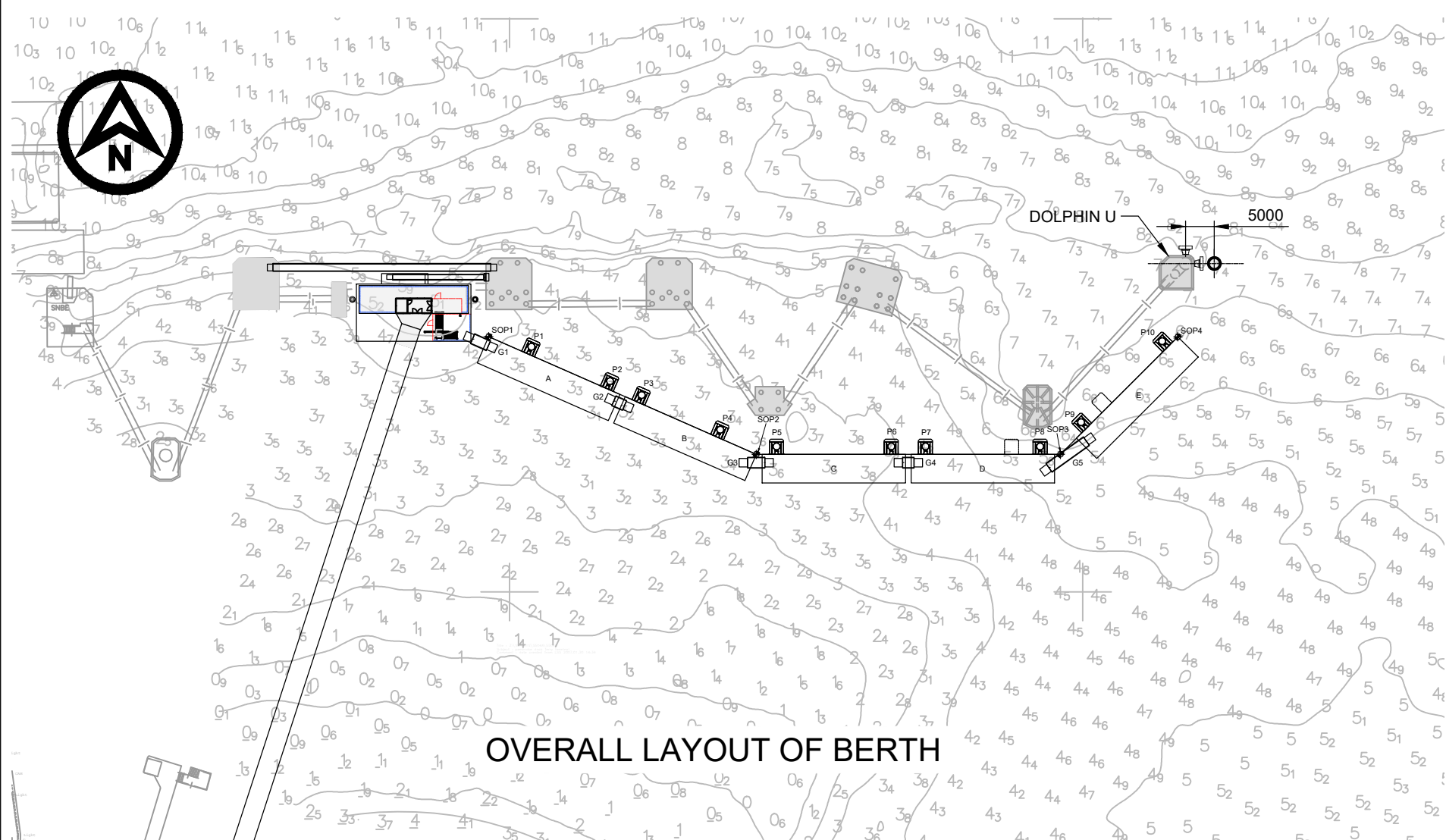
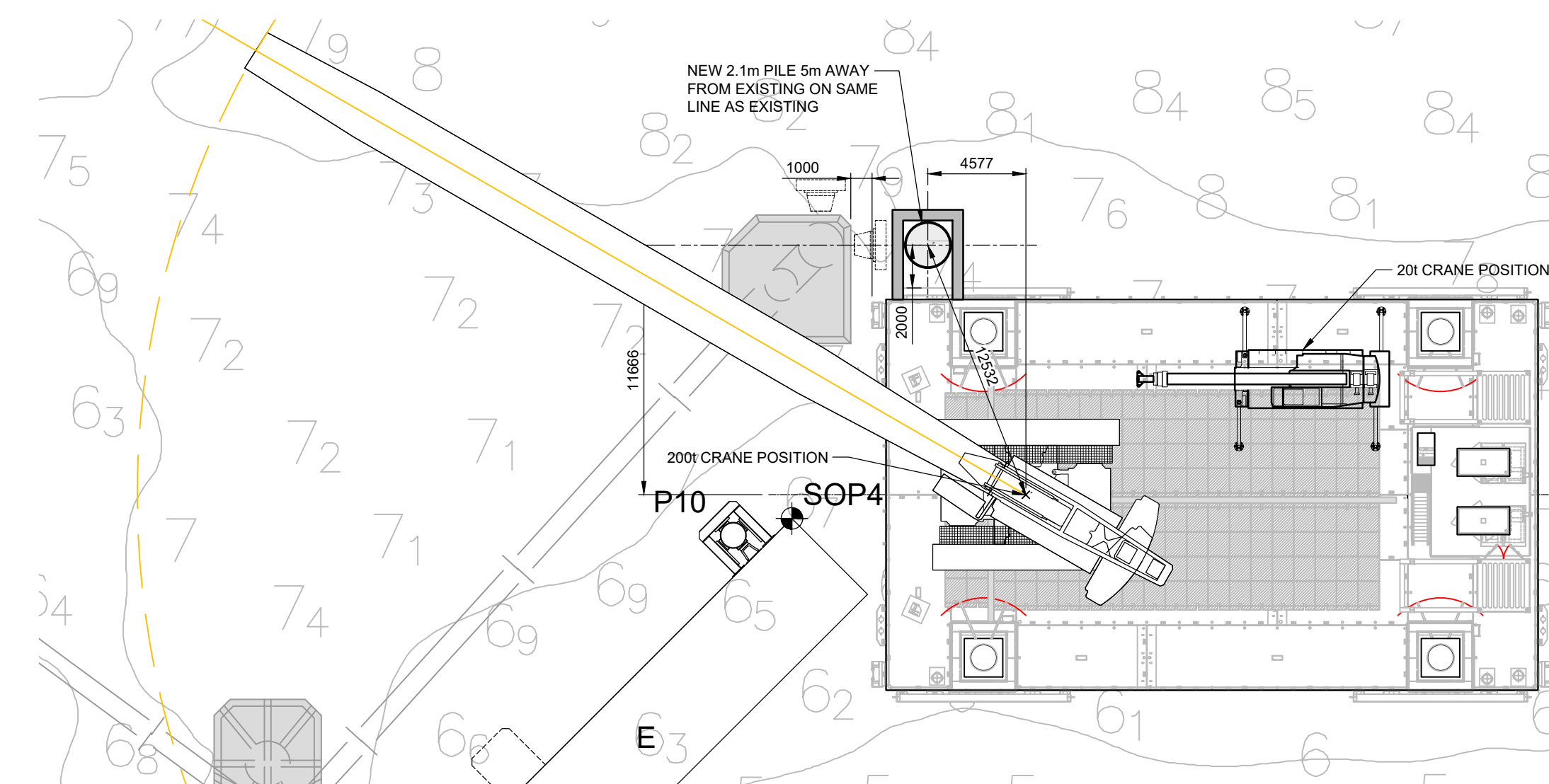




OVERALL LAYOUT OF BERTH



- PHASE 1**
- PILE INSTALLATION - ROCK SOCKET**
- CONSTRUCTION SEQUENCE**
1. POSITION JIB TO EAST OF EXISTING DOLPHIN U AND AS FAR BEHIND THE BERTHING LINE AS THE OPERATIONAL REACH OF THE CRANE AND PILE FRAME WILL ALLOW.
 2. INSTALL A SLEEVE THAT IS A LARGER DIAMETER THAN THE PILE INTO THE SEA BED WITH A VIBRATING HAMMER. THE SLEEVE IS INSTALLED AS A SHIELD TO PREVENT LOOSE MATERIAL FALLING INTO THE SOCKET DRILLED INTO THE SEA BED. (1 DAY)
 3. DEPLOY ROCK SOCKETING DRILL FROM BARGE AND START TO DRILL SOCKET WITHIN SLEEVE INTO THE ROCK OF THE SEA BED TO THE DEPTH OF THE TOE OF THE PILE WHICH WILL BE APPROXIMATELY -23M CD WHICH IS APPROXIMATELY 15M BELOW THE SEA BED LEVEL. (2 DAYS)
 4. WHEN SOCKET HAS BEEN DRILLED OUT THE PILE WILL BE PLACED INTO THE SOCKET AND UNDER WATER GROUT WILL BE PUMPED INTO THE BASE OF THE OF THE SOCKET UNTIL THE GROUT IS AT SEA BED LEVEL. (1 DAY)
 5. THE PILE WILL THEN BE HELD IN THE PILING FRAME UNTIL SUCH TIME AS THE GROUT HAS GAINED ENOUGH STRENGTH TO SUPPORT THE PILE (1 TO 2 DAYS DEPENDENT ON CUBE RESULTS)
- PHASE 1 - PILE INSTALLATION - UNDER REAM AND DRIVE PILE (ALTERNATIVE SOLUTION)**
1. AS ABOVE
 2. POSITION PILE IN PILE FRAME AND DRIVE TO REFUSAL WITH VIBRATING HAMMER (1 TO 2 DAYS)
 3. POSITION UNDER REAMING DRILL WITHIN PILE AND DRILL DOWN WITHIN PILE UNTIL ROCK STARTS TO FALL IN HOLE
 4. RETRACT UNDER REAMING DRILL AND DRIVE PILE TO REFUSAL WITH HYDRAULIC HAMMER
 5. REPEAT STEPS 3 AND 4 UNTIL TOE OF PILE REACHES THE DESIGN DEPTH
 6. ITEMS 3 TO 5 WILL TAKE ANYTHING FROM 3 TO 6 DAYS DEPENDENTS ON THE EASE OF DRILLING THROUGH THE GROUND CONDITIONS

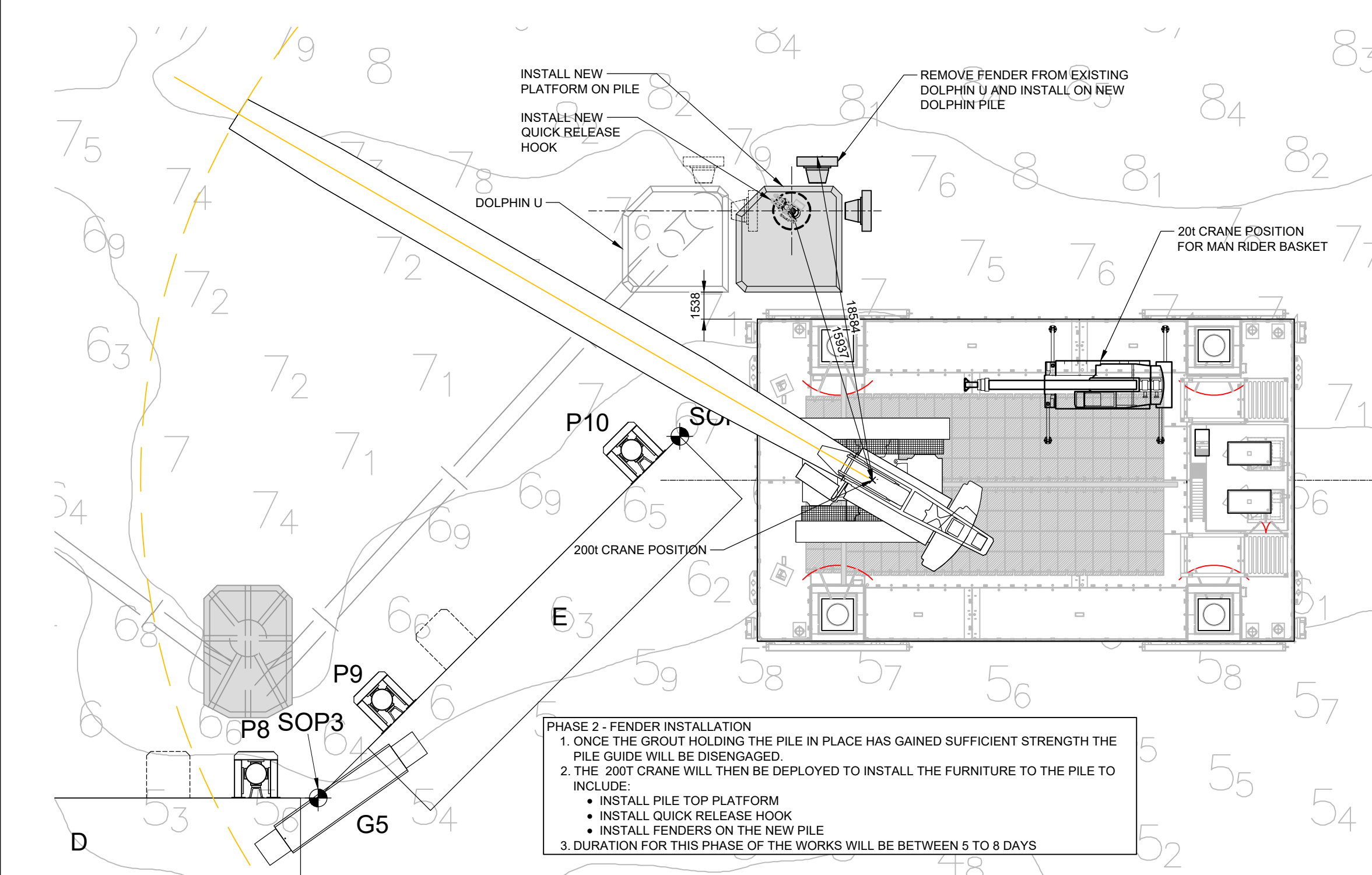
NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES ABOVE CHART DATUM.
3. CHART DATUM = -3.710 mOD.
4. BATHYMETRY BASED ON 2020 ANNUAL SURVEY FOR E6 BY ASPECT LAND + HYDROGRAPHIC SURVEYORS.
5. THESE PONTOONS ARE TO INCLUDE AN ADDITIONAL SET OF PILE GUIDE FIXINGS TO BE INTERCHANGEABLE WITH A & B.

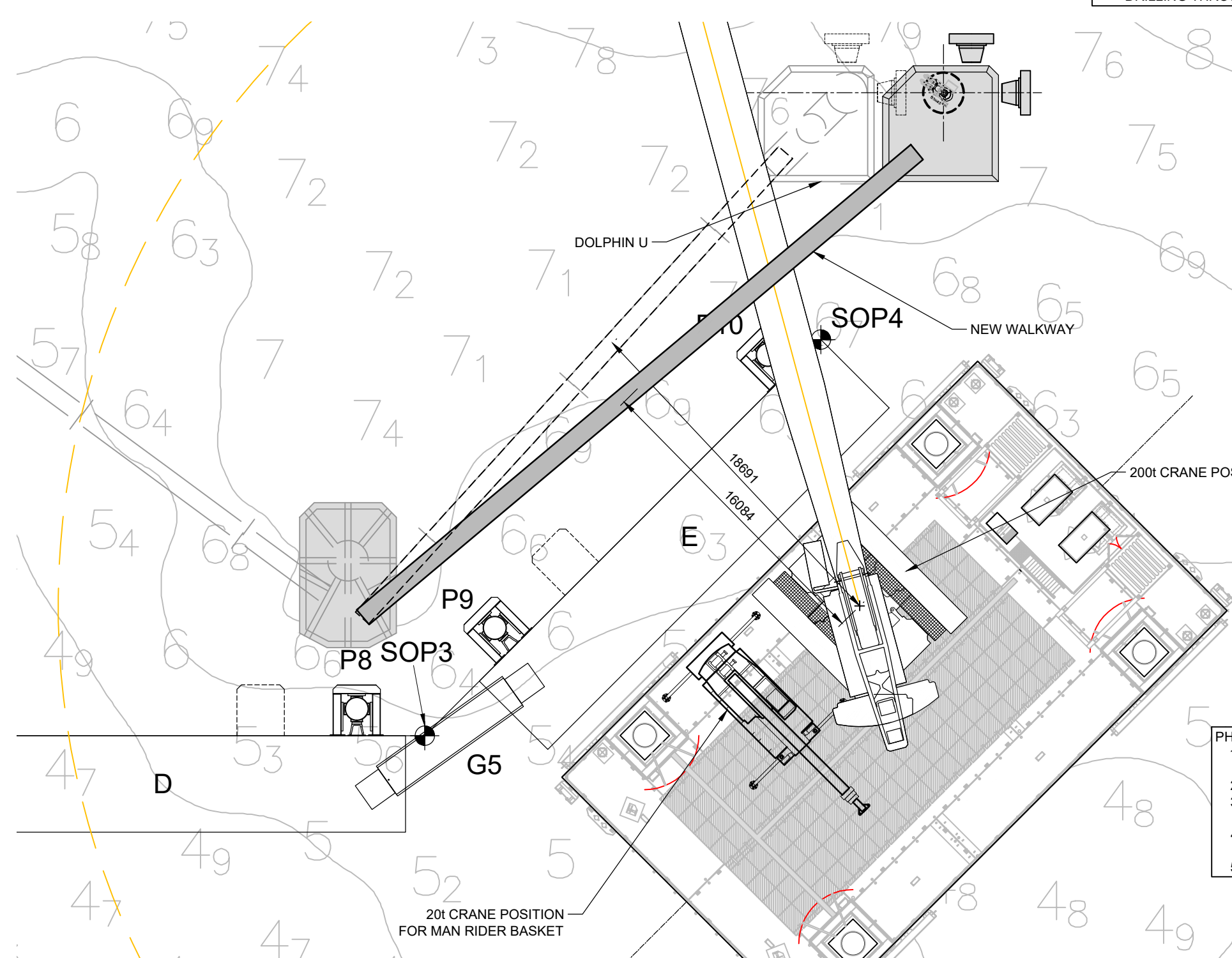
KEY

RED LINE BOUNDARY

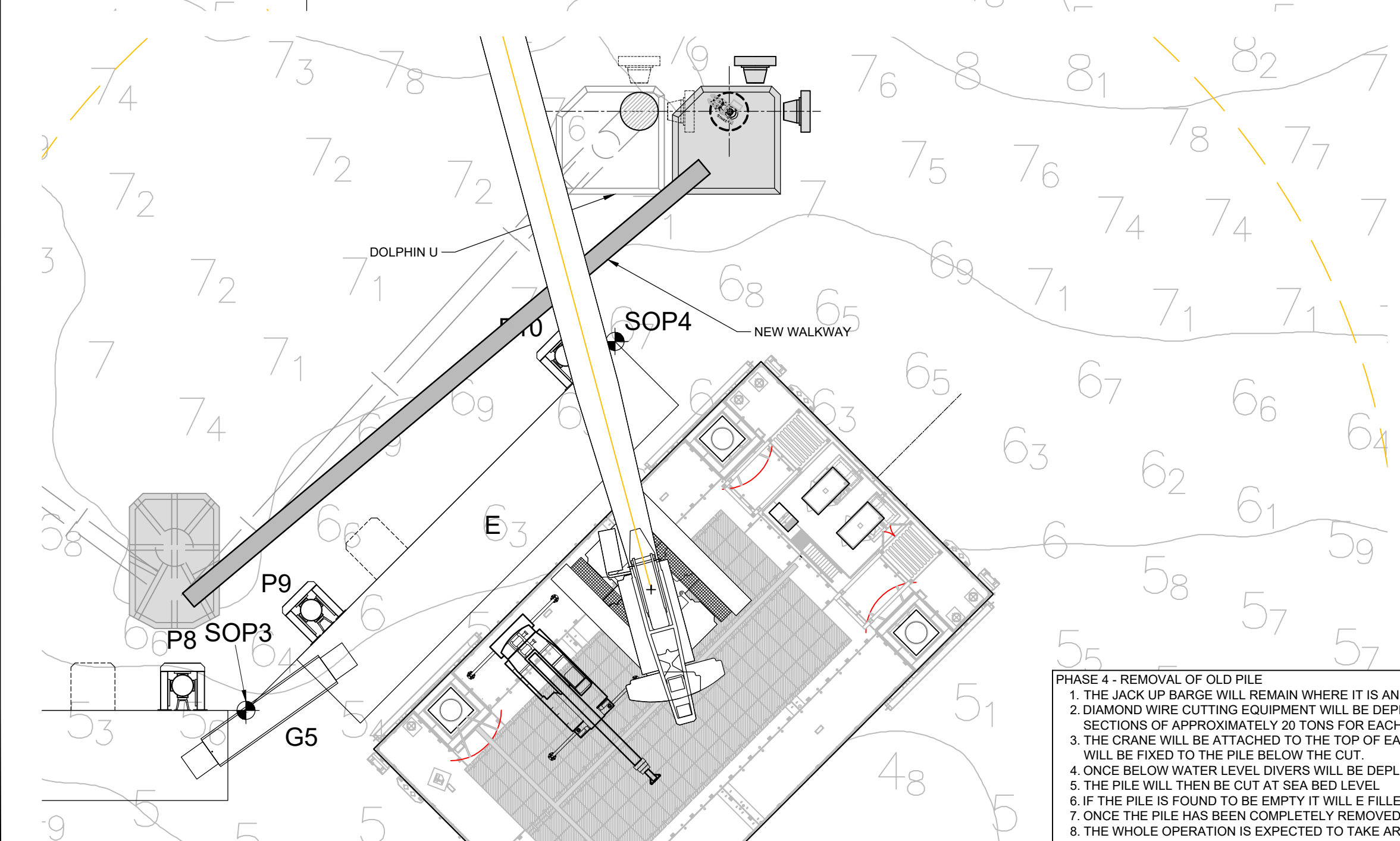
**NOT FOR
CONSTRUCTION**



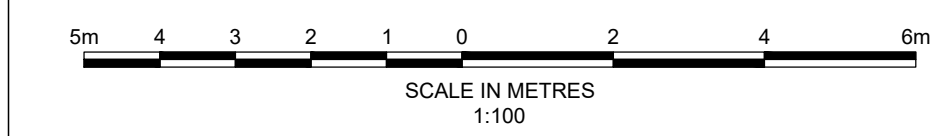
- PHASE 2 - FENDER INSTALLATION**
1. ONCE THE GROUT HOLDING THE PILE IN PLACE HAS GAINED SUFFICIENT STRENGTH THE PILE GUIDE WILL BE DISENGAGED.
 2. THE 200T CRANE WILL THEN BE DEPLOYED TO INSTALL THE FURNITURE TO THE PILE TO INCLUDE:
 - INSTALL PILE TOP PLATFORM
 - INSTALL QUICK RELEASE HOOK
 - INSTALL FENDERS ON THE NEW PILE
 3. DURATION FOR THIS PHASE OF THE WORKS WILL BE BETWEEN 5 TO 8 DAYS



- PHASE 3 - INSTALL NEW WALKWAY**
1. THE JACK UP BARGE WILL BE MOVED TO A MORE ADVANTAGEOUS POSITION TO EMPLOY THE CRANE TO LIFT THE WALKWAYS
 2. THE CRANE WILL THEN LIFT THE OLD WALKWAY OFF
 3. IT WILL THEN BE NECESSARY TO UNDERTAKE SOME AMENDMENTS TO DOLPHIN T PLATFORM TO ACCEPT THE WALKWAY FORM A SLIGHTLY DIFFERENT ANGLE
 4. THE NEW WALKWAY FROM DOLPHIN T TO THE NEW DOLPHIN WILL THEN BE LIFTED INTO POSITION USING THE 200T CRANE
 5. THIS PHASE OF THE OPERATIONS IS LIKELY TO TAKE 1 TO 2 DAYS



- PHASE 4 - REMOVAL OF OLD PILE**
1. THE JACK UP BARGE WILL REMAIN WHERE IT IS AND THE CRANE WILL MOVE UP TOWARDS THE BERTHING LINE
 2. DIAMOND WIRE CUTTING EQUIPMENT WILL BE DEPLOYED ONTO THE PILE TO CUT THE PILE TOP OFF AT SECTIONS OF APPROXIMATELY 20 TONS FOR EACH SECTION
 3. THE CRANE WILL BE ATTACHED TO THE TOP OF EACH SECTION AND THE DIAMOND WIRE CUTTING EQUIPMENT WILL BE FIXED TO THE PILE BELOW THE CUT.
 4. ONCE BELOW WATER LEVEL DIVERS WILL BE DEPLOYED TO FIX THE DIAMOND WIRE CUTTING EQUIPMENT.
 5. THE PILE WILL THEN BE CUT AT SEA BED LEVEL
 6. IF THE PILE IS FOUND TO BE EMPTY IT WILL BE FILLED WITH CONCRETE TO BED LEVEL VIA A TREMY TUBE
 7. ONCE THE PILE HAS BEEN COMPLETELY REMOVED THE JUB WILL BE DEMOBILISED AND MOVED OFF SITE
 8. THE WHOLE OPERATION IS EXPECTED TO TAKE AROUND 6 WEEKS
 9. THIS PHASE OF THE OPERATION IS LIKELY TO TAKE BETWEEN 7 TO 12 DAYS



REV	DATE	DESCRIPTION	BY	CHK	APP
REVISIONS					
CLIENT					
 Port of Milford Haven					
PROJECT PEMBROKE DOCK FERRY TERMINAL DOLPHIN U DAMAGE RECTIFICATION					
TITLE PROPOSED CONSTRUCTION METHODOLOGY FOR INSTALLATION OF A NEW DOLPHIN PILE					
 Honeycomb, Edmund Street Liverpool, L3 9NG Tel: +44 (0)151 230 2944 Email: info.liv@rhdhv.com www.royalhaskoningdhv.com					
DRAWN	DD	CHECKED	M.P.	APPROVED	A.R.
DATE	AUG. 2022	SCALE	AS SHOWN	REF.	
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