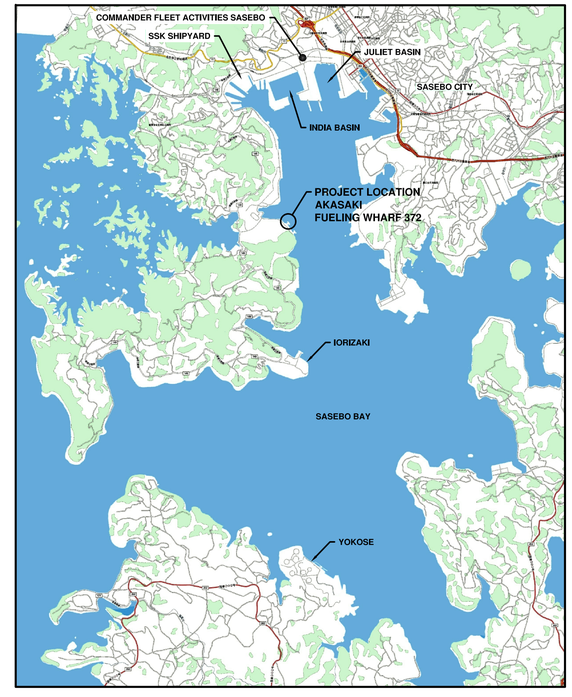
DEPARTMENT OF THE NAVY,
NAVAL FACILITIES ENGINEERING AND
EXPEDITIONARY WARFARE CENTER

REPAIRS TO FUELING WHARF 372

AKASAKI TERMINAL, SASEBO, JAPAN

JAPAN MAP

AREA MAP



SASEBO MAP

SYM	DESCRIPTION	DATE	APPR

NAVFAC

COMMONWEALTH OF MASSACHUSETTS
CHARLES MARSHALL ROBERTS
No. 50339
REGISTERED PROFESSIONAL ENGINEER
4/23/13
SEAL

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APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES CMR DRW TEQ CHK CDS
BRANCH MANAGER
CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND
FISC, AKASAKI TERMINAL
SASEBO, JAPAN
REPAIRS TO FUELING WHARF 372
TITLE SHEET

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
10006524
SHEET 1 OF 12
GI-001

DRAWFORM REVISION: 10 MARCH 2009

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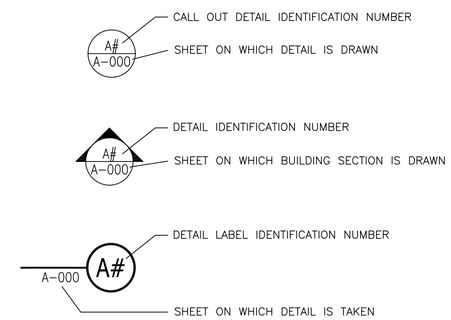
10	S-503	10006533	BOLLARD AKSW-2 UPGRADE DETAILS
11	S-504	10006534	BOLLARD AKSW-3 REPLACEMENT DETAILS
12	S-601	10006535	REPAIR SCHEDULE

SYMBOLS



SYM	DESCRIPTION	DATE	APPR

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NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND

FISC, AKASAKI TERMINAL
SASEBO, JAPAN

REPAIRS TO FUELING WHARF 372

DRAWING INDEX

SCALE: AS NOTED

EPROJECT NO.:

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
10006525

SHEET 2 OF 12

GI-002

DRAWFORM REVISION: 10 MARCH 2009

PROJECT DESCRIPTION

REPAIRS TO FUELING WHARF 372 SHALL INCLUDE BUT ARE NOT LIMITED TO:

- UPGRADING THE CAPACITY OF BOLLARD AKSW–2
- REMOVING AND REPLACING EXISTING BOLLARD AKSW–3 WITH A NEW BOLLARD AND FOUNDATION.
- REPAIRS TO THE PIER STRUCTURE INCLUDE REPAIRING SPALLS AND CRACKS IN THE CONCRETE DECK AND CAISSON.
- REPLACEMENT OF A MISSING STONE COPING BLOCK WITH A NEW STONE COPING BLOCK.
- CLEANING AND RECOATING OF ALL MOORING HARDWARE.

GENERAL

1. THE FUEL FACILITIES ARE CONSIDERED A HIGHLY FLAMMABLE AREA WITH RESTRICTED ACCESS. USE OF FLAME PRODUCING EQUIPMENT AND HAZARDOUS MATERIALS IS RESTRICTED. THE CONTRACTOR SHALL OBTAIN A HOT WORK PERMIT FROM THE BASE FIRE CHIEF PRIOR TO CONSTRUCTION. NO HOT WORK SHALL BE ALLOWED DURING FUELING OPERATIONS.
2. CONTRACTORS ACTIVITIES SHALL NOT BLOCK FIRE LANES ON ANY OF THE FACILITIES DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL PROVIDE TEMPORARY FENCE OR BARRIER AT SURROUNDINGS OF WORK SITE TO PRECLUDE SAFETY HAZARD AS NECESSARY. CONTRACTOR SHALL PROVIDE FLASHING LIGHTS AROUND TEMPORARY FENCE OF BARRICADE DURING NIGHT.
4. THE CONTRACTOR'S WORKERS SHALL KEEP WITHIN LIMITS OF THE WORK AREA AND SHALL NOT ENTER ANY RESTRICTED AREAS UNLESS REQUIRED TO DO SO AND ARE CLEARED FOR SUCH ENTRY.
5. NO SMOKING IS ALLOWED EXCEPT IN DESIGNATED SMOKING AREAS.
6. OPENING AND CLOSING OF EXISTING GATE FOR ENTRANCE TO WHARF AND CUSTODY OF KEY FOR LOCK OF GATE SHALL BE COORDINATED WITH THE SECURITY DEPARTMENT AND RELATED DEPARTMENT VIA THE CONTRACTING OFFICER.
7. THE CONTRACTOR SHALL PROVIDE FALL PROTECTION FOR WORKERS WORKING BESIDE WHARF. ALSO WORKERS SHALL WEAR LIFE JACKETS. SCAFFOLDING SHALL BE PROVIDED AS NECESSARY. IN THIS CASE, THE SCAFFOLDING PLAN SHALL BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK.
8. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE CONDITIONS AT THE SITE AND SUGGESTED CONSTRUCTION SEQUENCES SHOWN ON THE DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY SAFE GUARDS TO MAINTAIN ALL PARTS OF THE EXISTING PIER STRUCTURE IN SAFE CONDITION AT ALL TIMES DURING THE PROCESS OF CONSTRUCTION AND TO PROTECT THE STRUCTURE FROM DAMAGE.
9. THE CONTRACTOR SHALL VERIFY AT THE JOB SITE ALL DIMENSIONS AND CONDITIONS PERTAINING TO THE WORK. SHOULD ACTUAL FIELD CONDITIONS VARY FROM THOSE SHOWN, THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER PRIOR TO PROCEEDING WITH THE WORK.
10. THE FACILITIES ARE EXPOSED TO SEVERE WEATHER CONDITIONS THAT WILL EFFECT THE WORK. CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO PROTECT THE WORK AND SHALL BE RESPONSIBLE FOR ANY LOSS OF TIME AND EQUIPMENT OR DAMAGE TO THE WORK AS A RESULT OF THE WEATHER.
11. UTILITIES ARE SHOWN ON THE PLAN FOR REFERENCE PURPOSES ONLY. THE CONTRACTOR SHALL PROCEED WITH CAUTION DURING ALL EXCAVATION AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGED UTILITIES. THE CONTRACTOR SHALL COORDINATE ALL EXCAVATION PERMISSIONS WITH THE CONTRACTING OFFICER AND PUBLIC WORKS DEPARTMENT.
12. IF THE CONTRACTOR ENCOUNTERS UTILITIES THAT AFFECT THE WORK THAT ARE NOT SHOWN ON THE PLANS THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER PRIOR TO CONTINUING WITH THE WORK.
13. THE CONTRACTOR SHALL MAKE SURE ALL MEASURES LAID OUT IN THEIR APPROVED SPILL PREVENTION, CONTROL, AND RESPONSE (SPCR) PLAN ARE IN PLACE PRIOR TO THE START OF ANY CONSTRUCTION.
14. IF THE CONTRACTOR MUST DISTURB THE EXISTING SECURITY FENCE FOR REPAIRS, A TEMPORARY SECURITY FENCE SHALL BE ERECTED DURING THE REPAIR PROCESS AND SHALL REMAIN SECURE AT ALL TIMES. THE PERMANENT SECURITY FENCE SHALL BE REPLACED IN KIND AT THE CONCLUSION OF THE REPAIR PROCESS.
15. INFORMATION REGARDING EXISTING CONSTRUCTION AND CONDITIONS IS BASED ON FIELD INSPECTION AND IS INCLUDED TO ASSIST THE CONTRACTOR. THE CONTRACTING OFFICER ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY OR COMPLETENESS.
16. THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER WHEN UNANTICIPATED OR APPARENTLY DANGEROUS CONDITIONS ARE UNCOVERED DURING CONSTRUCTION OR DEMOLITION.
17. DETAILS NOT SPECIFICALLY SHOWN SHALL BE SIMILAR TO THOSE FOR MOST NEARLY SIMILAR CONDITION AS DETERMINED BY THE CONTRACTING OFFICER.
18. THE CONTRACTOR SHALL SHORE, BRACE, SHEETPILE OR OTHERWISE SUPPORT THE STRUCTURE AND EXCAVATIONS AS REQUIRED TO MAINTAIN STRUCTURAL INTEGRITY AT ALL TIMES.

DEMOLITION

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL WASTE MATERIALS AND DEMOLISHED MATERIALS NOT BEING REUSED OFF SITE AT AN APPROVED FACILITY.
2. CONTRACTOR SHALL NOT ALLOW ANY WASTE MATERIALS TO ENTER THE WATER. CONTRACTOR SHALL TAKE MEASURES TO COLLECT ALL DEMOLISHED WASTE.
3. CONTRACTOR SHALL INSTALL A DEBRIS BOOM AROUND ALL WORK AREAS OVER THE WATER. ALL DEBRIS COLLECTED IN THE BOOM SHALL BE REMOVED DAILY.
4. CONTRACTOR SHALL NOT UTILIZE GOVERNMENT FUEL BOOM FOR DEBRIS CONTAINMENT.
5. CONTRACTOR SHALL COLLECT AND REMOVE ALL DEMOLITION DEBRIS AND WASTE MATERIALS THAT ENTER THE WATER AND LAY ON THE BOTTOM.

FOUNDATIONS

1. FOUNDATIONS HAVE BEEN DESIGNED BASED UPON A PRESUMPTIVE BEARING CAPACITY OF 130 KPA. THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER IMMEDIATELY IN UNSUITABLE BEARING MATERIALS EXIST.
2. THE CONTRACTING OFFICER ASSUMES NO RESPONSIBILITY FOR THE VALIDITY OF SUBSURFACE CONDITIONS WHERE DESCRIBED ON DRAWINGS, SPECIFICATIONS, TEST BORINGS, OR TEST PITS. THESE DATA ARE INCLUDED ONLY TO ASSIST THE CONTRACTOR DURING CONSTRUCTION, AND REPRESENT CONDITIONS ONLY AT THESE SPECIFIC LOCATIONS AT THE PARTICULAR TIME THEY WERE MADE.
3. UNSUITABLE BEARING MATERIALS, SUCH AS MISCELLANEOUS FILL AND ORGANIC SOILS MAY EXIST IN AREAS OF NEW FOUNDATIONS. EXISTING UNSUITABLE MATERIALS SHALL BE EXCAVATED AS DIRECTED OR AS INDICATED ON THE DRAWINGS AND SHALL BE FOLLOWED BY PLACEMENT OF COMPACTED GRAVEL FILL AS SPECIFIED.
4. NO FOUNDATION CONCRETE SHALL BE PLACED IN WATER OR ON FROZEN SOIL.
5. BACKFILL UNDER ANY PORTION OF THE STRUCTURE SHALL BE COMPACTED IN 200MM LIFTS.
6. COMPACT SOIL TO 98% OF MAX. DRY DENSITY UNDER FOUNDATIONS.
7. CONTRACTOR SHALL MAINTAIN CONTINUOUS CONTROL OF SURFACE AND SUBSURFACE WATER DURING CONSTRUCTION SO THAT WORK IS DONE UNDER DRY CONDITIONS ON UNDISTURBED SUBGRADE MATERIAL OR COMPACTED FILL, AS APPLICABLE.

CONCRETE

1. CONCRETE WORK SHALL CONFORM TO LATEST EDITIONS OF JAPAN SOCIETY OF CIVIL ENGINEERING (JSCE) STANDARD SPECIFICATION FOR CONCRETE.
2. CONCRETE SHALL BE PROPORTIONED, MIXED, AND PLACED UNDER THE SUPERVISION OF THE APPROVED TESTING AGENCY.
3. MASS CONCRETE FOR BOLLARD FOUNDATIONS SHALL BE DESIGNED AND PROPORTIONED TO CURE AT A LOW HEAT OF HYDRATION TO PREVENT THERMAL STRESS AND CRACKING.
4. CONCRETE SHALL HAVE A MINIMUM 42–DAY COMPRESSIVE STRENGTH OF 30 MPA.
5. ALL CONCRETE SHALL BE AIR–ENTRAINED.
6. CONCRETE SHALL BE CURED FOR A MINIMUM OF SEVEN DAYS.
7. LOADS SHALL BE APPLIED TO THE BOLLARDS NO SOONER THAN 28 DAYS AFTER FINAL PLACING OF CONCRETE.
8. PROVIDE A BROOM FINISH FOR EXTERIOR FLAT SURFACES.
9. PORTLAND CEMENT TYPE II SHALL BE USED FOR ALL CONCRETE AND MAXIMUM W/C (WATER CEMENT RATIO) SHALL BE 0.40.
10. AT ALL CONSTRUCTION JOINTS EPOXY NEW CONCRETE TO HARDENED CONCRETE WITH BONDING AGENT. APPLY PER MANUFACTURER'S RECOMMENDATIONS.
11. ELASTOMERIC SEALANT SHALL BE A ONE PART POLYURETHANE SEALANT/ADHESIVE. APPLY PER MANUFACTURER'S RECOMMENDATIONS.
12. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 75MM CHAMFER (TYPE.)
13. ALL CONCRETE SHALL BE PLACED IN THE DRY.

REINFORCING STEEL

1. REINFORCING STEEL SHALL BE GRADE 60 NEW BILLET STEEL, CONFORMING TO ASTM A615. WELDED WIRE FABRIC SHALL BE ASTM A185.
2. DETAILING, FABRICATION, AND ERECTION OF REINFORCEMENT SHALL CONFORM TO LATEST EDITIONS OF JAPAN SOCIETY OF CIVIL ENGINEERING (JSCE) STANDARD SPECIFICATION FOR CONCRETE.
3. MINIMUM LAP OF REINFORCING BARS SHALL BE 40 DIAMETERS, UNLESS SHOWN OTHERWISE.
4. MINIMUM LAP OF WELDED WIRE FABRIC SHALL BE 150 MM OR ONE WIRE SPACE, WHICHEVER IS LARGER.
5. MINIMUM COVER OF CONCRETE SHALL BE 75 MM.
6. INSTALLATION OF REINFORCEMENT SHALL BE COMPLETED AT LEAST 24 HOURS PRIOR TO SCHEDULED CONCRETE PLACEMENT, UNLESS OTHERWISE APPROVED BY CONTRACTING OFFICER.
7. PROVIDE AND SCHEDULE ON SHOP DRAWINGS THE NECESSARY ACCESSORIES TO HOLD REINFORCEMENT SECURELY IN POSITION.
8. WHERE REINFORCEMENT IS REQUIRED IN SECTION, REINFORCEMENT IS CONSIDERED TYPICAL WHEREVER THE SECTION APPLIES.

STEEL

1. ALL STEEL COMPONENTS AND FITTINGS EXPOSED TO WEATHER IN THEIR FINAL STATE SHALL BE HOT DIPPED GALVANIZED.
2. ANCHOR BOLTS AND BEARING PLATES SHALL BE LOCATED BY TEMPLATES OR SIMILAR METHOD. PLATES SHALL BE SET IN FULL BEDS OF NON–SHRINK GROUT, BOTTOM OF BASE PLATES SHALL BE SET APPROXIMATELY 3/4" ABOVE TOP OF BEARING. RESULTING SPACE SHALL BE FILLED WITH FLOWABLE NON–SHRINK GROUT.
3. WELDING SHALL BE INSPECTED IN THE FIELD BY QUALIFIED WELDING INSPECTORS UNDER THE SUPERVISION OF AN APPROVED TESTING AGENCY.
4. ALL EXPOSED STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANIZED (.622 KG/M2) AFTER FABRICATION IN COMPLIANCE WITH ASTM–123, A156, OR A386, AS APPLICABLE. GALVANIZER SHALL FURNISH TO CONTRACTING OFFICER A NOTARIZED CERTIFICATE OF COMPLIANCE WITH THESE SPECIFICATIONS.

MOORING HARDWARE

1. PROVIDE AND INSTALL CAST STEEL BOLLARD AS SHOWN ON THE PLANS.
2. BOLLARD SHALL BE NAVY TYPE SPECIAL MOORING BOLLARD "B" WITH A MINIMUM HORIZONTAL LINE PULL CAPACITY OF 200,000 LBS. (100 TONS) OR EQUAL BOLLARD TYPE ACCEPTABLE TO THE CONTRACTING OFFICER.
3. BOLLARD SHALL BE SECURED TO THE FOUNDATION AS SHOWN. BOLTS AND HARDWARE SHALL BE AS RECOMMENDED BY THE BOLLARD MANUFACTURER TO RESIST THE DESIGN LOADS.
4. BOLLARD SHALL BE COATED WITH A 3 PART COATING SYSTEM AS DESCRIBED IN SPECIFICATION SECTION 05 30 00.
5. BOLLARD SHALL BE SET IN NON–SHRINK GROUT SUCH THAT THERE IS 100% BEARING ON THE FOUNDATION AND NO VOIDS UNDER THE BOLLARD BASE.

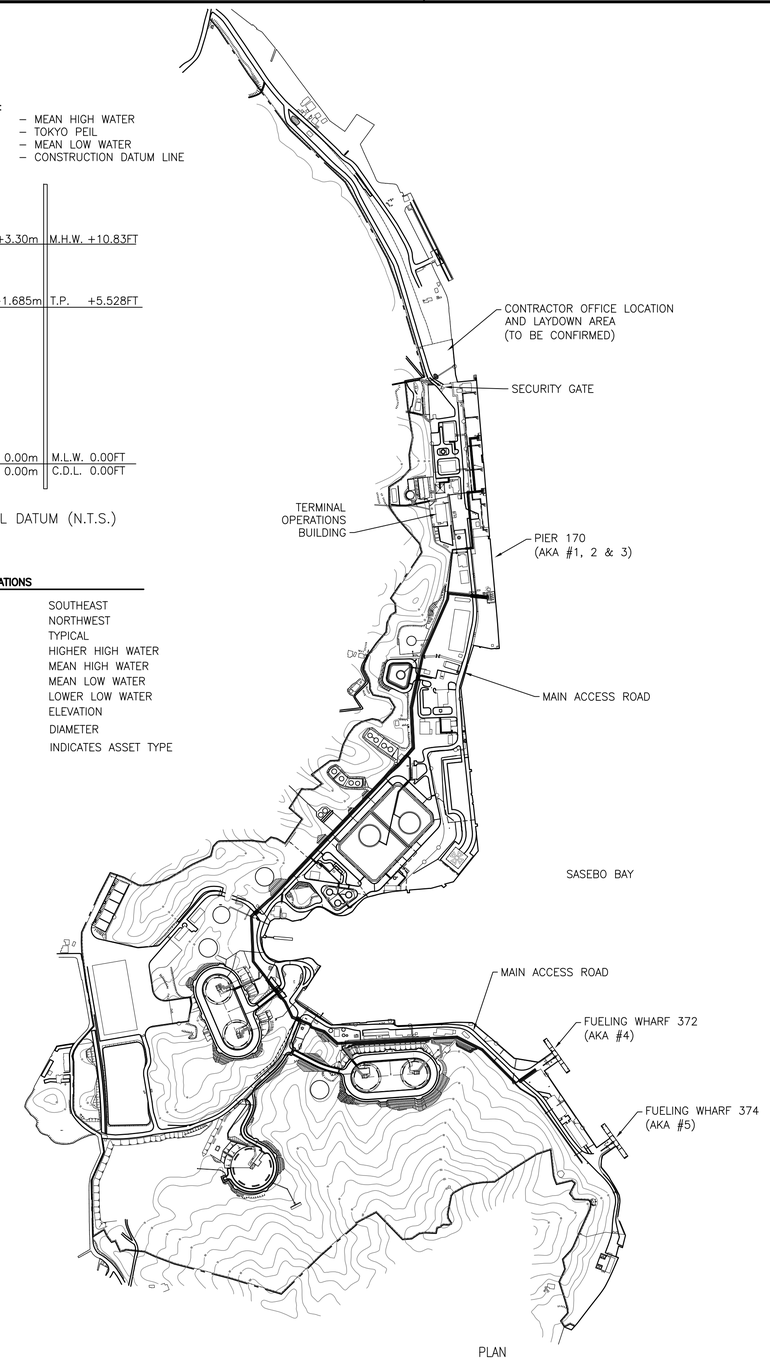
DATUMS:
M.H.W. – MEAN HIGH WATER
T.P. – TOKYO PEIL
M.L.W. – MEAN LOW WATER
C.D.L. – CONSTRUCTION DATUM LINE

M.H.W. +3.30m	M.H.W. +10.83FT
T.P. +1.685m	T.P. +5.528FT
M.L.W. 0.00m	M.L.W. 0.00FT
C.D.L. 0.00m	C.D.L. 0.00FT

TIDAL DATUM (N.T.S.)

ABBREVIATIONS

SE	SOUTHEAST
NW	NORTHWEST
TYP	TYPICAL
HHW	HIGHER HIGH WATER
MHW	MEAN HIGH WATER
MLW	MEAN LOW WATER
LLW	LOWER LOW WATER
EL.	ELEVATION
ø	DIAMETER
(UT)	INDICATES ASSET TYPE



PLAN NORTH

AKASAKI SITE PLAN

NOT TO SCALE

SYM	DESCRIPTION	DATE	APPR

NAVFAC

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SASEBO, JAPAN

REPAIRS TO FUELING WHARF 372

GENERAL NOTES

SCALE: AS NOTED

EPROJECT NO.:

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
10006526

SHEET 3 OF 12

GI-003

DRAWFORM REVISION: 10 MARCH 2009

BORING NO. AB-13

BORING EXPLORATION RESULT — BORING NO. AB-13

SITE: AKASAKI, SASEBO EL. 4.73M DATE: 23 DEC. 1986

DEPTH M	SOIL SYMBOL	DESCRIPTION OF SUBSURFACE MATERIALS	SPT N	USCS	W (%)	FINES (%)
0	GC	YELLOWISH / DARK BROWN LOOSE FILL OF CLAYEY GRAVEL	6		13.9	18
			9			
4.5	RK	ALTERNATION OF BLUISH GRAY SANDY SHALL AND YELLOWISH BROWN SANDSTONE	6		16.6	18
6		END OF BORING				

BORING NO. AB-14

BORING EXPLORATION RESULT — BORING NO. AB-14

SITE: AKASAKI, SASEBO EL. 4.49M DATE: 22-23 DEC. 1986

DEPTH M	SOIL SYMBOL	DESCRIPTION OF SUBSURFACE MATERIALS	SPT N	USCS	W (%)	FINES (%)
0			REF.			
	GC	BROWN TO DARK GRAY MEDIUM DENSE FILL OF CLAYEY GRAVEL	10		15.5	20
			13			
			11		9.9	39
			18			
5.7	GC	DARK GRAY CLAYEY GRAVEL	8		10.2	9
6.8	SC	WEATHERED SOFT SANDSTONE	22		15.1	17
8.1	RK	GRAY FISSILE SANDSTONE	50+			
10		END OF BORING				

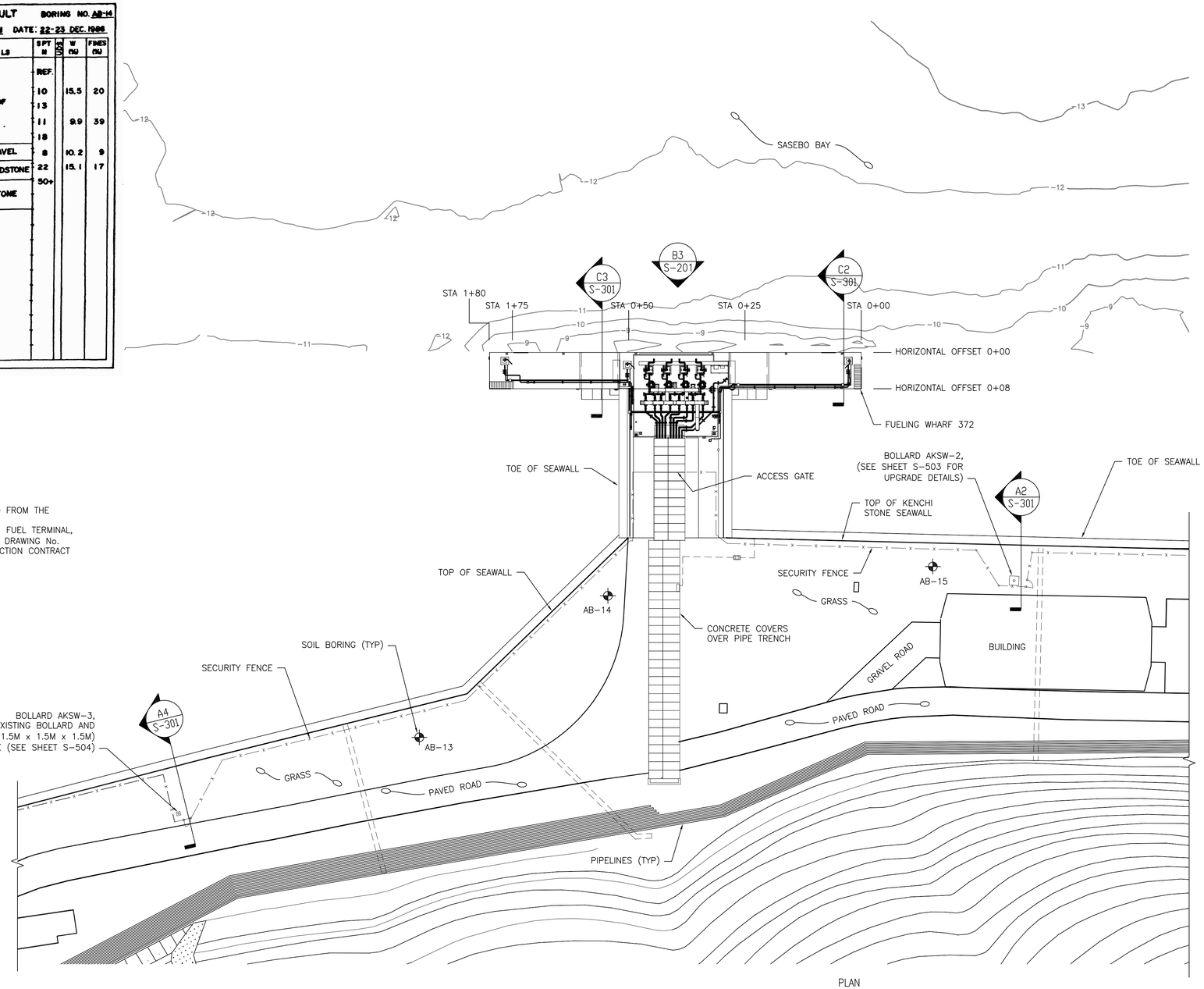
BORING NO. AB-15

BORING EXPLORATION RESULT — BORING NO. AB-15

SITE: AKASAKI, SASEBO EL. 4.61M DATE: 16-18 DEC. 1986

DEPTH M	SOIL SYMBOL	DESCRIPTION OF SUBSURFACE MATERIALS	SPT N	USCS	W (%)	FINES (%)
0			9		18.5	35
	GC	LIGHT BROWN TO DARK GRAY LOOSE TO MED. DENSE FILL OF CLAYEY GRAVEL / COBBLE	REF.			
			10		14.7	19
			22		11.4	25
4.8	RK	GRAY FISSILE SANDSTONE	REF.			
6		END OF BORING				

BORING LOGS REFERENCED FROM THE FOLLOWING PROJECT:
REPAIR SEAWALLS, AKASAKI FUEL TERMINAL, BORING LOGS (2), NAVFAC DRAWING No. 7787261 UNDER CONSTRUCTION CONTRACT No. N62837-87--0147



FUELING WHARF 372 SITE AND DEMOLITION PLAN

SCALE: 1:500

PLAN NORTH

0 10.0 25.0 50.0 m

GRAPHIC SCALE: 1:500

SYM	DESCRIPTION	DATE	APPR

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COMMONWEALTH OF MASSACHUSETTS — CHARLES MARSHALL ROBERTS No. 50339 — REGISTERED PROFESSIONAL ENGINEER — 4/23/13 — SEAL

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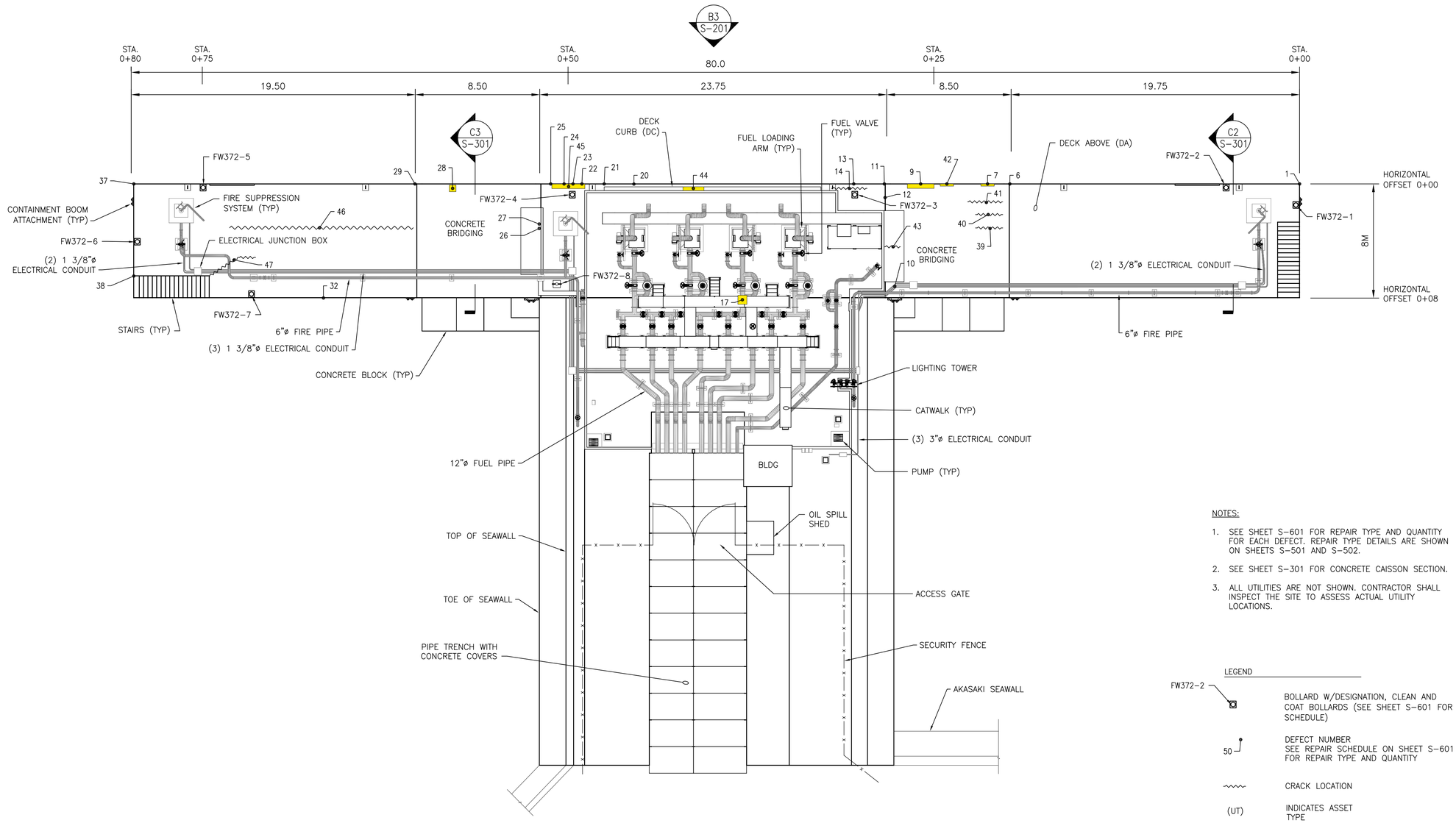
SASEBO, JAPAN
REPAIRS TO FUELING WHARF 372
SITE AND DEMOLITION PLAN

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 10006527
SHEET 4 OF 12
C-101

DRAWFORM REVISION: 10 MARCH 2009



FUELING WHARF 372 DECK PLAN

SCALE: 1:150

PLAN NORTH

0 4.0 8.0 16.0 m

GRAPHIC SCALE: 1:150

NOTES:

1. SEE SHEET S-601 FOR REPAIR TYPE AND QUANTITY FOR EACH DEFECT. REPAIR TYPE DETAILS ARE SHOWN ON SHEETS S-501 AND S-502.
2. SEE SHEET S-301 FOR CONCRETE CAISSON SECTION.
3. ALL UTILITIES ARE NOT SHOWN. CONTRACTOR SHALL INSPECT THE SITE TO ASSESS ACTUAL UTILITY LOCATIONS.

LEGEND

FW372-2	BOLLARD W/DESIGNATION, CLEAN AND COAT BOLLARDS (SEE SHEET S-601 FOR SCHEDULE)
50	DEFECT NUMBER SEE REPAIR SCHEDULE ON SHEET S-601 FOR REPAIR TYPE AND QUANTITY
	CRACK LOCATION
(UT)	INDICATES ASSET TYPE
(TYP)	TYPICAL
STA. 1+00	STATION NUMBER
—x—	FENCE LINE
	APPROXIMATE AREA OF DEFECT

SYM	DESCRIPTION	DATE	APPR

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DECK PLAN

SCALE: AS NOTED
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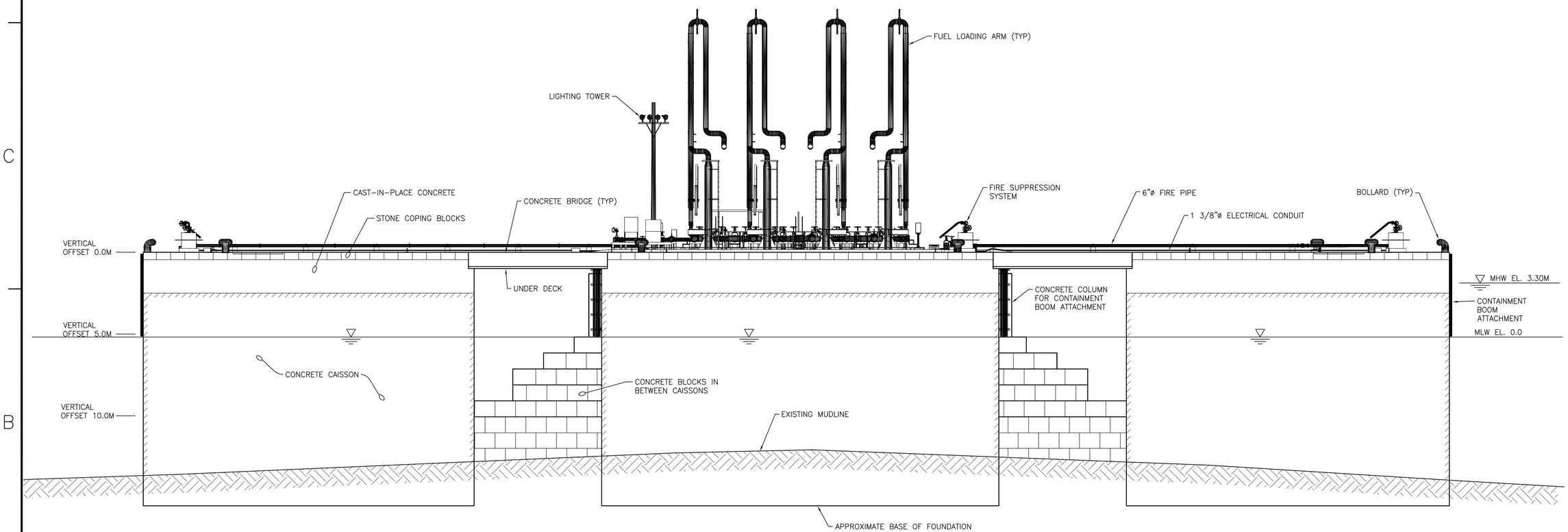
10006528
SHEET 5 OF 12
S-101

DRAWFORM REVISION: 10 MARCH 2009



FUELING WHARF 372 ELEVATION

SCALE: 1:125

C-101, S-101 (B3)

0 2.0 4.0 8.0 12.0 m

GRAPHIC SCALE: 1:125

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FISC, AKASAKI TERMINAL

REPAIRS TO FUELING WHARF 372

ELEVATION

SCALE: 1:125

EPROJECT NO.:

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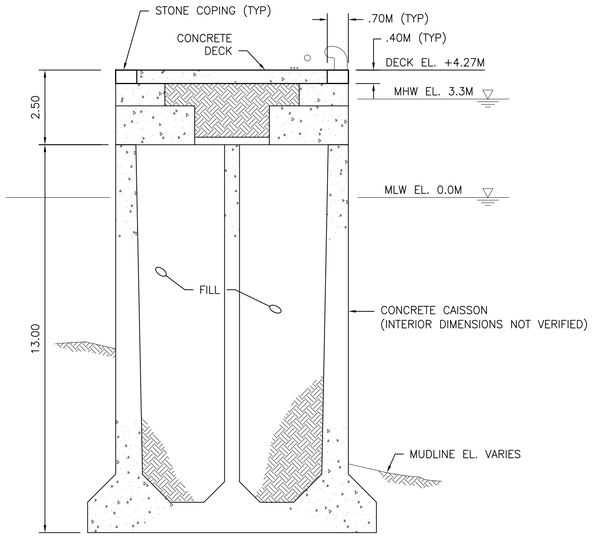
SHEET 6 OF 12

S-201

DRAWFORM REVISION: 10 MARCH 2009

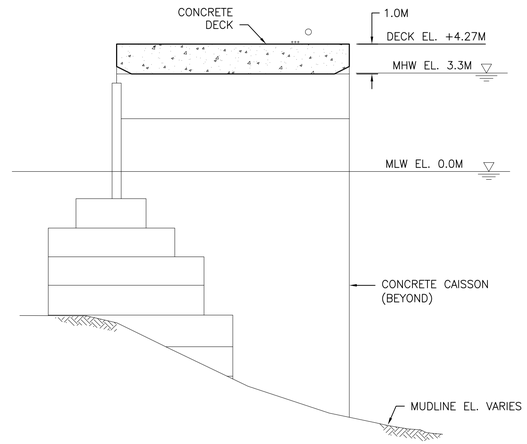


FUELING WHARF 372 EXISTING SECTION (C2)

SCALE 1:100 C-101, S-101

0 2.0 5.0 10.0 m

GRAPHIC SCALE: 1:100

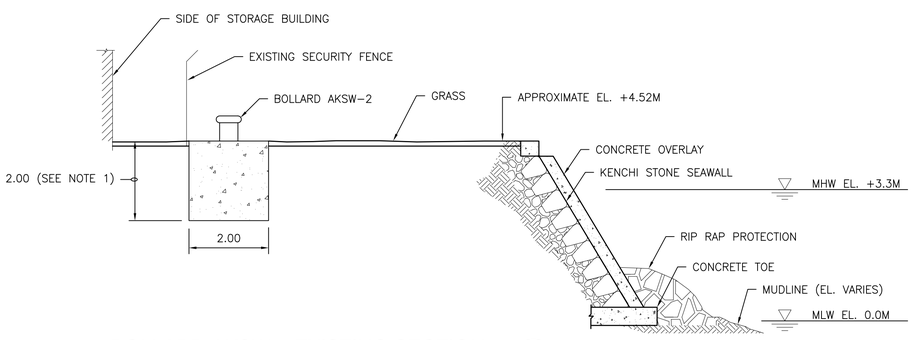


FUELING WHARF 372 EXISTING SECTION (C3)

SCALE 1:100 C-101, S-101

0 2.0 5.0 10.0 m

GRAPHIC SCALE: 1:100



BOLLARD AKSW-2 EXISTING SECTION (A2)

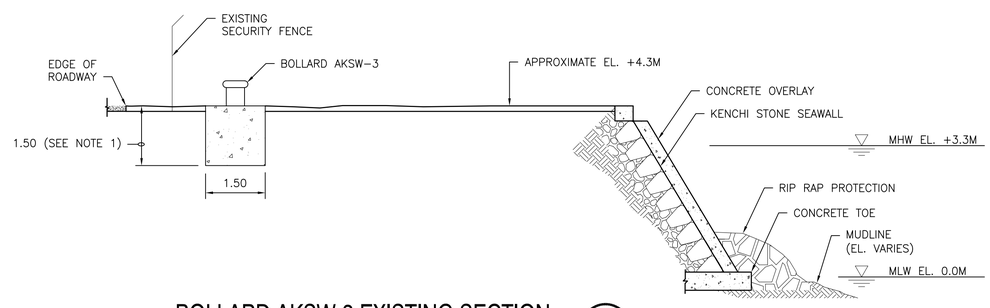
SCALE 1:75 C-101

NOTE:

1. DEPTH SHOWN IS APPROXIMATE, USE DIMENSIONS SHOWN FOR BIDDING.

0 2.0 4.0 8.0 m

GRAPHIC SCALE: 1:75



BOLLARD AKSW-3 EXISTING SECTION (A4)

SCALE 1:75 C-101

0 2.0 4.0 8.0 m

GRAPHIC SCALE: 1:75

SYM	DESCRIPTION	DATE	APPR

NAVFAC

COMMONWEALTH OF MASSACHUSETTS
CHARLES MARSHALL ROBERTS
No. 50339
REGISTERED PROFESSIONAL ENGINEER
4/23/13
SEAL

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APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES CMR DRW TEQ CHK CDS

BRANCH MANAGER

CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND
FISC, AKASAKI TERMINAL
SASEBO, JAPAN

REPAIRS TO FUELING WHARF 372

SECTIONS

SCALE: AS NOTED

EPROJECT NO.:

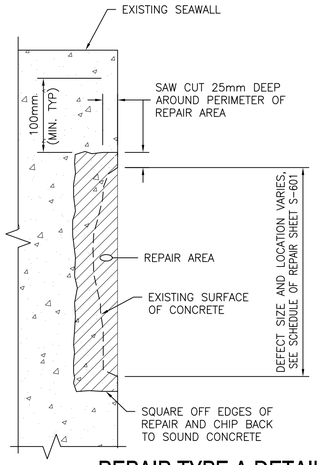
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
10006530

SHEET 7 OF 12

S-301

DRAWFORM REVISION: 10 MARCH 2009



REPAIR TYPE A DETAIL

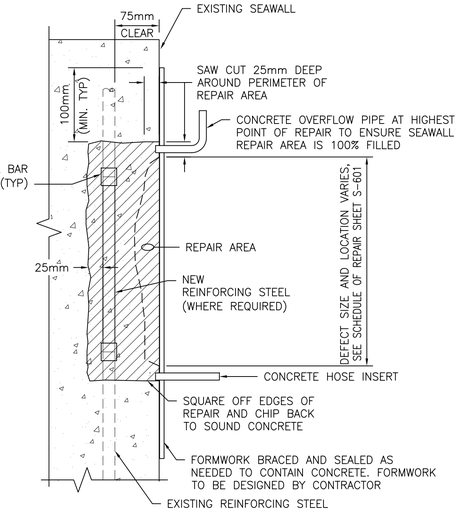
SCALE 1:5 S-101 (D1)

ABOVE WATER PARTIAL DEPTH SPALL REPAIR 25mm TO 75mm DEPTH WITHOUT REINFORCING STEEL FOR VERTICAL SURFACES USING HAND TROWELING PLACEMENT METHODS

1. PROVIDE SCAFFOLDING AS NECESSARY TO ACCESS THE WORK AREA.
2. SQUARE OFF LIMITS OF REPAIR AREA A MINIMUM OF 25mm DEEP BY SAW CUTTING. CHIP BACK TO SOUND CONCRETE. MINIMUM DEPTH OF REPAIR IS 25mm. CONTRACTOR SHALL VERIFY DEPTH TO REINFORCING PRIOR TO CUTTING.
3. PRESENT PREPARED REPAIR AREA TO THE CONTRACTING OFFICER FOR APPROVAL.
4. ONCE REPAIR AREA PRESENTATION IS APPROVED BY THE CONTRACTING OFFICER, FILL WITH CONCRETE RESTORATION MORTAR. RESTORE AND RECONSTRUCT THE ORIGINAL DIMENSIONS OF THE STRUCTURAL ELEMENT BEING REPAIRED. FOLLOW MANUFACTURER'S RECOMMENDATION FOR HAND PLACEMENT.
5. CURE FOR 7 DAYS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

SCHEDULE OF MATERIALS

1. SPALLED CONCRETE AREAS SHALL BE REPAIRED WITH CONCRETE RESTORATION MORTAR AS SPECIFIED IN SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION.



REPAIR TYPE C DETAIL

SCALE 1:5 S-101 (D3)

ABOVE WATER PARTIAL DEPTH SPALL REPAIR 75mm AND GREATER WITH EXPOSED REINFORCING STEEL FOR VERTICAL SURFACES USING FORM AND PUMP METHODS

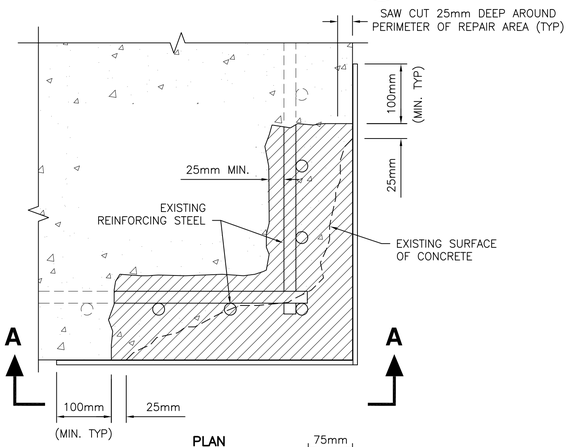
1. PROVIDE SCAFFOLDING AS NECESSARY TO ACCESS THE WORK AREA.
2. CHIP OUT AND REMOVE ALL LOOSE CONCRETE FROM DAMAGED AREA.
3. SQUARE OFF LIMITS OF REPAIR AREA A MINIMUM OF 25mm DEEP BY SAW CUTTING. CHIP BACK TO SOUND CONCRETE. CONTRACTOR SHALL VERIFY DEPTH TO REINFORCING PRIOR TO CUTTING.
4. WHERE STEEL REINFORCING IS EXPOSED, CHIP BACK BEHIND REINFORCING STEEL A MINIMUM OF 25mm. CLEAN ALL EXPOSED REINFORCING STEEL TO SA2. REFER TO SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION FOR REPLACEMENT OF CORRODED REINFORCING STEEL USING MECHANICAL SPLICES.
5. PRESENT PREPARED REPAIR AREA TO THE CONTRACTING OFFICER FOR APPROVAL.
6. ONCE REPAIR AREA PREPARATION IS APPROVED BY THE CONTRACTING OFFICER, FILL WITH CONCRETE RESTORATION MORTAR. RESTORE AND RECONSTRUCT THE ORIGINAL DIMENSIONS OF THE STRUCTURAL ELEMENT BEING REPAIRED. FOLLOW MANUFACTURER'S RECOMMENDATION FOR FORM AND PUMP PLACEMENT.
7. LEAVE FORMS IN PLACE FOR A MINIMUM OF 7 DAYS.

SCHEDULE OF MATERIALS

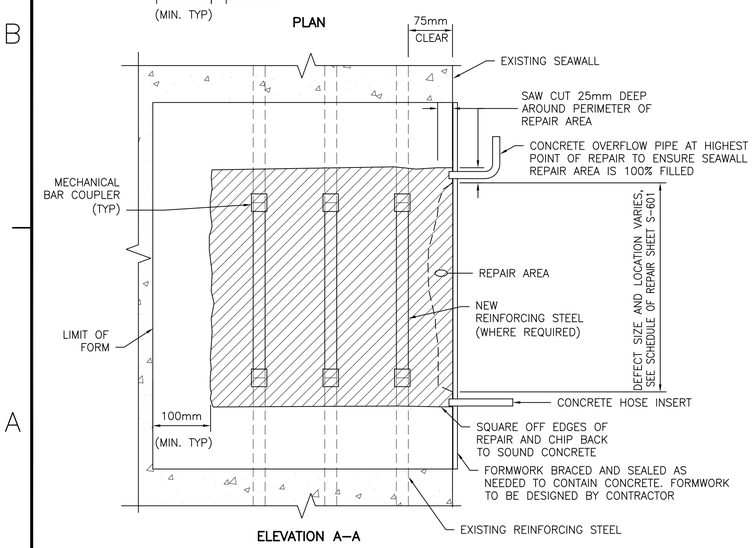
1. SPALLED CONCRETE AREAS SHALL BE REPAIRED WITH CONCRETE RESTORATION MORTAR AS SPECIFIED IN SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION.
2. ALL REINFORCING STEEL SHALL HAVE A MINIMUM Fy = 410 mPa.

GENERAL NOTES:

1. CONTRACTOR SHALL ASSUME 19mm REINFORCING BAR IS 120mm O.C. BOTH WAYS FOR BASIS OF BID.
2. ANY REINFORCING BAR WITH GREATER THAN 25% LOSS OF SECTION SHALL BE REPLACED.
3. THE CONTRACTOR SHALL EXPOSE AT LEAST 300mm TO EITHER SIDE OF ANY CORRODED REINFORCING BAR.
4. WHEN SAW CUTTING AROUND REPAIR AREA ALL SAW CUT EDGES SHALL BE SQUARE WITH A MAXIMUM OF SIX EDGES PER REPAIR AREA.



PLAN



ELEVATION A–A

REPAIR TYPE B DETAIL

SCALE 1:5 S-101 (A2)

ABOVE WATER PARTIAL DEPTH SPALL REPAIR WITH EXPOSED REINFORCING STEEL FOR VERTICAL EDGES USING FORM AND PUMP METHODS

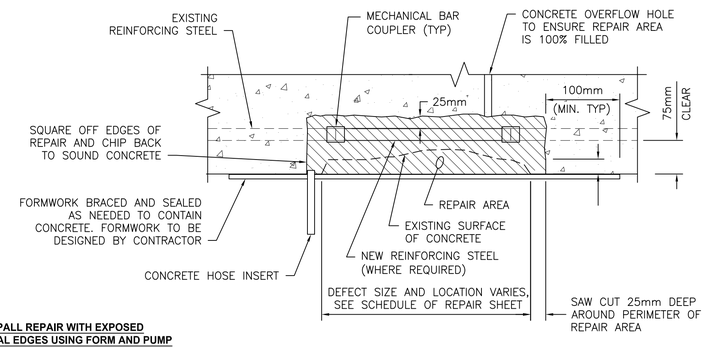
1. PROVIDE SCAFFOLDING AS NECESSARY TO ACCESS THE WORK AREA.
2. CHIP OUT AND REMOVE ALL LOOSE CONCRETE FROM DAMAGED AREA.
3. SQUARE OFF LIMITS OF REPAIR AREA A MINIMUM OF 25mm DEEP BY SAW CUTTING. CHIP BACK TO SOUND CONCRETE. CONTRACTOR SHALL VERIFY DEPTH TO REINFORCING PRIOR TO CUTTING.
4. WHERE STEEL REINFORCING IS EXPOSED, CHIP BACK BEHIND REINFORCING STEEL A MINIMUM OF 25mm. CLEAN ALL EXPOSED REINFORCING STEEL TO SA2. REFER TO SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION FOR REPLACEMENT OF CORRODED REINFORCING STEEL USING MECHANICAL SPLICES.
5. PRESENT PREPARED REPAIR AREA TO THE CONTRACTING OFFICER FOR APPROVAL.
6. ONCE REPAIR AREA PREPARATION IS APPROVED BY THE CONTRACTING OFFICER, FILL WITH CONCRETE RESTORATION MORTAR. RESTORE AND RECONSTRUCT THE ORIGINAL DIMENSIONS OF THE STRUCTURAL ELEMENT BEING REPAIRED. FOLLOW MANUFACTURER'S RECOMMENDATION FOR FORM AND PUMP PLACEMENT.
7. LEAVE FORMS IN PLACE FOR A MINIMUM OF 7 DAYS.

SCHEDULE OF MATERIALS

1. SPALLED CONCRETE AREAS SHALL BE REPAIRED WITH CONCRETE RESTORATION MORTAR AS SPECIFIED IN SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION.
2. ALL REINFORCING STEEL SHALL HAVE A MINIMUM Fy = 410 mPa.

0 100 200 500 mm

GRAPHIC SCALE: 1:5



REPAIR TYPE E DETAIL

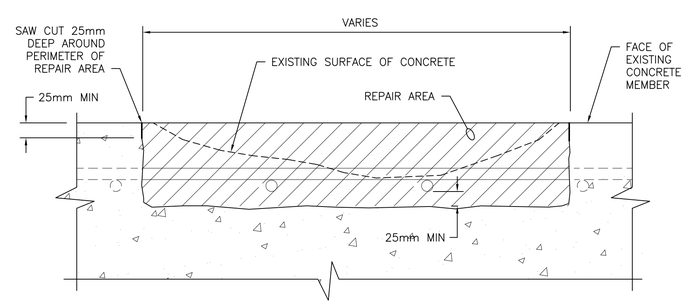
SCALE 1:5 S-101 (B4)

OVERHEAD UNDERDECK PARTIAL DEPTH SPALL REPAIR 0mm TO 150mm DEEP USING FORM AND PUMP METHODS

1. PROVIDE SCAFFOLDING AS NECESSARY TO ACCESS THE WORK AREA.
2. CHIP OUT AND REMOVE ALL LOOSE CONCRETE FROM DAMAGED AREA.
3. SQUARE OFF LIMITS OF REPAIR AREA A MINIMUM OF 25mm DEEP BY SAW CUTTING. CHIP BACK TO SOUND CONCRETE. CONTRACTOR SHALL VERIFY DEPTH TO REINFORCING PRIOR TO CUTTING.
4. WHERE STEEL REINFORCING IS EXPOSED, CHIP BACK BEHIND REINFORCING STEEL A MINIMUM OF 25mm. CLEAN ALL EXPOSED REINFORCING STEEL TO SA2. REFER TO SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION FOR REPLACEMENT OF CORRODED REINFORCING STEEL USING MECHANICAL SPLICES.
5. PRESENT PREPARED REPAIR AREA TO THE CONTRACTING OFFICER FOR APPROVAL.
6. ONCE REPAIR AREA PREPARATION IS APPROVED BY THE CONTRACTING OFFICER, FILL WITH CONCRETE RESTORATION MORTAR. RESTORE AND RECONSTRUCT THE ORIGINAL DIMENSIONS OF THE STRUCTURAL ELEMENT BEING REPAIRED. FOLLOW MANUFACTURER'S RECOMMENDATION FOR PLACEMENT.
7. LEAVE FORMS IN PLACE A MINIMUM OF 7 DAYS.

SCHEDULE OF MATERIALS

1. SPALLED CONCRETE AREAS SHALL BE REPAIRED WITH CONCRETE RESTORATION MORTAR AS SPECIFIED IN SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION.
2. ALL REINFORCING STEEL SHALL HAVE A MINIMUM Fy = 410 mPa.



REPAIR TYPE D DETAIL

SCALE 1:5 S-101 (A4)

PARTIAL DEPTH DECK SPALL REPAIR 0mm TO 150mm DEEP USING POUR AND TROWEL METHODS

1. CHIP OUT AND REMOVE ALL LOOSE CONCRETE FROM DAMAGED AREA.
2. SQUARE OFF LIMITS OF REPAIR AREA A MINIMUM OF 25mm DEEP BY SAW CUTTING OR CHIPPING. CHIP BACK TO SOUND CONCRETE.
3. WHERE STEEL REINFORCING IS EXPOSED, CHIP BACK BELOW REINFORCING STEEL A MINIMUM OF 25mm. CLEAN EXPOSED REINFORCING STEEL TO SA2. REFER TO SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION FOR REPLACEMENT OF CORRODED REINFORCING STEEL.
4. PRESENT PREPARED REPAIR AREA TO THE CONTRACTING OFFICER FOR APPROVAL.
5. ONCE REPAIR AREA PREPARATION IS APPROVED BY THE CONTRACTING OFFICER, FILL WITH CONCRETE RESTORATION MORTAR. RESTORE AND RECONSTRUCT THE ORIGINAL DIMENSIONS OF THE STRUCTURAL ELEMENT BEING REPAIRED. FOLLOW MANUFACTURER'S RECOMMENDATION FOR PLACEMENT.
6. LEAVE FORMS IN PLACE FOR A MINIMUM OF 7 DAYS.

SCHEDULE OF MATERIALS

1. SPALLED CONCRETE AREAS SHALL BE REPAIRED WITH CONCRETE RESTORATION MORTAR AS SPECIFIED IN SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION.
2. ALL REINFORCING STEEL SHALL HAVE A MINIMUM F = 410 mPa.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

COMMONWEALTH OF MASSACHUSETTS CHARLES MARSHALL ROBERTS No. 50339 REGISTERED PROFESSIONAL ENGINEER 4/23/13 SEAL

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Fax: (508) 966-9096
E-mail: mail@childseng.com
A/E INFO

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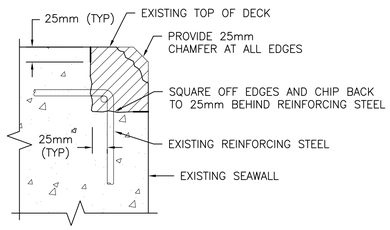
CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND
FISC, AKASAKI TERMINAL
SASEBO, JAPAN
REPAIRS TO FUELING WHARF 372
REPAIR TYPE A–E DETAILS

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 10006531
SHEET 8 OF 12
S-501

DRAWFORM REVISION: 10 MARCH 2009



REPAIR TYPE F DETAIL (C1)

SCALE 1:5 — S-101

0 100 200 500 mm

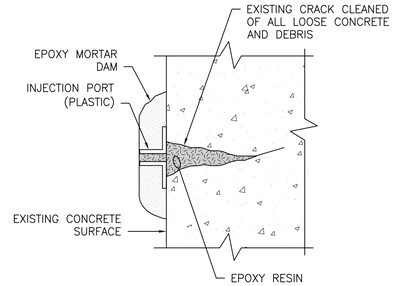
GRAPHIC SCALE: 1:5

EDGE SPALL/ABRASION REPAIR USING FORM AND POUR METHODS

1. PROVIDE SCAFFOLDING AS NECESSARY TO ACCESS WORK AREA.
2. SQUARE OFF LIMITS OF REPAIR AREA A MINIMUM OF 25mm DEEP BY SAW CUTTING. CHIP BACK TO SOUND CONCRETE.
3. WHERE STEEL REINFORCING IS EXPOSED, CHIP BACK BELOW REINFORCING STEEL A MINIMUM OF 25mm. CLEAN EXPOSED REINFORCING STEEL TO SA2. REFER TO SPECIFICATIONS SECTION 03 01 30.71 CONCRETE REHABILITATION FOR REPLACEMENT OF CORRODED REINFORCING STEEL.
4. PRESENT PREPARED REPAIR AREA TO THE CONTRACTING OFFICER FOR APPROVAL.
5. ONCE REPAIR AREA PREPARATION IS APPROVED BY THE CONTRACTING OFFICER, FORM AND FILL WITH CONCRETE RESTORATION MORTAR. RESTORE AND RECONSTRUCT THE ORIGINAL DIMENSIONS OF THE STRUCTURAL ELEMENT BEING REPAIRED. FOLLOW MANUFACTURER'S RECOMMENDATION FOR PLACEMENT.
6. LEAVE FORMS IN PLACE FOR A MINIMUM OF 7 DAYS.

SCHEDULE OF MATERIALS

1. SPALLED CONCRETE AREAS SHALL BE REPAIRED WITH CONCRETE RESTORATION MORTAR AS SPECIFIED IN SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION.
2. ALL REINFORCING STEEL SHALL HAVE A MINIMUM Fy = 410 mPa.



EPOXY CRACK REPAIR BY PRESSURE INJECTION

1. PROVIDE SCAFFOLDING AS NECESSARY TO ACCESS THE WORK AREA.
2. CLEAN SURFACE OF ALL CONCRETE DUST, LOOSE CONCRETE, GREASE. OIL AND OTHER MATERIAL THAT WILL EFFECT THE BOND OF THE EPOXY MORTAR DAM.
3. SET APPROPRIATE INJECTION PORTS OVER CRACK AS RECOMMENDED BY THE EPOXY INJECTION SYSTEM MANUFACTURER WITH EPOXY MORTAR DAM.
4. PRESENT PREPARED REPAIR AREA TO THE CONTRACTING OFFICER FOR APPROVAL.
5. SEAL CRACKS AND PORTS WITH EPOXY MORTAR. TAKE CARE TO ENSURE THAT THE PORTS PROVIDE A CLEAN PATH FOR INJECTING EPOXY RESIN INTO THE CRACK.
6. USING AUTOMATED MIXING SYSTEM AND INJECTING EQUIPMENT INJECT EPOXY RESIN INTO CRACKS THROUGH PORTS. START AT ONE END OF CRACK (LOWER END) AND INJECT EPOXY RESIN INTO PORT UNTIL RESIN APPEARS AT THE NEXT PORT. PLUG PORT WHERE EPOXY RESIN IS BEING INJECTED AND MOVE NOZZLE TO PORT WHERE EPOXY RESIN HAS APPEARED. CONTINUE PUMPING REPEATING PROCEDURE UNTIL ALL THE PORTS AND CRACK HAS BEEN FILLED COMPLETELY WITH EPOXY RESIN.

SCHEDULE OF MATERIALS

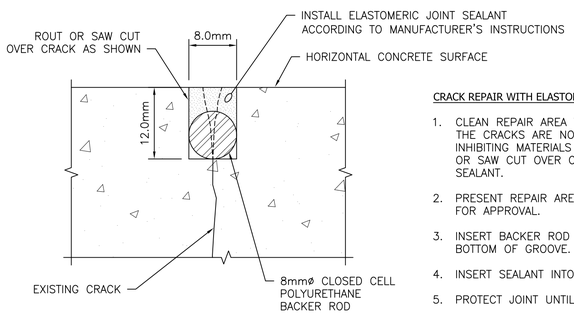
1. CRACKS SHALL BE REPAIRED WITH EPOXY RESIN AS SPECIFIED IN SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION.

REPAIR TYPE G DETAIL (D4)

SCALE 1:5 — S-101

0 100 200 500 mm

GRAPHIC SCALE: 1:5



CRACK REPAIR WITH ELASTOMERIC SEALANT

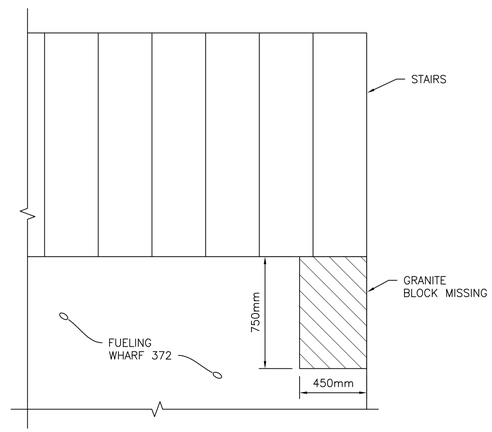
1. CLEAN REPAIR AREA TO REMOVE DEBRIS, ENSURE THAT THE CRACKS ARE NOT CONTAMINATED WITH ANY BOND INHIBITING MATERIALS SUCH AS OIL AND GREASE. ROUT OR SAW CUT OVER CRACK TO PREPARE SURFACE FOR SEALANT.
2. PRESENT REPAIR AREA TO THE CONTRACTING OFFICER FOR APPROVAL.
3. INSERT BACKER ROD OR BOND BREAKER TAPE INTO BOTTOM OF GROOVE.
4. INSERT SEALANT INTO GROOVE OVER BOND BREAKER.
5. PROTECT JOINT UNTIL SEALANT HAS CURED.

REPAIR TYPE H DETAIL (B1)

SCALE 1:0.5 — S-101

0 10 20 40 mm

GRAPHIC SCALE: 1:0.5



PLAN

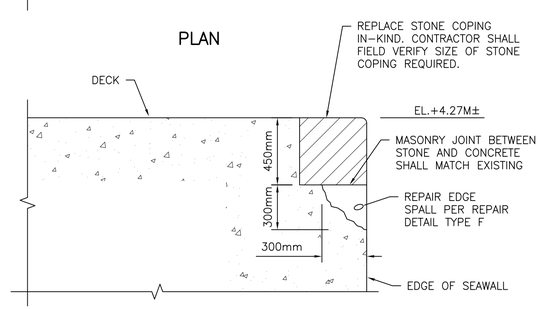
PHOTO S-502 – EDGE BLOCK MISSING ON FW 372

REPLACE MISSING EDGE BLOCK

1. PROVIDE SCAFFOLDING AS NECESSARY TO ACCESS THE WORK AREA.
2. CHIP OUT AND REMOVE ALL LOOSE CONCRETE FROM DAMAGED AREA.
3. REPAIR EDGE SPALL, PER REPAIR TYPE H.
4. PRESENT PREPARED REPAIR AREA TO THE CONTRACTING OFFICER FOR APPROVAL.
5. ONCE REPAIR AREA PREPARATION IS APPROVED BY THE CONTRACTING OFFICER, INSTALL STONE COPING TO MATCH ADJACENT COPING BLOCKS. CONTRACTOR MUST VERIFY SIZE OF REQUIRED BLOCK PRIOR TO ORDERING OR PLACEMENT. STONE COPING BLOCK MUST BE FULLY BEDED IN MORTAR AND FINAL POINTING SHALL MATCH ADJACENT BLOCKS.

SCHEDULE OF MATERIALS

1. SPALLED CONCRETE AREAS SHALL BE REPAIRED WITH CONCRETE RESTORATION MORTAR AS SPECIFIED IN SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION.
2. STONE COPING BLOCK SHALL MATCH EXISTING COPING BLOCKS.



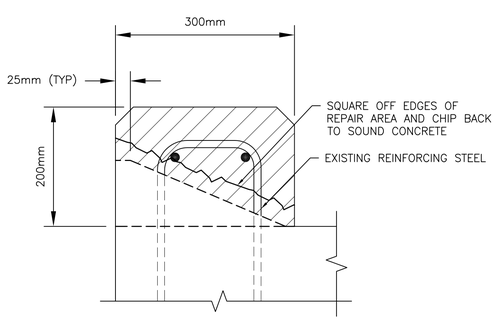
SECTION

REPAIR TYPE K DETAIL (A4)

SCALE 1:20 — S-101

0 500 1000 2000 mm

GRAPHIC SCALE: 1:20



CONCRETE CURB REPAIR

1. PROVIDE SCAFFOLDING AS NECESSARY TO ACCESS WORK AREA.
2. SQUARE OFF LIMITS OF REPAIR AREA A MINIMUM OF 25mm DEEP BY SAW CUTTING. CHIP BACK TO SOUND CONCRETE.
3. WHERE STEEL REINFORCING IS EXPOSED, CHIP BACK BELOW REINFORCING STEEL A MINIMUM OF 25mm. CLEAN EXPOSED REINFORCING STEEL TO SA2. REFER TO SPECIFICATIONS SECTION 03 01 30.71 CONCRETE REHABILITATION FOR REPLACEMENT FOR CORRODED REINFORCING STEEL.
4. PRESENT PREPARED REPAIR AREA TO THE CONTRACTION OFFICER FOR APPROVAL.
5. ONCE REPAIR AREA PREPARATION IS APPROVED BY THE CONTRACTING OFFICER, FORM AND FILL WITH CONCRETE RESTORATION MORTAR. RESTORE AND RECONSTRUCT THE ORIGINAL DIMENSIONS OF THE STRUCTURAL ELEMENT BEING REPAIRED. FOLLOW MANUFACTURER'S RECOMMENDATION FOR PLACEMENT.

SCHEDULE OF MATERIALS

1. SPALLED CONCRETE AREAS SHALL BE REPAIRED WITH CONCRETE RESTORATION MORTAR AS SPECIFIED IN SPECIFICATION SECTION 03 01 30.71 CONCRETE REHABILITATION.
2. ALL REINFORCING STEEL SHALL HAVE A MINIMUM Fy = 410 mPa.

REPAIR TYPE J DETAIL (A1)

SCALE 1:5 — S-101

0 100 200 500 mm

GRAPHIC SCALE: 1:5

SYM	DESCRIPTION	DATE	APPR

NAVFAC

COMMONWEALTH OF MASSACHUSETTS — CHARLES MARSHALL ROBERTS No. 50339 — REGISTERED PROFESSIONAL ENGINEER — 4/25/13 — SEAL

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APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES CMR DRW TEQ CHK CDS

BRANCH MANAGER

CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

NAVAL FACILITIES ENGINEERING COMMAND

FISC, AKASAKI TERMINAL — SASEBO, JAPAN

REPAIRS TO FUELING WHARF 372

REPAIR TYPE F-K DETAILS

SCALE: AS NOTED

EPROJECT NO.:

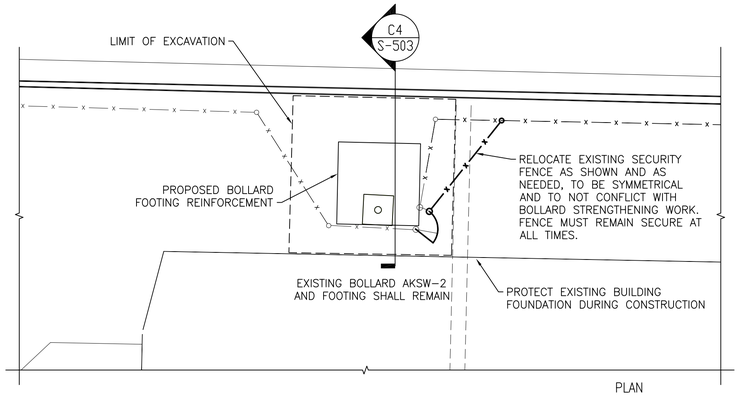
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 10006532

SHEET 9 OF 12

S-502

DRAWFORM REVISION: 10 MARCH 2009



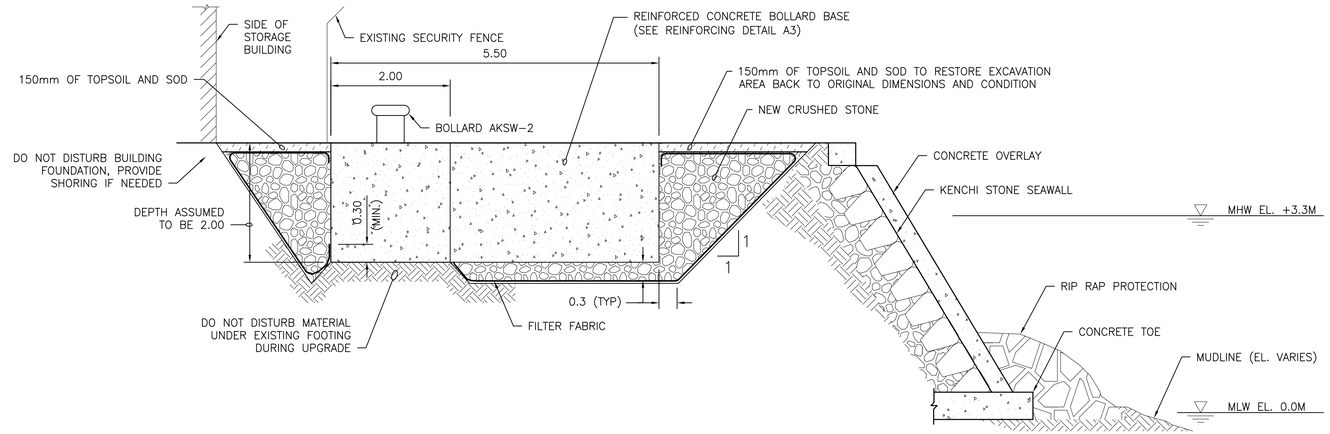
BOLLARD AKSW-2 UPGRADE PLAN

SCALE: 1:200 S-102

PLAN NORTH

0 4 10 20 M

GRAPHIC SCALE: 1:200

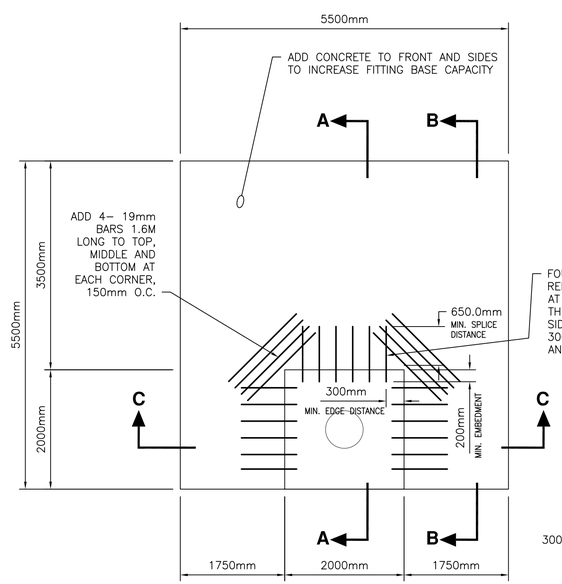


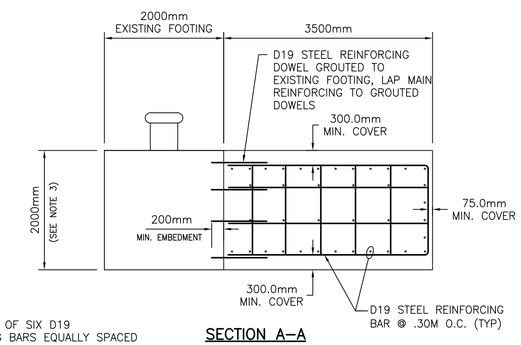
BOLLARD AKSW-2 SECTION

SCALE 1:50 S-503 C4

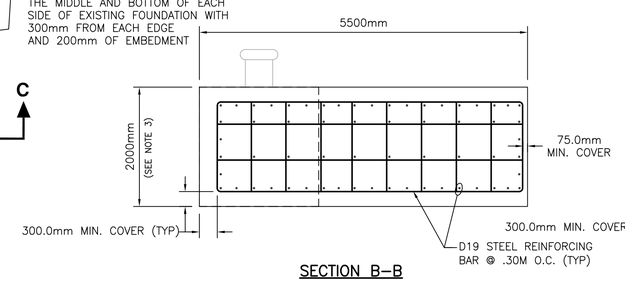
0 1.0 2.0 5.0 m

GRAPHIC SCALE: 1:50

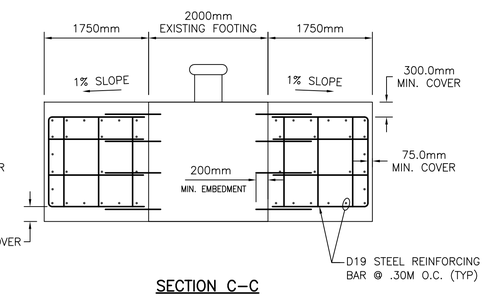




SECTION A–A



SECTION B–B



SECTION C–C

NOTES:

1. ANCHOR D19 REBAR DOWELS TO EXISTING FOOTING WITH CHEMICAL ANCHOR SYSTEM. EMBEDMENT AND SPACING SHOWN FOR EXAMPLE ONLY, CONTRACTOR SHALL PROVIDE ANCHOR SYSTEM FOR FULL DEVELOPMENT OF THE TENSILE CAPACITY OF THE REBAR. TOTAL NUMBER OF DOWELS REQUIRED IS 72.
2. GEOTEXTILE FILTER FABRIC SHALL BE CLASS A AS SPECIFIED IN SPECIFICATION SECTION 31 23 00.00 20 EXCAVATION AND FILL.
3. DEPTH SHOWN IS APPROXIMATE. FINAL DEPTH TO BE DETERMINED UPON COMPLETION OF EXCAVATION.

BOLLARD AKSW-2 REINFORCING DETAIL

SCALE 1:50 S-503 A3

0 1.0 2.0 5.0 m

GRAPHIC SCALE: 1:50

SYM	DESCRIPTION	DATE	APPR

NAVFAC

COMMONWEALTH OF MASSACHUSETTS CHARLES MARSHALL ROBERTS No. 50339 PROFESSIONAL ENGINEER 4/23/13 SEAL

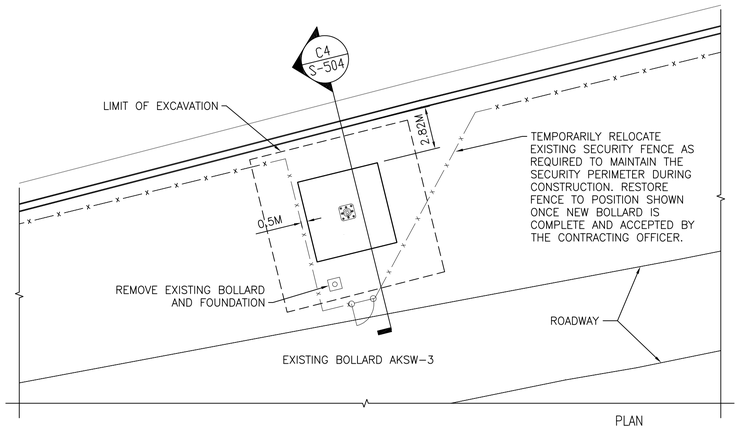
CHILDS ENGINEERING CORPORATION
34 WILLIAM WAY BELLINGHAM, MASSACHUSETTS 02019 U.S.A.
Phone: (508) 966–9092
Fax: (508) 966–9096
E–mail: mail@childseng.com
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES CMR DRW TEQ CHK CDS
BRANCH MANAGER
CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND
FISC, AKASAKI TERMINAL
SASEBO, JAPAN
REPAIRS TO FUELING WHARF 372
BOLLARD AKSW–2 UPGRADE DETAILS

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 10006533
SHEET 10 OF 12
S-503

DRAWFORM REVISION: 10 MARCH 2009



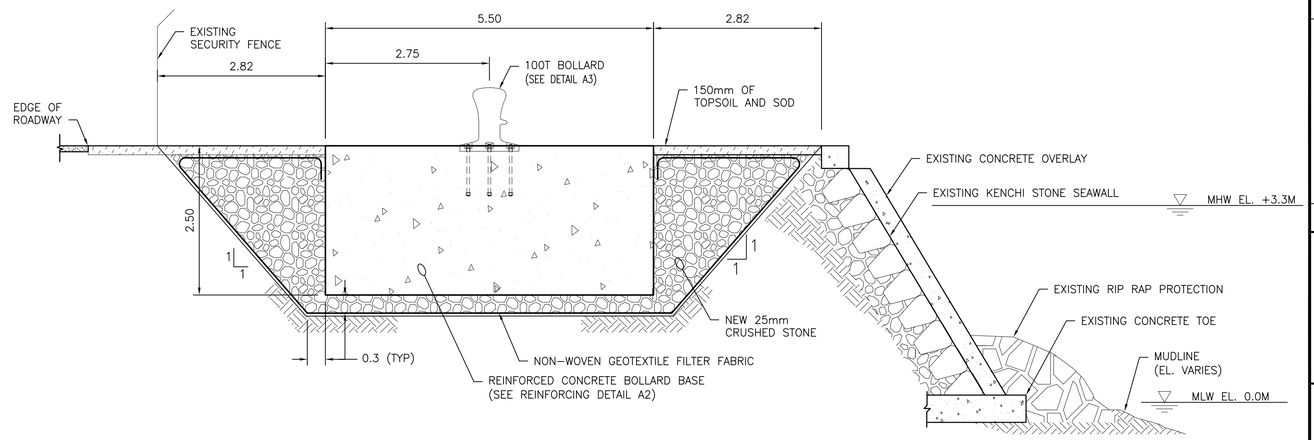
PLAN NORTH

BOLLARD AKSW-3 REPLACEMENT PLAN

SCALE: 1:200 C-101 S-102

0 4 10 20 M

GRAPHIC SCALE: 1:200

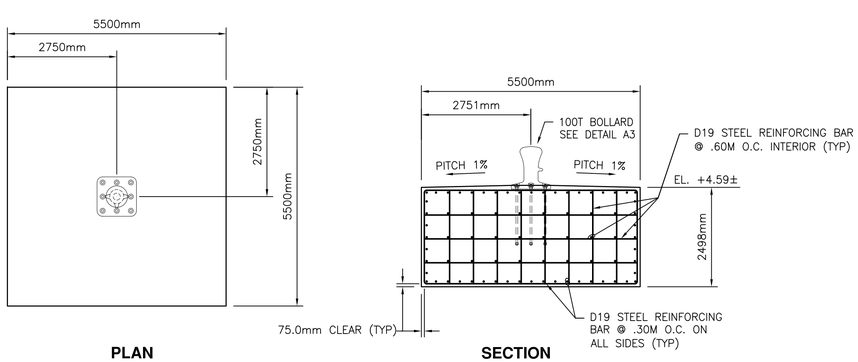


BOLLARD AKSW-3 SECTION

SCALE 1:50 S-504 C4

0 1.0 2.0 5.0 m

GRAPHIC SCALE: 1:50

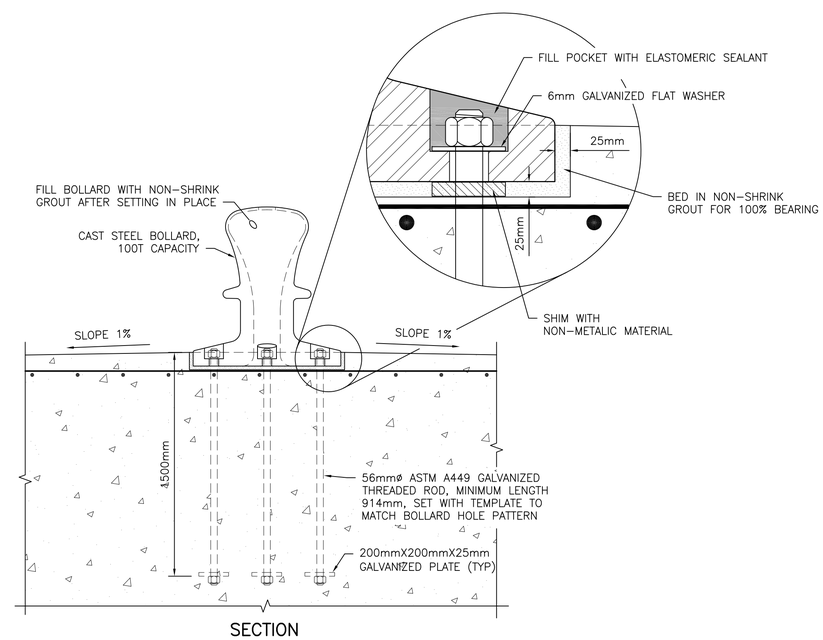


BOLLARD AKSW-3 REINFORCING

SCALE: 1:75 S-504 A2

0 2.0 4.0 8.0 m

GRAPHIC SCALE: 1:75



NEW 100 TON BOLLARD DETAIL

SCALE 1:20 S-504 A3

0 500 1000 2000 mm

GRAPHIC SCALE: 1:20

NOTES:

1. GEOTEXTILE FILTER FABRIC SHALL BE CLASS A AS SPECIFIED IN SPECIFICATION SECTION 31 23 00.00 20 EXCAVATION AND FILL.
2. PROVIDE AND INSTALL CAST STEEL BOLLARD AS SHOWN ON THE PLANS.
3. BOLLARD SHALL BE NAVY TYPE SPECIAL MOORING BOLLARD "B" WITH A MINIMUM HORIZONTAL LINE PULL CAPACITY OF 200,000 LBS. (100 TONS) OR EQUAL BOLLARD TYPE ACCEPTABLE TO THE CONTRACTING OFFICER.
4. BOLLARDS SHALL BE SECURED TO THE FOUNDATION AS SHOWN. BOLTS AND HARDWARE SHALL BE AS RECOMMENDED BY THE BOLLARD MANUFACTURER TO RESIST THE DESIGN LOADS.
5. BOLLARD SHALL BE COATED WITH A 3 PART COATING SYSTEM AS DESCRIBED IN SPECIFICATION SECTION 05 30 00.
6. BOLLARD SHALL BE SET IN NON-SHRINK GROUT SUCH THAT THERE IS 100% BEARING ON THE FOUNDATION AND NO VOIDS UNDER THE BOLLARD BASE.

SYM	DESCRIPTION	DATE	APPR

NAVFAC

COMMONWEALTH OF MASSACHUSETTS CHARLES MARSHALL ROBERTS No. 50339 REGISTERED PROFESSIONAL ENGINEER 4/23/13 SEAL

CHILDS ENGINEERING CORPORATION
34 WILLIAM WAY BELLINGHAM, MASSACHUSETTS 02019 U.S.A.
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A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES CMR DRW TEQ CHK CDS
BRANCH MANAGER
CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND
FISC, AKASAKI TERMINAL
SASEBO, JAPAN
REPAIRS TO FUELING WHARF 372
BOLLARD AKSW-3 REPLACEMENT DETAILS

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 10006534
SHEET 11 OF 12
S-504

DRAWFORM REVISION: 10 MARCH 2009

REPAIR SCHEDULE

Defect ID No.	Asset Type	Defect Location			Fac. Sec.	Defect Type	Repair Type	Area (M^2)	Depth D (mm)
		Station	Hor. Offset	Ver. Offset					
1	CA	0+00	0.0	0.6	FW372	ABS	A	0.2	250
11	CA	0+27.7	0.0	0.9	FW372	FRS	A	0.2	75
26	CA	0+52.4	3.0	0.6	FW372	CCS	A	1.9	100

Defect ID No.	Asset Type	Defect Location			Fac. Sec.	Defect Type	Repair Type	Area (M^2)	Depth D (mm)
		Station	Hor. Offset	Ver. Offset					
6	CA	0+19.8	0.0	2.4	FW372	ABS	B	0.3	125
37	CA	0+80.2	0.0	1.2	FW372	ABS	B	0.6	75

Defect ID No.	Asset Type	Defect Location			Fac. Sec.	Defect Type	Repair Type	Area (M^2)	Depth D (mm)	Exp Bars N (#)
		Station	Hor. Offset	Ver. Offset						
29	CA	0+60.4	0.0	1.2	FW372	OCS	C	0.9	100	4

Defect ID No.	Asset Type	Defect Location		Fac. Sec.	Defect Type	Repair Type	Area (M^2)	Depth D (mm)
		Station	Hor. Offset					
17	DA	0+38.1	8.0	FW372	CCS	D	0.4	50

Defect ID No.	Asset Type	Defect Location			Fac. Sec.	Defect Type	Repair Type	Area (M^2)	Depth D (mm)
		Station	Hor. Offset	Ver. Offset					
10	DU	0+27.7	7.0	0.6	FW372	CCS	E	0.3	100

Defect ID No.	Asset Type	Defect Location		Fac. Sec.	Defect Type	Repair Type	Length L (m)	Width (mm)	Depth D (mm)	Exp Bars N (#)
		Station	Hor. Offset							
7	DA	0+21.3	0.0	FW372	OCS	F	0.3	100	75	1
9	DA	0+25.9	0.0	FW372	OCS	F	0.7	100	50	3
20	DA	0+45.7	0.0	FW372	OCS	F	0.3	100	50	1
28	DA	0+57.9	0.3	FW372	OCS	F	0.3	100	25	1
42	DA	0+24	0	FW372	OCS	F	0.3	100	75	1
45	DA	0+50	0	FW372	OCS	F	0.5	100	75	1

Defect ID No.	Asset Type	Defect Location			Fac. Sec.	Defect Type	Repair Type	Length L (m)	Crack W (mm)
		Station	Hor. Offset	Ver. Offset					
12	CA	0+27.7	2.4	2.4	FW372	CRD	G	0.9	3
13	CA	0+30.5	0.0	0.3	FW372	CRH	G	3.0	3
14	CA	0+30.8	0.0	1.2	FW372	CRV	G	2.4	2
21	CA	0+47.6	0.0	1.2	FW372	CRV	G	2.4	2
22	CA	0+49.1	0.0	0.3	FW372	CRH	G	6.1	3
23	CA	0+49.7	0.0	1.2	FW372	CRV	G	2.4	2
24	CA	0+50.3	0.0	1.2	FW372	CRV	G	2.4	2
25	CA	0+51.2	0.0	1.2	FW372	CRV	G	2.4	2
27	CA	0+52.4	2.7	1.2	FW372	CRV	G	2.1	3
32	CA	0+66.8	7.9	0.3	FW372	CRH	G	9.1	3
39	DA	0+21	4	0.0	FW372	CRL	G	1.0	1
40	DA	0+21	3.5	0.0	FW372	CRL	G	1.0	1
41	DA	0+21	3	0.0	FW372	CRL	G	2.0	1
43	DA	0+27	4	0.0	FW372	CRL	G	1.0	1

Defect ID No.	Asset Type	Defect Location		Fac. Sec.	Defect Type	Repair Type	Length L (m)	Crack W (mm)
		Station	Hor. Offset					
46	DA	0+67	3	FW372	CRL	H	3.0	1
47	DA	0+73	6.5	FW372	CRL	H	10.0	1

Defect ID No.	Asset Type	Defect Location		Fac. Sec.	Defect Type	Repair Type	Area (M^2)	Depth D (mm)
		Station	Hor. Offset					
44	DC	0+41.5	0.2	FW372	FRS	J	0.2	50

Defect ID No.	Asset Type	Defect Location			Fac. Sec.	Defect Type	Repair Type	Area (M^2)	Depth D (mm)
		Station	Hor. Offset	Ver. Offset					
38	CA	0+80.2	6.4	4.3	FW372	VOD	K	0.1	100

NOTE:
SEE SHEETS S-501 AND S-502 FOR REPAIR DETAILS.

BOLLARD CLEAN AND RECOAT SCHEDULE

BOLLARD	CLEAN AND RECOAT	ADD I.D.
FW 372-1	YES	N/A
FW 372-2	YES	N/A
FW 372-3	YES	N/A
FW 372-4	YES	N/A
FW 372-5	YES	N/A
FW 372-6	YES	N/A
FW 372-7	YES	N/A
AKSW-2	YES	N/A
AKSW-3	YES	N/A

NOTE:

BOLLARDS SHALL BE CLEANED AND RECOATED AS SPECIFIED IN SECTION 05 30 00 .01 MOORING HARDWARE.

ASSET TYPE KEY

CA = CONCRETE CAISSON
DU = DECK UNDER
DA = DECK ABOVE
DC = DECK CURB

DEFECT TYPE KEY

ABS = ABRAISON
CCS = CLOSED CORROSION SPALL
FRS = FRACTURE SPALL
VOID = VOID
OCS = OPEN CORROSION SPALL
CRD = DIAGONAL CRACK
CRH = HORIZONTAL CRACK
CRV = VERTICAL CRACK
CRL = LONGITUDINAL CRACK
CRT = TANGENTAL CRACK
DSG = DISINTEGRATION
WEA = WEATHERING
MIS = MISSING
UND = UNDERMINING
MDE = MORTAR DEGRADATION
BRK = BROKEN

NOTES

1. DIMENSIONS IN SCHEDULE FOR AREA AND DEPTH INDICATE THE DIMENSIONS OF THE DEFECT. THE TOTAL BELOW HAS HAD A MINIMUM OF 30% ADDED TO THE AREA OR LENGTH FOR BIDDING.
2. REFER TO SHEETS S-101 AND S-201 FOR STATIONING, VERTICAL AND HORIZONTAL OFFSETS AND DEFECT NUMBERS.

REPAIR QUANTITIES FOR BIDDING PURPOSES

REPAIR	QUANTITY
A	$3m^2$
B	$1.2m^2$
C	$1.2m^2$
D	$0.5m^2$
E	$0.4m^2$
F	3.2m
G	50.0m
H	17.0m
J	$0.3m^2$
K	$0.1m^2$

SYM	DESCRIPTION	DATE	APPR

NAVFAC

COMMONWEALTH OF MASSACHUSETTS
CHARLES MARSHALL ROBERTS
No. 50339
REGISTERED PROFESSIONAL ENGINEER
04/25/13
SEAL

CHILDS ENGINEERING CORPORATION
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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND
FISC, AKASAKI TERMINAL
SASEBO, JAPAN

REPAIRS TO FUELING WHARF 372

REPAIR SCHEDULE

SCALE: NONE
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 10006535
SHEET 12 OF 12
S-601

DRAWFORM REVISION: 10 MARCH 2009