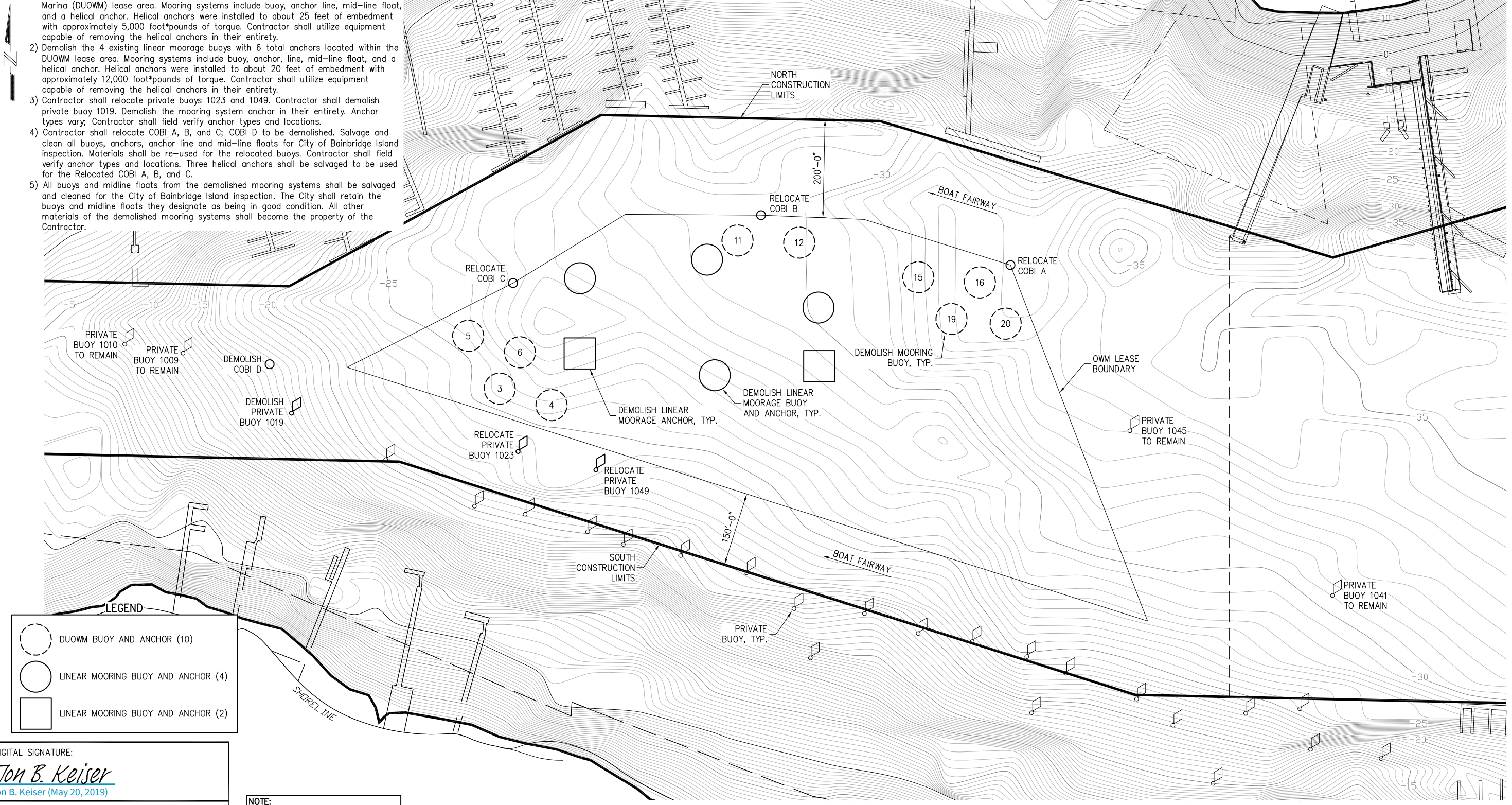


5/20/19 - GDEAN - K:\2018\184094 - BAINBRIDGE ISLAND DAVE ULLIN OPEN WATER MARINA\FINAL DRAWINGS\184094-01.DWG

DEMOLITION NOTES:

- 1) Demolish the 10 existing mooring systems located within the Dave Ullin Open Water Marina (DUOWM) lease area. Mooring systems include buoy, anchor line, mid-line float, and a helical anchor. Helical anchors were installed to about 25 feet of embedment with approximately 5,000 foot-pounds of torque. Contractor shall utilize equipment capable of removing the helical anchors in their entirety.
- 2) Demolish the 4 existing linear moorage buoys with 6 total anchors located within the DUOWM lease area. Mooring systems include buoy, anchor, line, mid-line float, and a helical anchor. Helical anchors were installed to about 20 feet of embedment with approximately 12,000 foot-pounds of torque. Contractor shall utilize equipment capable of removing the helical anchors in their entirety.
- 3) Contractor shall relocate private buoys 1023 and 1049. Contractor shall demolish private buoy 1019. Demolish the mooring system anchor in their entirety. Anchor types vary. Contractor shall field verify anchor types and locations.
- 4) Contractor shall relocate COBI A, B, and C; COBI D to be demolished. Salvage and clean all buoys, anchors, anchor line and mid-line floats for City of Bainbridge Island inspection. Materials shall be re-used for the relocated buoys. Contractor shall field verify anchor types and locations. Three helical anchors shall be salvaged to be used for the Relocated COBI A, B, and C.
- 5) All buoys and midline floats from the demolished mooring systems shall be salvaged and cleaned for the City of Bainbridge Island inspection. The City shall retain the buoys and midline floats they designate as being in good condition. All other materials of the demolished mooring systems shall become the property of the Contractor.



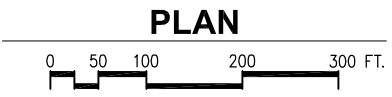
LEGEND

- DUOWM BUOY AND ANCHOR (10)
- LINEAR MOORING BUOY AND ANCHOR (4)
- LINEAR MOORING BUOY AND ANCHOR (2)

DIGITAL SIGNATURE:
Jon B. Keiser
 Jon B. Keiser (May 20, 2019)

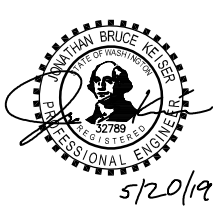
THIS DRAWING SET WAS CREATED AS AN ELECTRONIC DOCUMENT. IF THE ELECTRONIC DOCUMENT DOES NOT INCLUDE A VERIFIABLE DIGITAL SIGNATURE IN THE BOX ABOVE, PLEASE CONTACT THE ENGINEER OF RECORD FOR THE ORIGINAL CERTIFIED ELECTRONIC DOCUMENT.

NOTE:
 ALL EXISTING PIERS ALONG THE SOUTH SHORELINE ARE NOT INCLUDED IN CITY PROVIDED SURVEY. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS.



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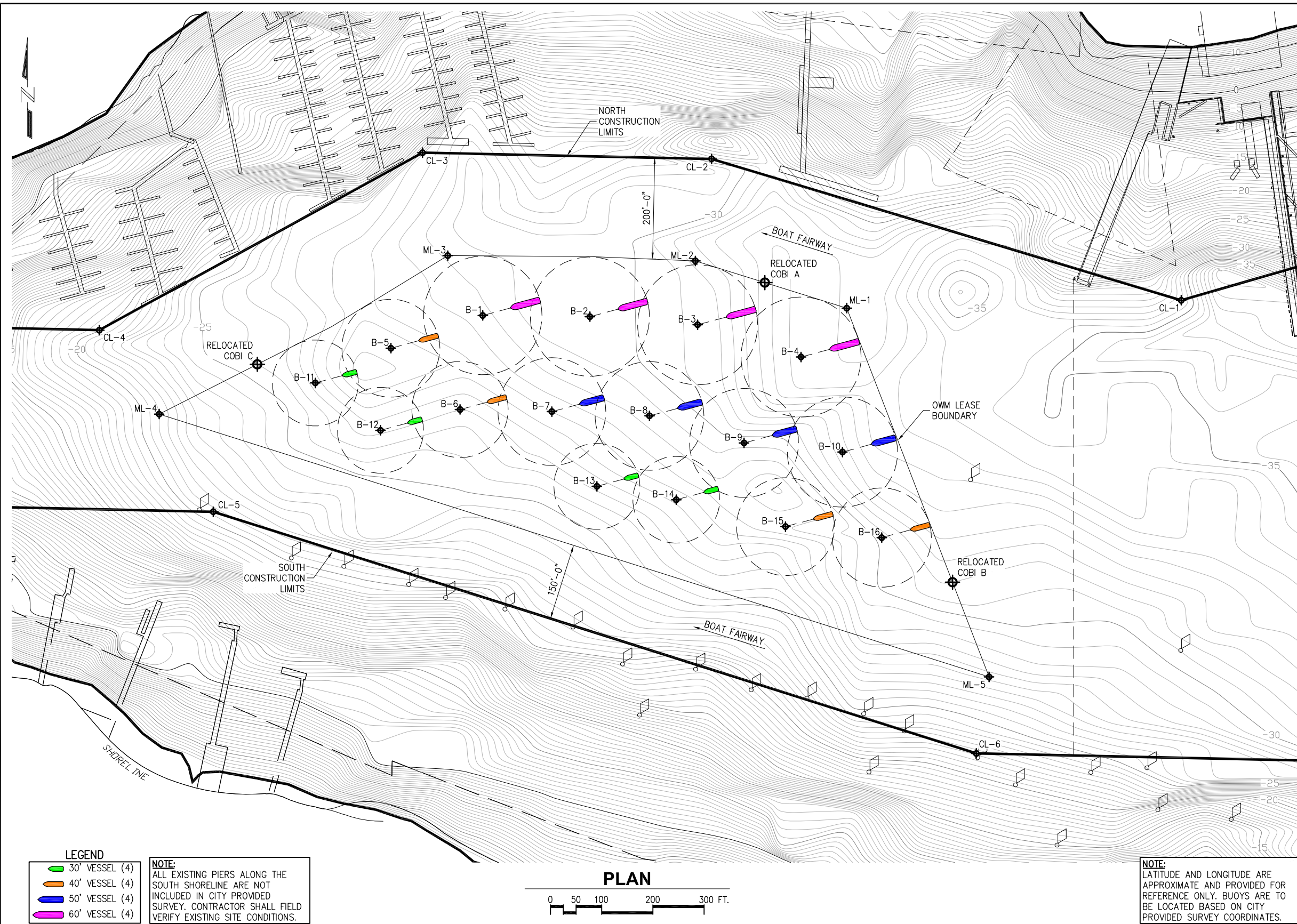
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PROJECT: BAINBRIDGE ISLAND DAVE ULLIN OPEN WATER MARINA

TITLE: EXISTING CONDITIONS AND DEMOLITION PLAN

| | | | | | |
|--------------|-----|-------------|------------|-----------|--------|
| DESIGNED BY: | CF | PROJECT NO: | 184094 | SHEET NO: | 1 OF 3 |
| DRAWN BY: | GRD | DATE: | MARCH 2019 | NOTED | |
| CHECKED BY: | | SCALE: | | | |

5/20/19 - GDEAN - K:\2018\184094 - BAINBRIDGE ISLAND DAVE ULLIN OPEN WATER MARINA\FINAL DRAWINGS\184094-02-03.DWG



| MOORING LIMIT | | | | |
|---------------|-----------|------------|----------------|----------------|
| POINT No. | NORTHING | EASTING | LATITUDE | LONGITUDE |
| ML-1 | 230686.31 | 1225110.84 | N047°37'11.85" | W122°31'02.82" |
| ML-2 | 230778.32 | 1224815.12 | N047°37'12.69" | W122°31'07.17" |
| ML-3 | 230788.71 | 1224331.36 | N047°37'12.69" | W122°31'14.23" |
| ML-4 | 230479.30 | 1223767.82 | N047°37'09.52" | W122°31'22.36" |
| ML-5 | 229965.79 | 1225388.60 | N047°37'04.80" | W122°30'58.54" |

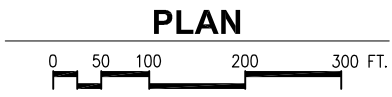
| CONSTRUCTION LIMIT | | | | |
|--------------------|-----------|------------|----------------|----------------|
| POINT No. | NORTHING | EASTING | LATITUDE | LONGITUDE |
| CL-1 | 230701.56 | 1225763.90 | N047°37'12.14" | W122°30'53.30" |
| CL-2 | 230977.69 | 1224846.67 | N047°37'14.67" | W122°31'06.77" |
| CL-3 | 230989.82 | 1224282.08 | N047°37'14.67" | W122°31'15.02" |
| CL-4 | 230643.29 | 1223650.95 | N047°37'11.11" | W122°31'24.12" |
| CL-5 | 230288.43 | 1223873.61 | N047°37'07.66" | W122°31'20.75" |
| CL-6 | 229816.29 | 1225363.84 | N047°37'03.32" | W122°30'58.85" |

| NAVIGATION BUOYS | | | | |
|------------------|-----------|------------|----------------|----------------|
| POINT No. | NORTHING | EASTING | LATITUDE | LONGITUDE |
| COBI A | 230736.01 | 1224950.82 | N047°37'12.31" | W122°31'05.18" |
| COBI B | 230150.90 | 1225317.24 | N047°37'06.61" | W122°30'59.64" |
| COBI C | 230576.55 | 1223959.60 | N047°37'10.52" | W122°31'19.59" |

| MOORING SCHEDULE | | | | |
|------------------|-----------|------------|----------------|----------------|
| POINT No. | NORTHING | EASTING | LATITUDE | LONGITUDE |
| B-1 | 230671.97 | 1224399.82 | N047°37'11.55" | W122°31'13.20" |
| B-2 | 230669.55 | 1224609.02 | N047°37'11.58" | W122°31'10.14" |
| B-3 | 230653.72 | 1224819.51 | N047°37'11.47" | W122°31'07.07" |
| B-4 | 230590.72 | 1225021.42 | N047°37'10.89" | W122°31'04.10" |
| B-5 | 230607.92 | 1224220.32 | N047°37'10.88" | W122°31'15.79" |
| B-6 | 230488.22 | 1224355.35 | N047°37'09.73" | W122°31'13.79" |
| B-7 | 230484.12 | 1224534.79 | N047°37'09.73" | W122°31'11.17" |
| B-8 | 230475.74 | 1224725.52 | N047°37'09.69" | W122°31'08.38" |
| B-9 | 230422.87 | 1224910.05 | N047°37'09.21" | W122°31'05.67" |
| B-10 | 230405.15 | 1225102.38 | N047°37'09.07" | W122°31'02.86" |
| B-11 | 230540.11 | 1224072.75 | N047°37'10.18" | W122°31'17.93" |
| B-12 | 230447.58 | 1224199.95 | N047°37'09.30" | W122°31'16.04" |
| B-13 | 230338.13 | 1224622.61 | N047°37'08.31" | W122°31'09.84" |
| B-14 | 230311.89 | 1224777.76 | N047°37'08.08" | W122°31'07.57" |
| B-15 | 230259.47 | 1224991.05 | N047°37'07.61" | W122°31'04.44" |
| B-16 | 230238.02 | 1225179.18 | N047°37'07.44" | W122°31'01.68" |

- LEGEND**
- █ 30' VESSEL (4)
 - █ 40' VESSEL (4)
 - █ 50' VESSEL (4)
 - █ 60' VESSEL (4)

NOTE:
ALL EXISTING PIERS ALONG THE SOUTH SHORELINE ARE NOT INCLUDED IN CITY PROVIDED SURVEY. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS.



NOTE:
LATITUDE AND LONGITUDE ARE APPROXIMATE AND PROVIDED FOR REFERENCE ONLY. BUOYS ARE TO BE LOCATED BASED ON CITY PROVIDED SURVEY COORDINATES.

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PROJECT: BAINBRIDGE ISLAND DAVE ULLIN OPEN WATER MARINA

TITLE: PROPOSED BUOY LAYOUT

| | | | | | |
|--------------|-----|-------------|------------|-----------|--------|
| DESIGNED BY: | CF | PROJECT NO: | 184094 | SHEET NO: | 2 OF 3 |
| DRAWN BY: | GRD | DATE: | MARCH 2019 | NOTED | |
| CHECKED BY: | | SCALE: | | | |

DESIGN CRITERIA

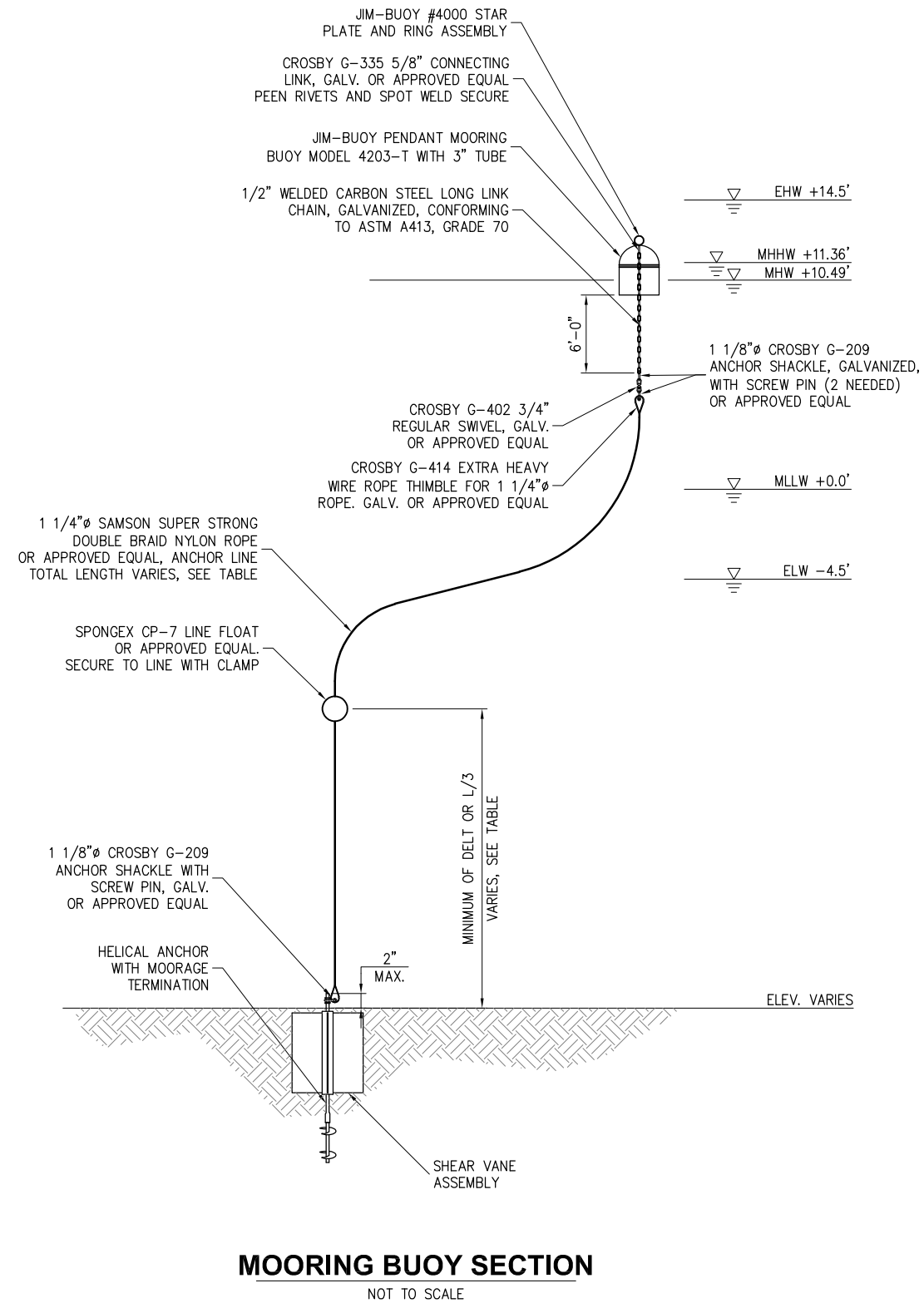
- 1) The maximum allowable line tension, working load, is 6.0 kips for all components along the load path of mooring system, above the anchor.
- 2) The helix mooring anchor is designed to resist a lateral load of 3.8 kip, corresponding to a 60 foot vessel with a 110 mph wind. Loads exceeding this amount may rotate the helix anchor, resulting in possible damage. Annual inspections of the anchor system are recommended.
- 3) Layout is based off the DUOWM lease area survey provided by the City of Bainbridge Island.
- 4) Buoy locations are approximate and are shown in the same coordinate system as the City provided survey.
- 5) Contractor shall coordinate with the City of Bainbridge Island to field locate buoy.

INSTALLATION NOTES

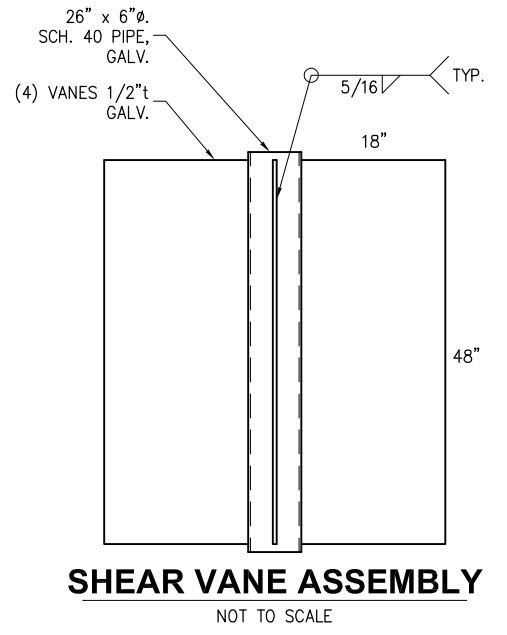
- 1) All materials for mooring buoys in the DUOWM lease area shall be new and free from defects.
- 2) North and East Coordinates are taken from AutoCAD drawings provided by the City of Bainbridge Island.
- 3) The contractor shall field verify the seafloor elevations listed in the Mooring Schedule before installing anchors. If the measured elevation is more than 2 feet different from those listed in the Mooring Schedule then notify the Engineer before proceeding with installation.
- 4) The total anchor line length in the Mooring Schedule is the distance from the anchor termination to the bottom of the mooring buoy, and does not include the length of chain above the water surface within the float.
- 5) All helix anchors shall be SS175 1-3/4 inches standard anchor by MacLean Dixie HFS, or approved equal. The helix anchor lead section shall be 14 inch dia. twin helix. The number and diameter of the helix plates may be adjusted with the approval of the Engineer in order to achieve adequate penetration and load capacity. Helix extension shafts may be required in soft soils to achieve adequate load capacity.
- 6) Helix anchors shall include a shear vane assembly to resist lateral loads, as indicated on the drawings. The shear vane consists of four plates, welded to a pipe, and installed by slipping over the mooring termination. Shear vane assembly shall be below sea floor in its entirety.
- 7) The Contractor shall screw each anchor into the sea bottom until a minimum torque of 5,000 foot pounds is achieved. In addition, each anchor shall have a minimum embedment of 10 times the diameter of the top helix on the anchor. In addition, all helix anchors shall be proof loaded, as described below. Torque shall be measured with a psi gauge on the installation equipment that has been calibrated to foot-pounds of torque by the anchor manufacturer. Before construction, the Contractor shall supply the Engineer with a letter from the Manufacturer certifying the calibration and describing the calibration methods for the specific equipment being used, and a calibration chart.
- 8) All helix anchors shall be proof loaded to 10,500 pounds vertical, static load. The static load shall be held constant for a minimum of 60 seconds, with no slippage or vertical movement of the anchor. Proof loads shall be applied directly to each helix anchor and not through the rope, chain, buoy or other mooring system components. If failure occurs, the Contractor shall reinstall at no additional cost.
- 9) Each helix anchor marine termination shall be not more than 2 inch above the existing sea floor.
- 10) Secure all pinned hardware and shackles with stainless steel seizing wire. Nylon ties shall not be used. Seizing wire shall be wrapped tight at all times, using min. 8 wraps with a systematic pattern so that all strands are parallel.
- 11) After installation, the Contractor shall submit a record of installation that lists the psi, torque, embedment depth and proof load applied for each anchor along with as-built drawings that show the actual locations where anchors have been placed, specific anchors used, and any other deviations from the original plans. Each installation shall be video recorded and a copy of the video delivered to the Engineer.
- 12) DUOWM Mooring buoys shall be labeled as follows:

DUOWM BUOY: B-10 MAX. VESSEL LENGTH = 50 FEET

Label for buoy B-10 shown as example. Buoy identification and vessel length to match the Mooring Schedule. Buoys labels shall be painted for paint suitable for the marine environment. Submit paint data sheet and stencil to the City for approval. Coordinate paint color with the City.
- 13) Contractor shall install decals provided by the City onto buoys COBI A, B and C. Coordinate with the City for decal install location.



| MOORING SCHEDULE | | | | | | | | | | | |
|------------------|--------------------|----------------|-------------|-------|---------------------------------|-------------|------------|-----------------------|---------------|--------------------|----------------------------|
| Buoy # | Max. Vessel (feet) | Mudline (feet) | DEHT (feet) | Scope | Total Anchor Line Length (feet) | DELT (feet) | Line Swing | Design Bowline (feet) | Vessel Length | Inner Swing Radius | Swing Radius at ELW (feet) |
| B-1 | 60 | 28.5 | 43 | 1.2 | 51.6 | 24 | 45.68 | 10 | 60 | 45.68 | 115.68 |
| B-2 | 60 | 29.5 | 44 | 1.2 | 52.8 | 25 | 46.51 | 10 | 60 | 46.51 | 116.51 |
| B-3 | 60 | 30.5 | 45 | 1.2 | 54.0 | 26 | 47.33 | 10 | 60 | 47.33 | 117.33 |
| B-4 | 60 | 30.5 | 45 | 1.2 | 54.0 | 26 | 47.33 | 10 | 60 | 47.33 | 117.33 |
| B-5 | 40 | 28.5 | 43 | 1.2 | 51.6 | 24 | 45.68 | 10 | 40 | 45.68 | 95.68 |
| B-6 | 40 | 26.5 | 41 | 1.2 | 49.2 | 22 | 44.01 | 10 | 40 | 44.01 | 94.01 |
| B-7 | 50 | 28 | 42.5 | 1.2 | 51.0 | 23.5 | 45.26 | 10 | 50 | 45.26 | 105.26 |
| B-8 | 50 | 29 | 43.5 | 1.2 | 52.2 | 24.5 | 46.09 | 10 | 50 | 46.09 | 106.09 |
| B-9 | 50 | 29.5 | 44 | 1.2 | 52.8 | 25 | 46.51 | 10 | 50 | 46.51 | 106.51 |
| B-10 | 50 | 31 | 45.5 | 1.2 | 54.6 | 26.5 | 47.74 | 10 | 50 | 47.74 | 107.74 |
| B-11 | 30 | 26.5 | 41 | 1.2 | 49.2 | 22 | 44.01 | 10 | 30 | 44.01 | 84.01 |
| B-12 | 30 | 26.5 | 41 | 1.2 | 49.2 | 22 | 44.01 | 10 | 30 | 44.01 | 84.01 |
| B-13 | 30 | 26.5 | 41 | 1.2 | 49.2 | 22 | 44.01 | 10 | 30 | 44.01 | 84.01 |
| B-14 | 30 | 27.5 | 42 | 1.2 | 50.4 | 23 | 44.85 | 10 | 30 | 44.85 | 84.85 |
| B-15 | 40 | 28.5 | 43 | 1.2 | 51.6 | 24 | 45.68 | 10 | 40 | 45.68 | 95.68 |
| B-16 | 40 | 30 | 44.5 | 1.2 | 53.4 | 25.5 | 46.92 | 10 | 40 | 46.92 | 96.92 |



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PROJECT: BAINBRIDGE ISLAND DAVE ULLIN OPEN WATER MARINA

TITLE: BUOY SECTION AND INSTALLATION NOTES

DESIGNED BY: CF PROJECT NO: 184094 SHEET NO:
 DRAWN BY: GRD DATE: MARCH 2019 3 OF 3
 CHECKED BY: SCALE: NOTED

5/20/19 - GDEAN - K:\2018\184094 - BAINBRIDGE ISLAND DAVE ULLIN OPEN WATER MARINA\FINAL DRAWINGS\184094-02-03.DWG