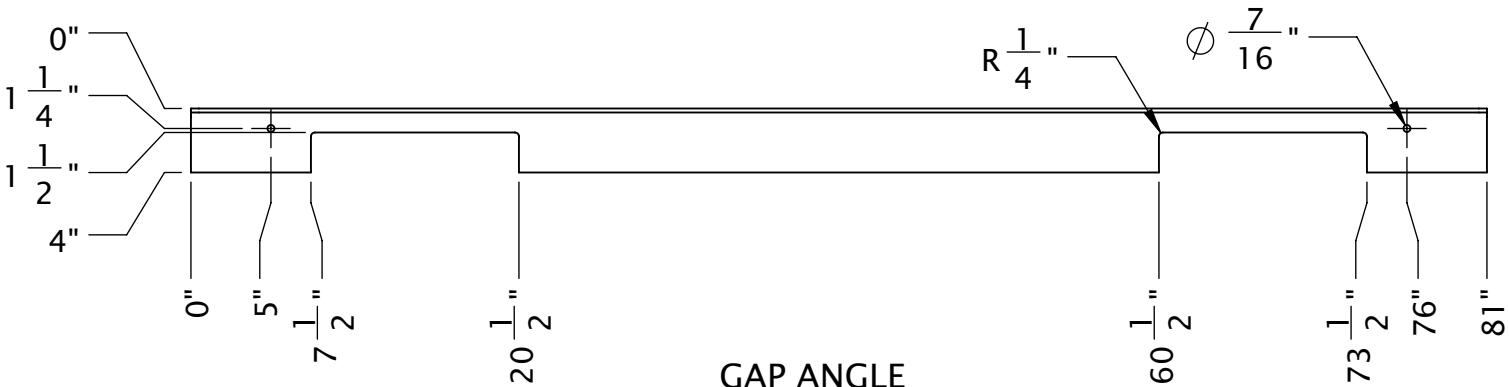
GAP ANGLE SUPPORT  
1207-23  
1/4"  
SCALE 1:4



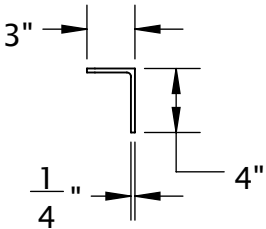
GAP ANGLE SUPPORT BASE  
1207-24  
1/4"  
SCALE 1:4



GAP ANGLE SUPPORT  
1207-25  
  
SCALE 1:4



GAP ANGLE  
1207-139  
L4x3 x 1/4  
SCALE 1:12



|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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|         |                                         |
|---------|-----------------------------------------|
| CLIENT  | COMOX VALLEY<br>REGIONAL DISTRICT       |
| PROJECT | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |

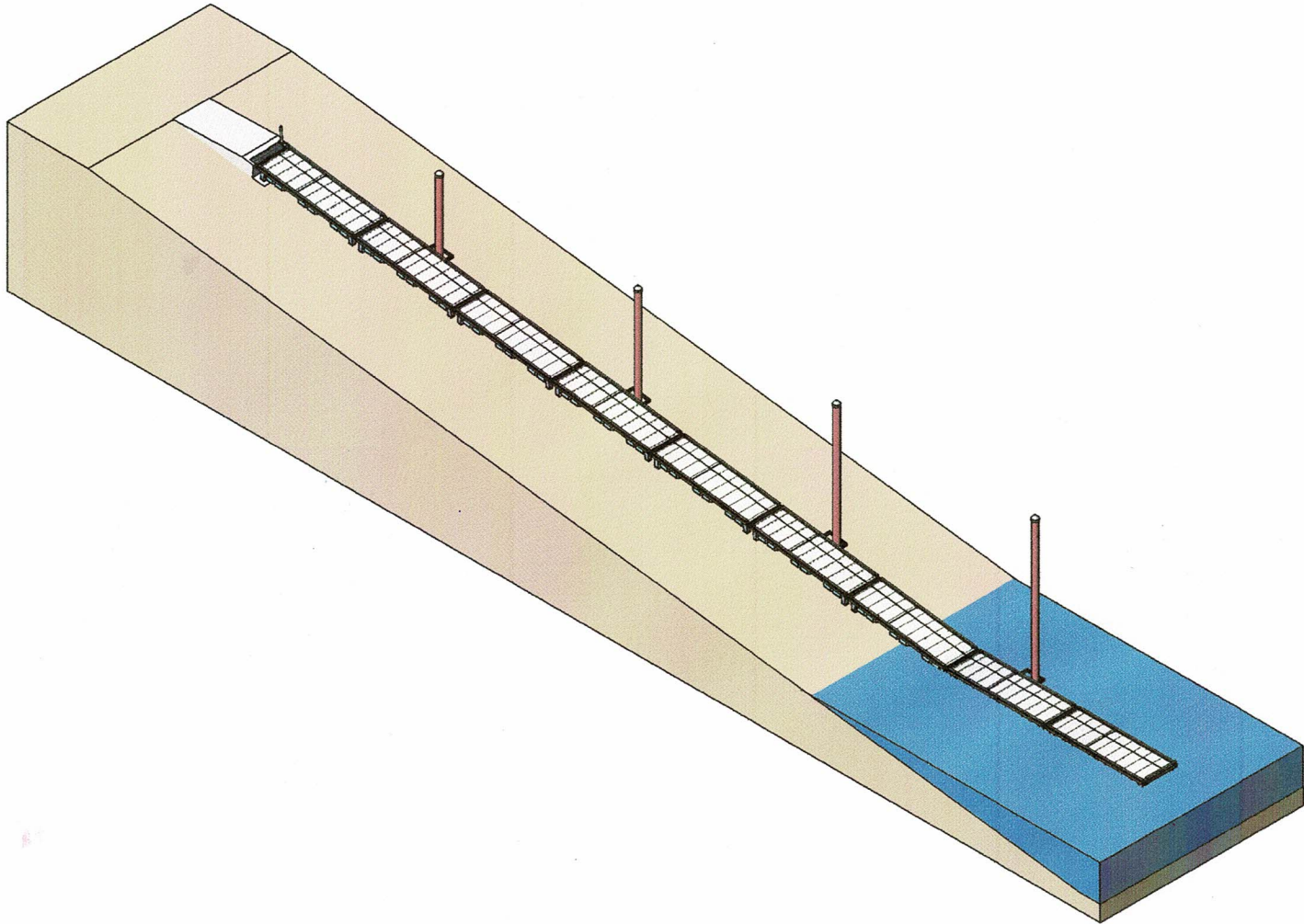
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|-------------------------|----------------|----------|-----|
| CR Engineering Inc.     |                |          |     |
| TITLE:<br><br>GAP ANGLE |                |          |     |
| PROJECT NUMBER          | DRAWING NUMBER | SHEET    | REV |
| 1207                    | 1207-400       | 11 OF 13 | 0   |

[illegible]

|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|---|---------------------------------------------------------------------------------------------|---------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|-------|-----------------------------------------|---|---------------------------------|-----|----------------|----------------|----------|-----|
| D | 8                                                                                           | 7                               | 6   | 5                                                                                                                                                                       | 4        | 3                 | 2     | 1                                       | D |                                 |     |                |                |          |     |
|   | ITEM NO.                                                                                    | PART NUMBER                     | REV | DESCRIPTION                                                                                                                                                             | QTY.     | MATERIAL          | WIDTH | LENGTH                                  |   | THICKNESS                       | LBS |                |                |          |     |
|   | 20                                                                                          | HBOLT 0.5000-13x3x1.25-N        |     | BOLT 1 /2" x 3"                                                                                                                                                         | 52       | GALVANIZED        |       |                                         |   |                                 |     |                |                |          |     |
|   | 21                                                                                          | HBOLT 0.5000-13x6.5x1.375-N     |     | BOLT 1 /2" x 6-1 /2"                                                                                                                                                    | 6        | GALVANIZED        |       |                                         |   |                                 |     |                |                |          |     |
|   | 22                                                                                          | HNUT 0.5000-13-D-N              |     | NUT 1 /2"                                                                                                                                                               | 58       | GALVANIZED        |       |                                         |   |                                 |     |                |                |          |     |
|   | 23                                                                                          | SCHCSCREW 0.375-16x1.5x1.5-HX-N |     | COUNTERSUNK SCREW 3 /8" x 1-1 /2"                                                                                                                                       | 16       | 304 SS            |       |                                         |   |                                 |     |                |                |          |     |
|   | 24                                                                                          | Regular FW 0.375                |     | FLAT WASHER 3 /8"                                                                                                                                                       | 40       | 304 SS            |       |                                         |   |                                 |     |                |                |          |     |
|   | 25                                                                                          | Regular FW 0.5                  |     | FLAT WASHER 1 /2"                                                                                                                                                       | 116      | 304 SS            |       |                                         |   |                                 |     |                |                |          |     |
|   | 26                                                                                          | Regular FW 0.75                 |     | FLAT WASHER 3 /4"                                                                                                                                                       | 52       | 304 SS            |       |                                         |   |                                 |     |                |                |          |     |
|   | 27                                                                                          | HTNUT 0.3750-16-D-N             |     | NYLOCK NUT 3 /8"                                                                                                                                                        | 40       | 304 SS            |       |                                         |   |                                 |     |                |                |          |     |
|   | 28                                                                                          | RHSNBOLT 0.375-16x5x1-N         |     | CARRIAGE BOLT 3 /8" x 5"                                                                                                                                                | 24       | 304 SS            |       |                                         |   |                                 |     |                |                |          |     |
| C | NOTE - BLUE LOCKTITE ON NUTS FOR BILLETS, GRATING AND RUB BOARDS<br>DO NOT USE LOCK WASHERS |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 | C   |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
| B |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 | B   |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
| A |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 | A   |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          | CLIENT            |       | COMOX VALLEY<br>REGIONAL DISTRICT       |   | CR Engineering Inc.             |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          | PROJECT           |       | SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |   | TITLE:<br><br>BILL OF MATERIALS |     |                |                |          |     |
|   | DIMENSIONS IN INCHES                                                                        |                                 |     | SHEET SIZE                                                                                                                                                              | DRAWN BY | DATE (mm/dd/yyyy) |       |                                         |   |                                 |     | PROJECT NUMBER | DRAWING NUMBER | SHEET    | REV |
|   |                                                                                             |                                 |     | B (11x17)                                                                                                                                                               | J KING   | 12/12/24          |       |                                         |   |                                 |     | 1207           | 1207-400       | 13 OF 13 | 0   |
|   |                                                                                             |                                 |     | PERMIT TO PRACTICE No. 10000370                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
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|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |
|   |                                                                                             |                                 |     |                                                                                                                                                                         |          |                   |       |                                         |   |                                 |     |                |                |          |     |

NOTES

1. DESIGN TO OREGON BOAT LAUNCH FACILITIES 2011  
CSA S157-2017 STRENGTH DESIGN IN ALUMINUM
2. DESIGN LOADS:  
LIVE LOAD 1.0 kPa (21 psf), POINT LOAD 1.8 kN (400 lbs)  
WAVE LOAD 0.2 kN/m (14 plf)
3. MATERIALS SHAPES 6061-T6, PLATE 5052-H32
4. WELDING TO CONFORM TO CSA W59.2 WELDED ALUMINUM
5. WELDS 1/4" FILLET AND FLARE GROOVE UNO, FILLER 5356



|                                                                                                                                                                         |                         |                    |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| 0                                                                                                                                                                       | FOR CONSTRUCTION        | 12/17/24           | JK                            |
| REV.                                                                                                                                                                    | DESCRIPTION             | DATE               | APPROVED                      |
| REVISIONS                                                                                                                                                               |                         |                    |                               |
| DIMENSIONS IN INCHES                                                                                                                                                    | SHEET SIZE<br>B (11x17) | DRAWN BY<br>J KING | DATE (mm/dd/yyyy)<br>12/12/24 |
| PERMIT TO PRACTICE No. 10000370                                                                                                                                         |                         |                    |                               |
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|                                                    |                            |                             |          |
|----------------------------------------------------|----------------------------|-----------------------------|----------|
| CLIENT<br>COMOX VALLEY<br>REGIONAL DISTRICT        |                            | CR Engineering Inc.         |          |
| PROJECT<br>SHINGLE SPIT BOAT RAMP<br>HORNBY ISLAND |                            | TITLE:<br>BILL OF MATERIALS |          |
| PROJECT NUMBER<br>1207                             | DRAWING NUMBER<br>1207-BOM | SHEET<br>1 OF 3             | REV<br>0 |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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