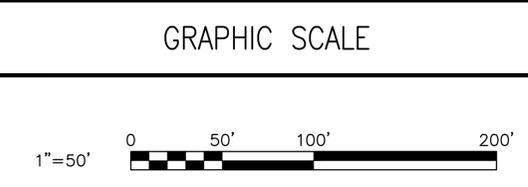
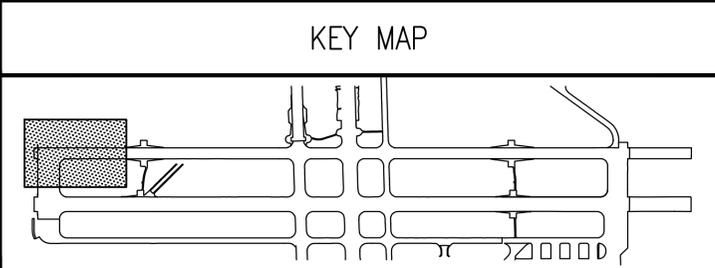


CURVE TABLE

	LENGTH	RADIUS	DELTA	TAN	CHORD
C1	89.613'	159.95'	32.1	46.02'	88.45'
C2	161.76'	100.41'	91.88	103.78'	144.31'

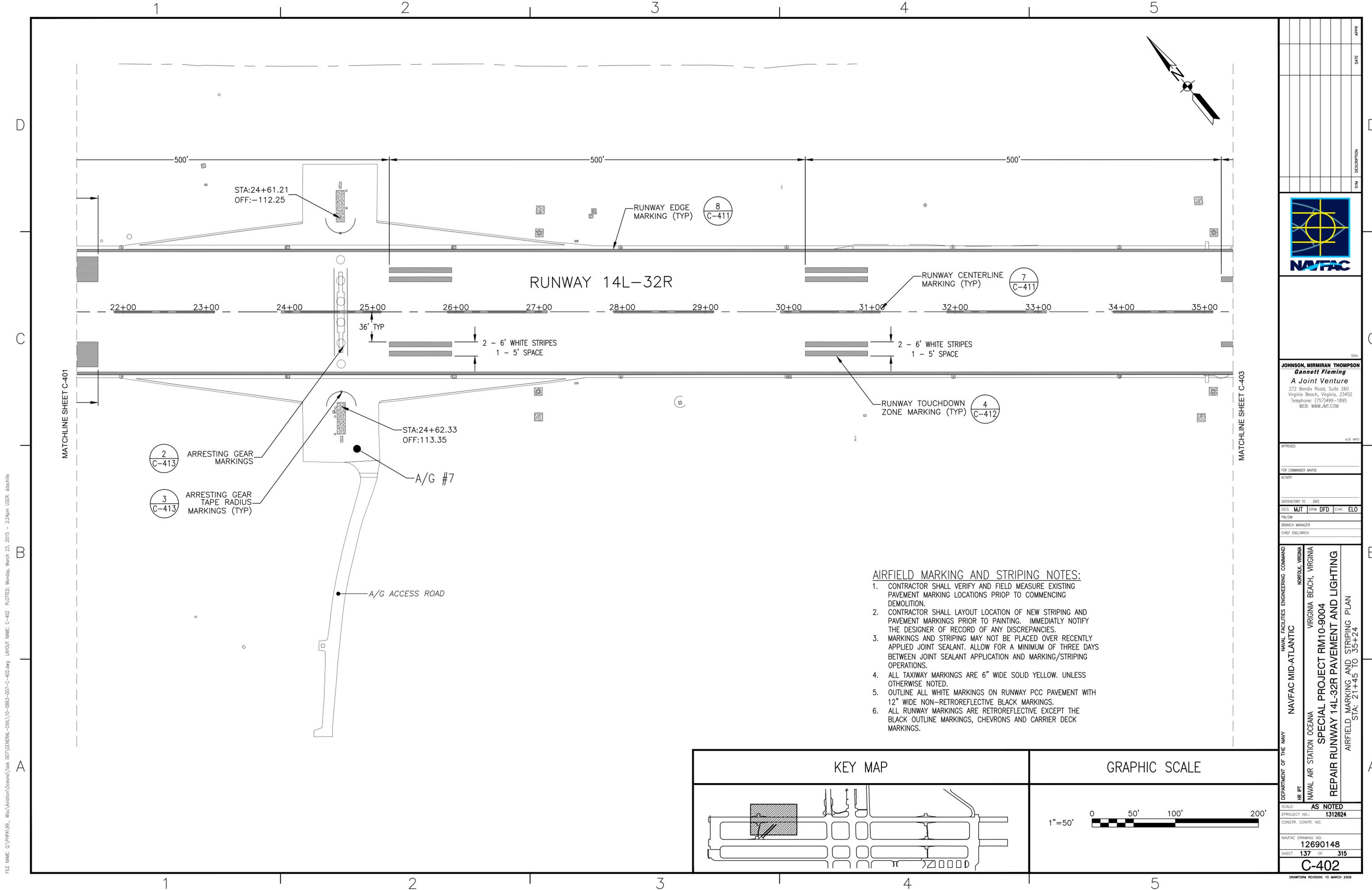
AIRFIELD MARKING AND STRIPING NOTES:

1. CONTRACTOR SHALL VERIFY AND FIELD MEASURE EXISTING PAVEMENT MARKING LOCATIONS PRIOR TO COMMENCING DEMOLITION.
2. CONTRACTOR SHALL LAYOUT LOCATION OF NEW STRIPING AND PAVEMENT MARKINGS PRIOR TO PAINTING. IMMEDIATELY NOTIFY THE DESIGNER OF RECORD OF ANY DISCREPANCIES.
3. MARKINGS AND STRIPING MAY NOT BE PLACED OVER RECENTLY APPLIED JOINT SEALANT. ALLOW FOR A MINIMUM OF THREE DAYS BETWEEN JOINT SEALANT APPLICATION AND MARKING/STRIPING OPERATIONS.
4. ALL TAXIWAY MARKINGS ARE 6" WIDE SOLID YELLOW. UNLESS OTHERWISE NOTED.
5. OUTLINE ALL WHITE MARKINGS ON RUNWAY PCC PAVEMENT WITH 12" WIDE NON-RETROREFLECTIVE BLACK MARKINGS.
6. ALL RUNWAY MARKINGS ARE RETROREFLECTIVE EXCEPT THE BLACK OUTLINE MARKINGS, CHEVRONS AND CARRIER DECK MARKINGS.

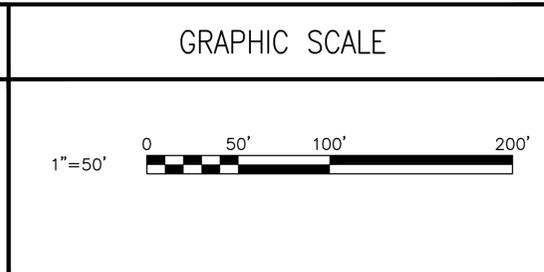
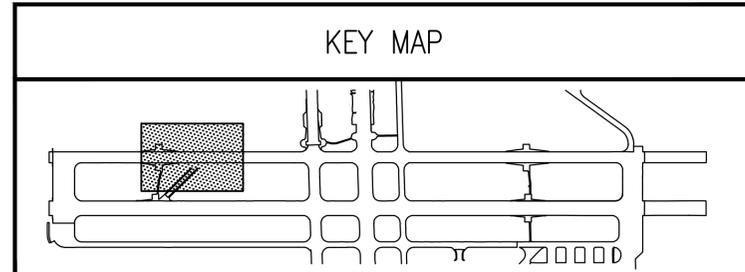


 JOHNSON, MIRMIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 200 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	SEAL APPROVED: _____ PER COMMANDER NAVFAC ACTIVITY SATISFACTORY TO DATE DES: MJT DRAW: DFD CHK: ELO PM/DM BRANCH MANAGER CHIEF ENG/ARCH
DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA	VIRGINIA BEACH, VIRGINIA SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING AIRFIELD MARKING AND STRIPING PLAN STA: 7+55 TO 21+45
SCALE: AS NOTED PROJECT NO.: 1312624 CONSTR. CONTR. NO.	
NAVFAC DRAWING NO. 12690147 SHEET 136 OF 315 C-401 <small>DRAWING REVISION: 10 MARCH 2009</small>	

FILE NAME: C:\P\PA\98...
 PLOTTED: Monday, March 23, 2015 - 2:23pm USER: daboille



FILE NAME: C:\P\PA\981_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-402.dwg LAYOUT NAME: C-402 PLOTTED: Monday, March 23, 2015 - 2:24pm USER: dbacille

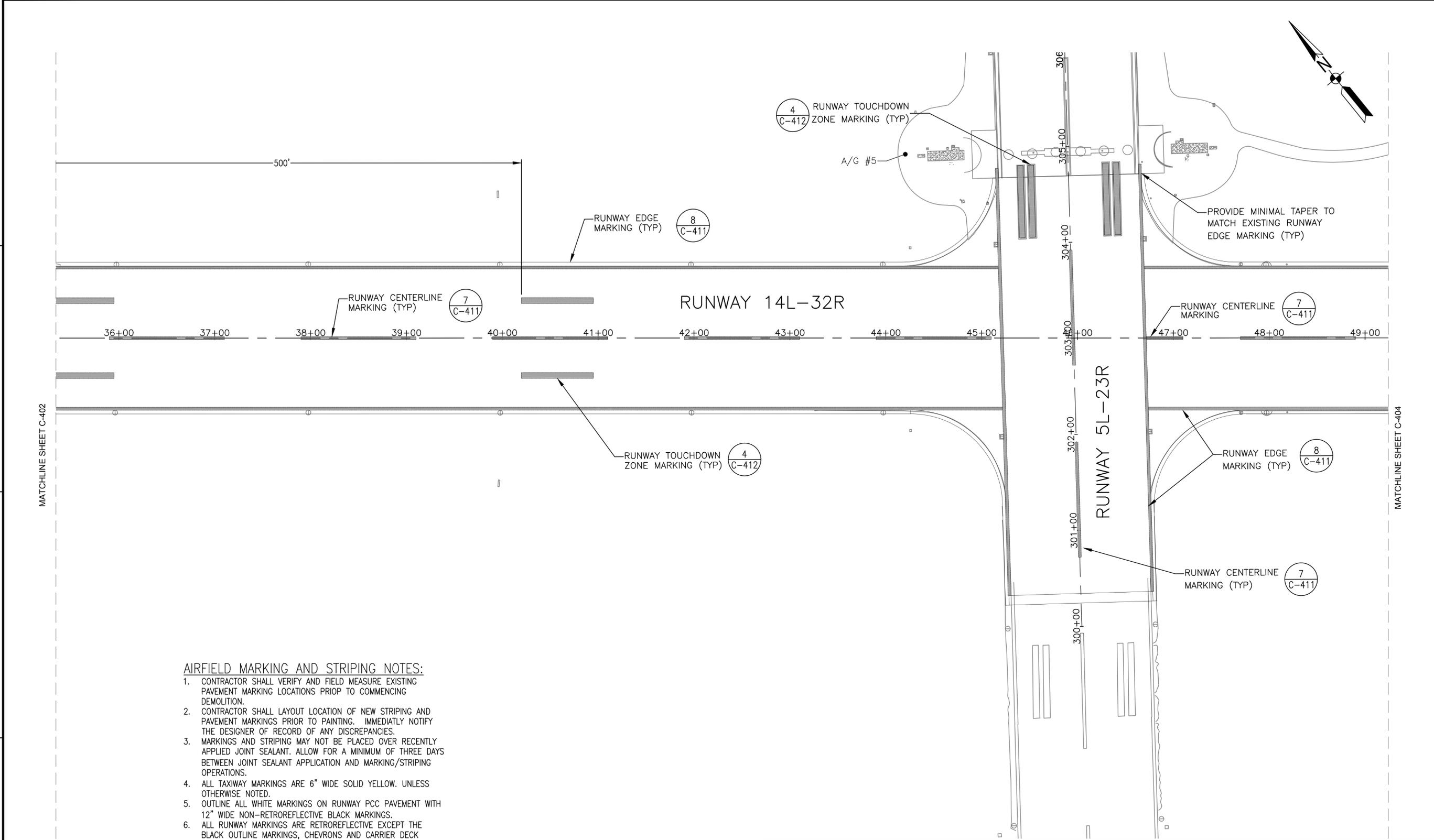


AIRFIELD MARKING AND STRIPING NOTES:

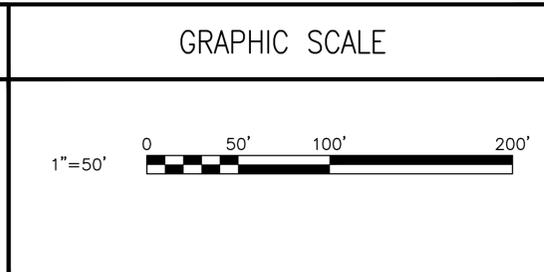
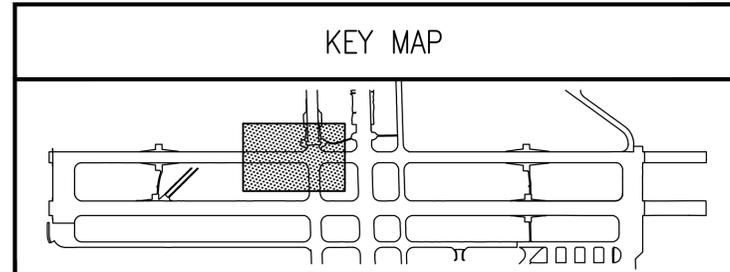
1. CONTRACTOR SHALL VERIFY AND FIELD MEASURE EXISTING PAVEMENT MARKING LOCATIONS PRIOR TO COMMENCING DEMOLITION.
2. CONTRACTOR SHALL LAYOUT LOCATION OF NEW STRIPING AND PAVEMENT MARKINGS PRIOR TO PAINTING. IMMEDIATELY NOTIFY THE DESIGNER OF RECORD OF ANY DISCREPANCIES.
3. MARKINGS AND STRIPING MAY NOT BE PLACED OVER RECENTLY APPLIED JOINT SEALANT. ALLOW FOR A MINIMUM OF THREE DAYS BETWEEN JOINT SEALANT APPLICATION AND MARKING/STRIPING OPERATIONS.
4. ALL TAXIWAY MARKINGS ARE 6" WIDE SOLID YELLOW. UNLESS OTHERWISE NOTED.
5. OUTLINE ALL WHITE MARKINGS ON RUNWAY PCC PAVEMENT WITH 12" WIDE NON-RETROREFLECTIVE BLACK MARKINGS.
6. ALL RUNWAY MARKINGS ARE RETROREFLECTIVE EXCEPT THE BLACK OUTLINE MARKINGS, CHEVRONS AND CARRIER DECK MARKINGS.

	DATE
	APPR
	
JOHNSON, MIRMIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 200 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
APPROVED	
PER COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES	DATE
MJT	DFD
CHK	ELO
BRANCH MANAGER	
CHIEF ENGR/ARCH	
DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA	VIRGINIA BEACH, VIRGINIA NAVAL AIR STATION OCEANA SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING AIRFIELD MARKING AND STRIPING PLAN STA: 21+45 TO 35+24
SCALE: AS NOTED	
PROJECT NO.: 1312624	
CONSTR. CONTR. NO.:	
NAVFAC DRAWING NO. 12690148	
SHEET 137 OF 315	
C-402	
DRAWFORM REVISION: 10 MARCH 2009	

FILE NAME: C:\P\PA\98_1\Map\Aviation\Ocean\Task_007\GENERAL-CMA\10-8863-007-C-403.dwg LAYOUT NAME: C-403 PLOTTED: Monday, March 23, 2015 - 2:25pm USER: dabchille

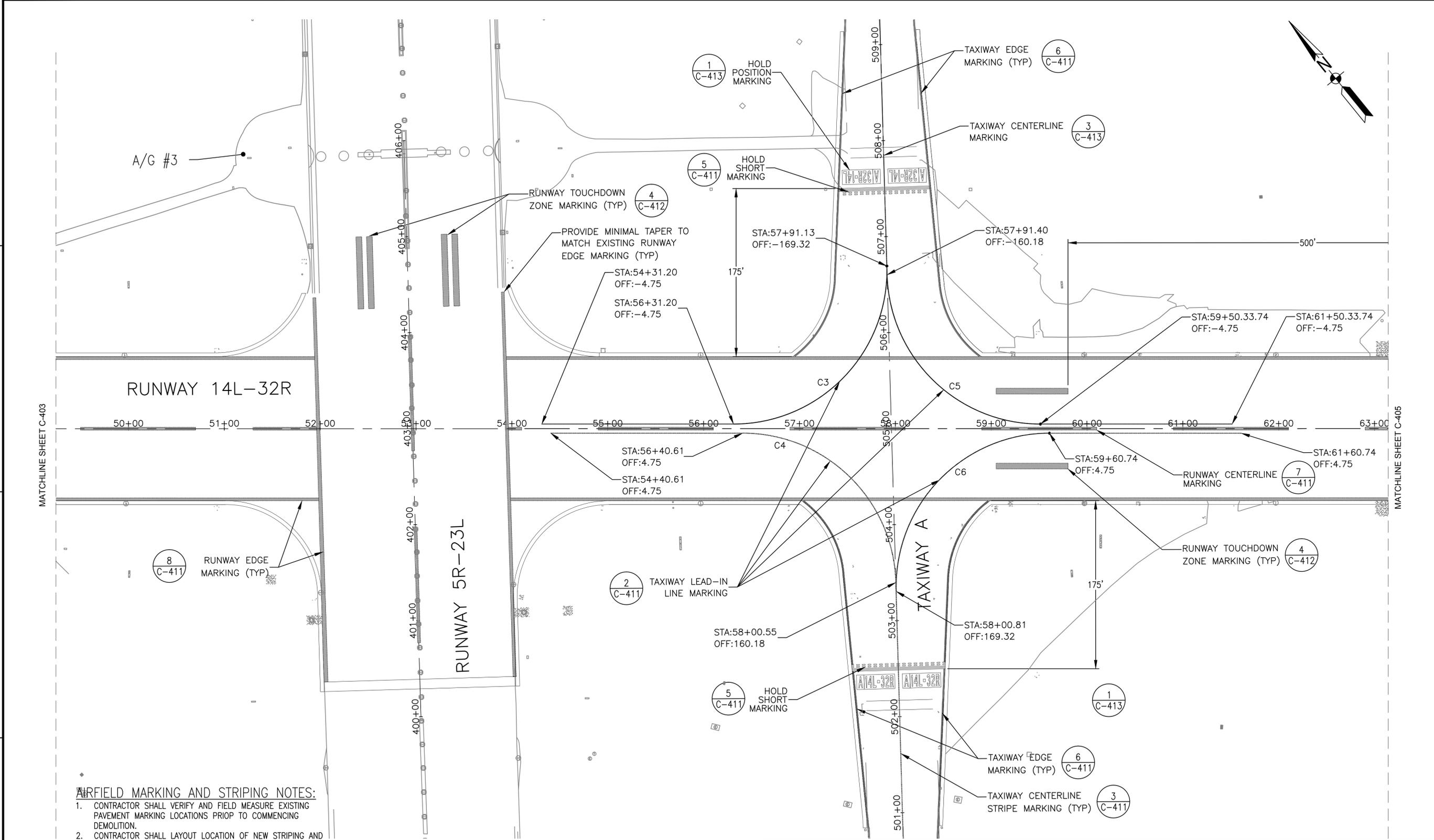


- AIRFIELD MARKING AND STRIPING NOTES:**
1. CONTRACTOR SHALL VERIFY AND FIELD MEASURE EXISTING PAVEMENT MARKING LOCATIONS PRIOR TO COMMENCING DEMOLITION.
 2. CONTRACTOR SHALL LAYOUT LOCATION OF NEW STRIPING AND PAVEMENT MARKINGS PRIOR TO PAINTING. IMMEDIATELY NOTIFY THE DESIGNER OF RECORD OF ANY DISCREPANCIES.
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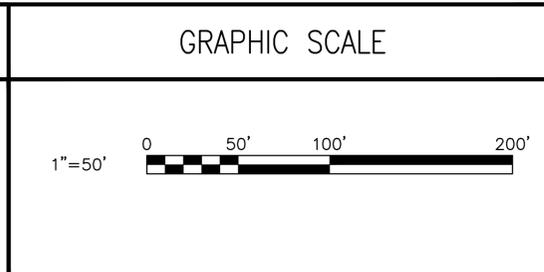
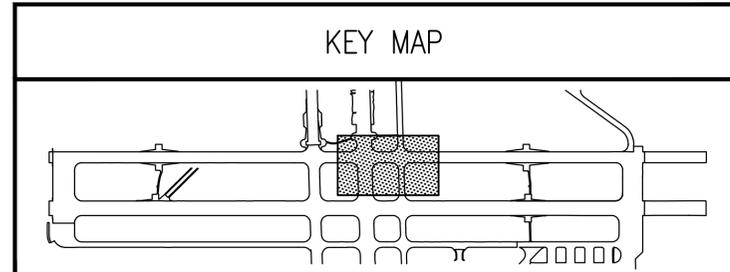
DATE	APPROVED
DESCRIPTION	SEAL
SYN	
JOHNSON, MIRIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 200 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
APPROVED	
PER COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES	CHK
MJT	DFD
PH/DM	ELO
BRANCH MANAGER	
CHIEF ENG/ARCH	
DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA VIRGINIA BEACH, VIRGINIA NAVAL AIR STATION OCEANA SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING AIRFIELD MARKING AND STRIPING PLAN STA: 35+24 TO 49+23	
SCALE: AS NOTED	
PROJECT NO.: 1312624	
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO. 12690149	
SHEET 138 OF 315	
C-403	
DRAWING REVISION: 10 MARCH 2009	

FILE NAME: C:\P\PA\981_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-404.dwg LAYOUT NAME: C-404 PLOTTED: Monday, March 23, 2015 - 2:26pm USER: dabachille



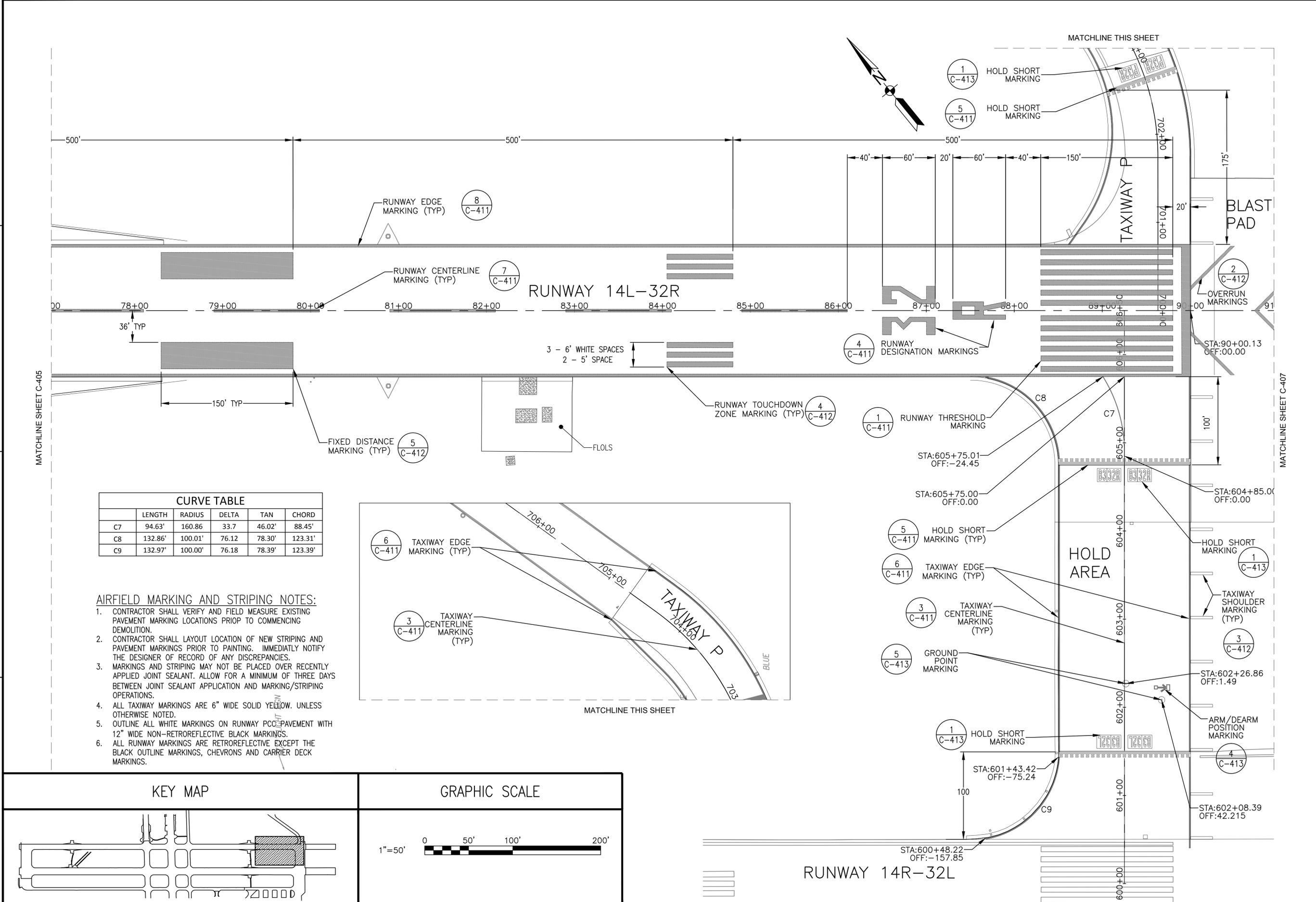
- AIRFIELD MARKING AND STRIPING NOTES:**
1. CONTRACTOR SHALL VERIFY AND FIELD MEASURE EXISTING PAVEMENT MARKING LOCATIONS PRIOR TO COMMENCING DEMOLITION.
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CURVE TABLE					
	LENGTH	RADIUS	DELTA	TAN	CHORD
C3	255.90'	160.00'	91.64	164.64'	229.48'
C4	246.76'	160.00'	88.36	155.49'	223.02'
C5	246.76'	160.00'	88.36	155.49'	223.02'
C6	255.90'	160.00'	91.64	164.64'	229.48'



DATE	APPR
DESCRIPTION	DATE
SYN	DATE
	
JOHNSON, MIRMIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 260 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
APPROVED: _____ PER COMMANDER NAVFAC	
ACTIVITY: _____	
SATISFACTORY TO DATE: _____	
DES	CHK
MJT	ELO
DRW	DFD
DFD	CHK
CHK	ELO
BRANCH MANAGER: _____ CHIEF ENGR/ARCH: _____	
DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA VIRGINIA BEACH, VIRGINIA NAVAL AIR STATION OCEANA SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING AIRFIELD MARKING AND STRIPING PLAN STA: 49+23 TO 63+14	
SCALE: AS NOTED PROJECT NO.: 1312624 CONSTR. CONTR. NO.: _____	
NAVFAC DRAWING NO.: 12690150 SHEET 139 OF 315 C-404 <small>DRAWING REVISION: 10 MARCH 2009</small>	

FILE NAME: C:\P\PA\91_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-0863-007-C-406.dwg LAYOUT NAME: C-406 PLOTTED: Monday, March 23, 2015 - 2:28pm USER: dbacchile

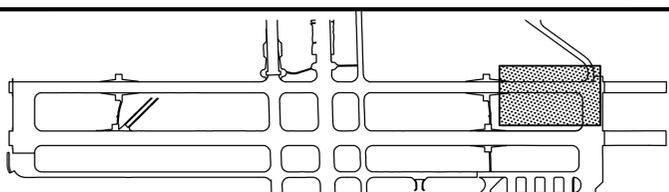


CURVE TABLE

	LENGTH	RADIUS	DELTA	TAN	CHORD
C7	94.63'	160.86	33.7	46.02'	88.45'
C8	132.86'	100.01'	76.12	78.30'	123.31'
C9	132.97'	100.00'	76.18	78.39'	123.39'

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KEY MAP

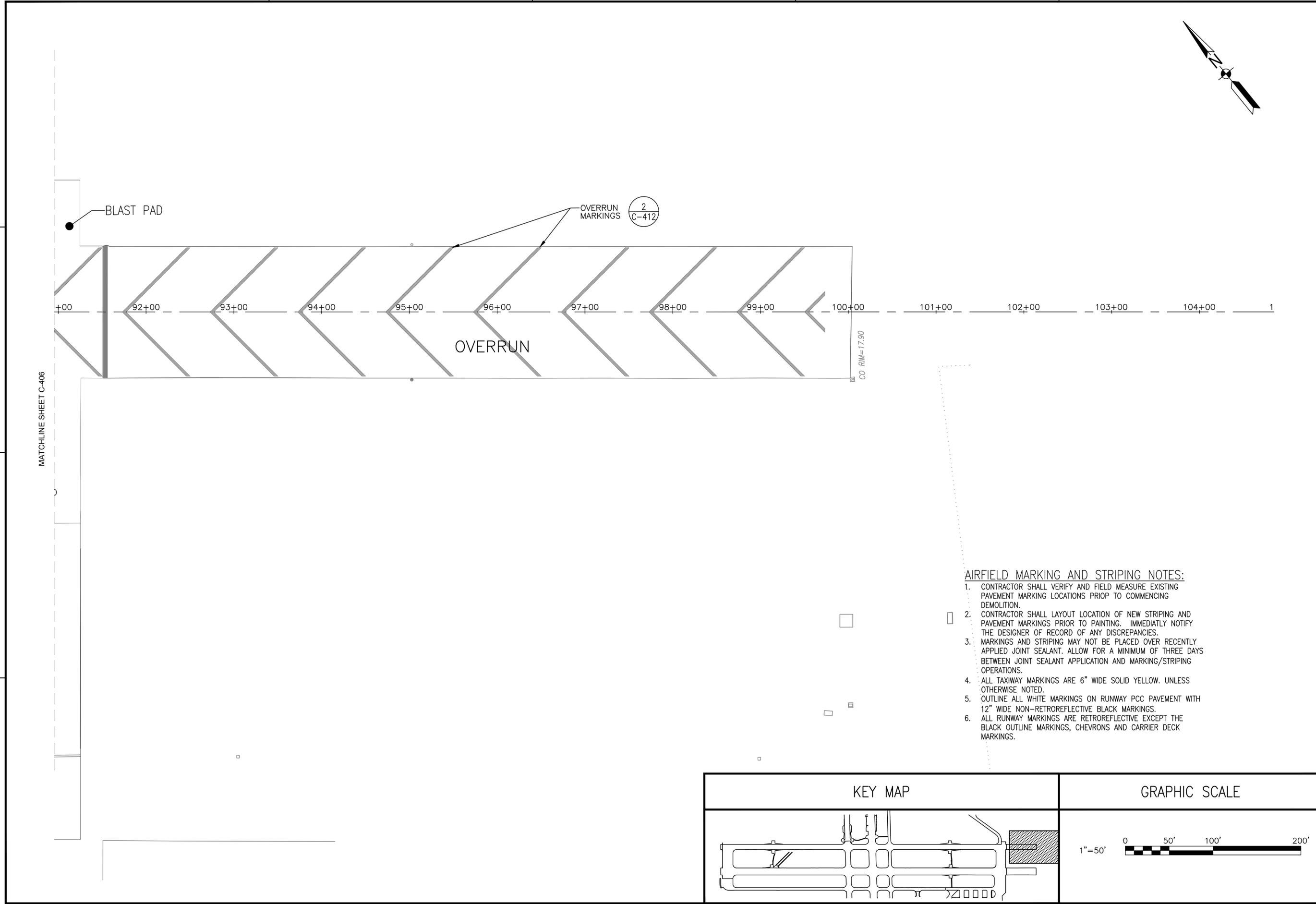


GRAPHIC SCALE



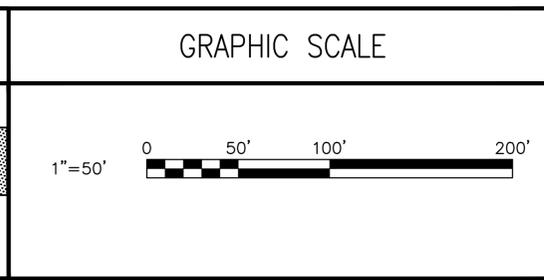
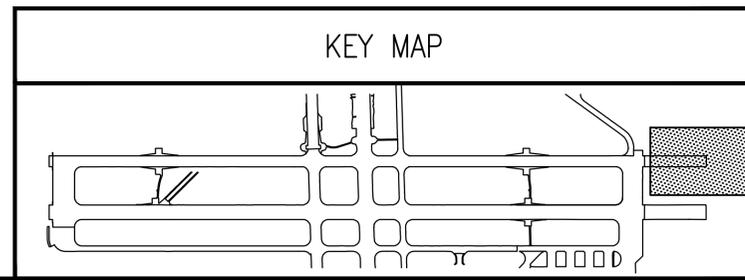
DATE	APPR
DESCRIPTION	SW
JOHNSON, MIRMIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 2600 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
APPROVED	DATE
PER COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DATE
DES: MJT	DRAW: DFD
CHK: ELO	
BRANCH MANAGER	CHIEF ENGINEER/ARCH
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVFAC MID-ATLANTIC VIRGINIA BEACH, VIRGINIA NAVAL AIR STATION OCEANA SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING AIRFIELD MARKING AND STRIPING PLAN STA: 77+04 TO 90+95	
SCALE: AS NOTED	
PROJECT NO.: 1312624	
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO. 12690152	
SHEET 141 OF 315	
C-406	
DRAWN/REVISED: 10 MARCH 2009	

FILE NAME: C:\P\PA\981_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-407.dwg LAYOUT NAME: C-407 PLOTTED: Monday, March 23, 2015 - 2:28pm USER: dbacille



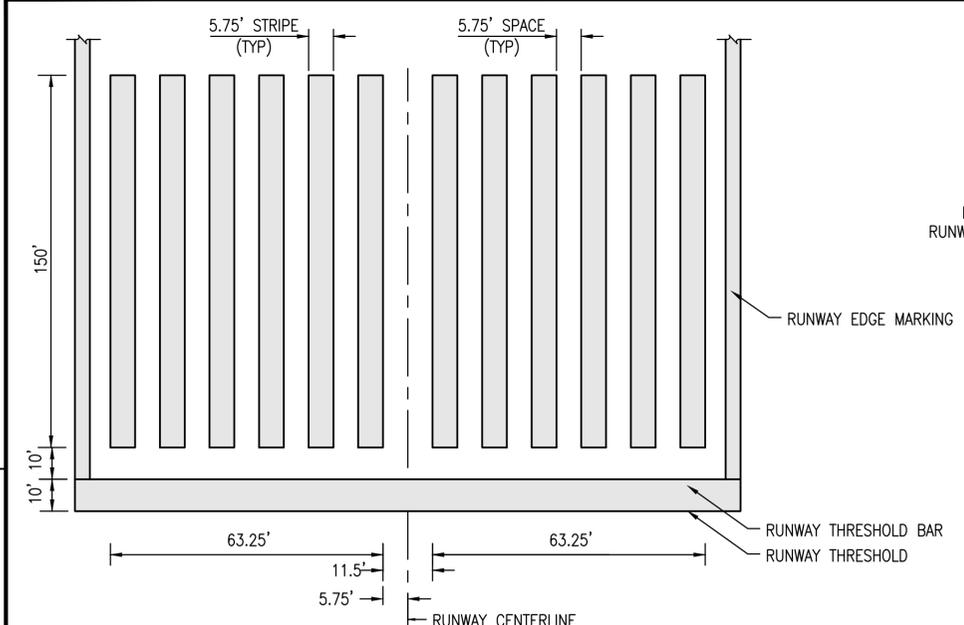
AIRFIELD MARKING AND STRIPING NOTES:

1. CONTRACTOR SHALL VERIFY AND FIELD MEASURE EXISTING PAVEMENT MARKING LOCATIONS PRIOR TO COMMENCING DEMOLITION.
2. CONTRACTOR SHALL LAYOUT LOCATION OF NEW STRIPING AND PAVEMENT MARKINGS PRIOR TO PAINTING. IMMEDIATELY NOTIFY THE DESIGNER OF RECORD OF ANY DISCREPANCIES.
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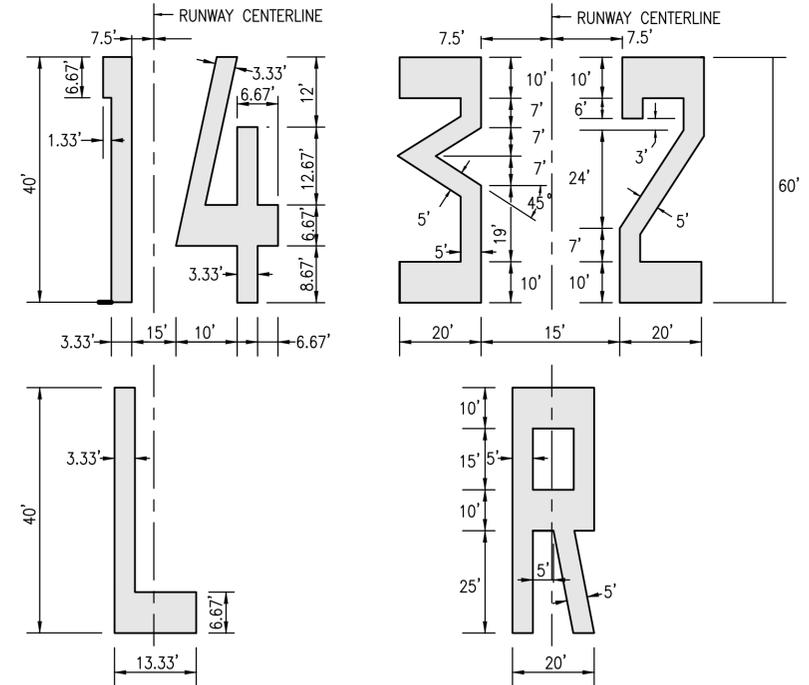
	DATE
	APPR
JOHNSON, MIRMIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 200 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
SEAL	
APPROVED	
PER COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES	DATE
MJT	DFD
CHK	ELO
PM/DM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA	VIRGINIA BEACH, VIRGINIA SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING AIRFIELD MARKING AND STRIPING PLAN STA: 90+95 TO 104+85
SCALE: AS NOTED	
EPROJCT NO.: 1312624	
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	
12690153	
SHEET 142 OF 315	
C-407	
DRAWFORM REVISION: 10 MARCH 2009	

FILE NAME: C:\P\PA\911_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-409.dwg LAYOUT NAME: C-411 PLOTTED: Monday, March 23, 2015 - 2:29pm USER: dbacchile



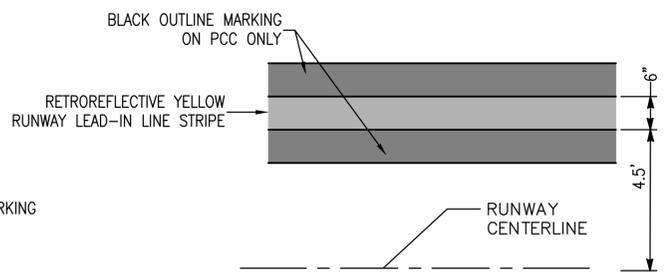
THRESHOLD MARKING DETAIL
NTS C-401, C-406 1

NOTE:
1. ALL THRESHOLD MARKINGS SHALL RECEIVE 12" BLACK BORDER

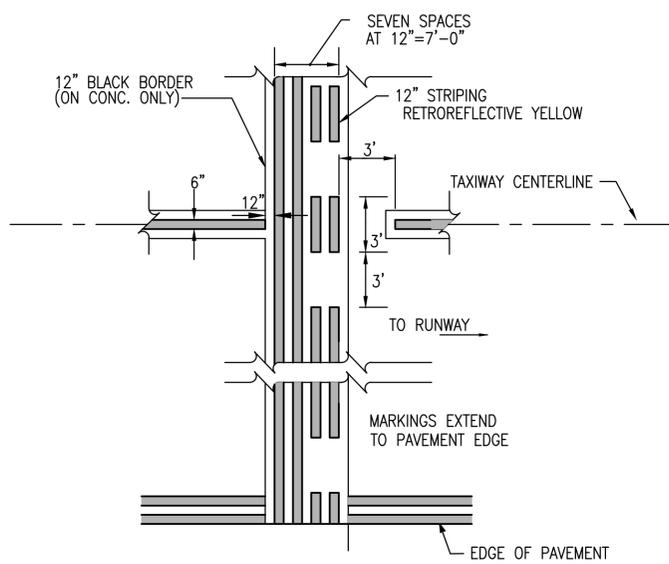


NOTE:
RUNWAY DESIGNATION SHALL BE RETROREFLECTIVE WHITE WITH NON-RETROREFLECTIVE 12" WIDE BLACK OUTLINE

RUNWAY DESIGNATION MARKING DETAIL
NTS C-401, C-406 4

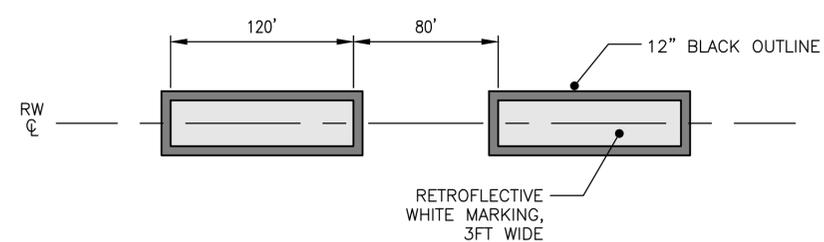


TAXIWAY LEAD-IN LINE STRIPING DETAIL
NTS C-404 2

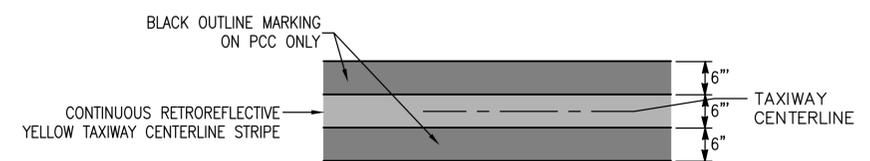


NOTE: MARKINGS SHALL BE RETROREFLECTIVE YELLOW.

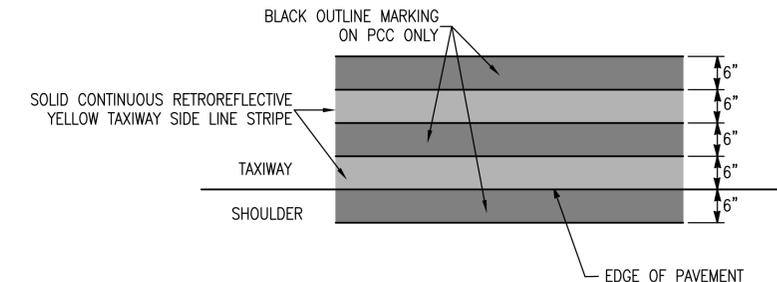
HOLD SHORT MARKING DETAIL
NTS C-401, C-404, C-406 5



RUNWAY CENTERLINE STRIPING DETAIL
NTS C-402, C-403, C-404, C-405, C-406 7

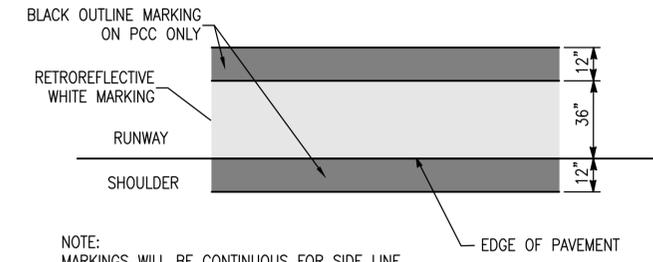


TAXIWAY CENTERLINE STRIPING DETAIL
NTS C-401, C-404, C-406 3



TAXIWAY EDGE MARKING DETAIL
NTS C-401, C-404, C-406 6

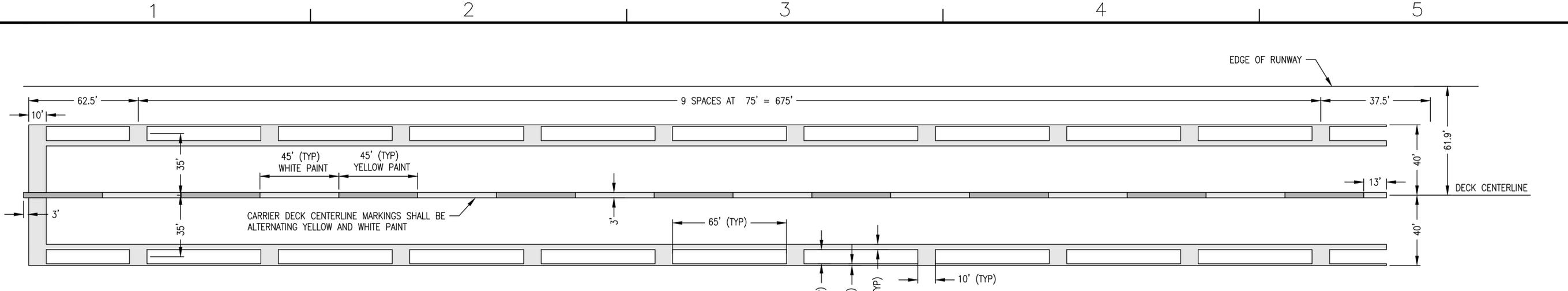
NOTES:
1. LAYOUT POINTS REPRESENT OUTER EDGE OF MARKING.



RUNWAY EDGE MARKING DETAIL
NTS C-401, C-402, C-403, C-404, C-405, C-406 8

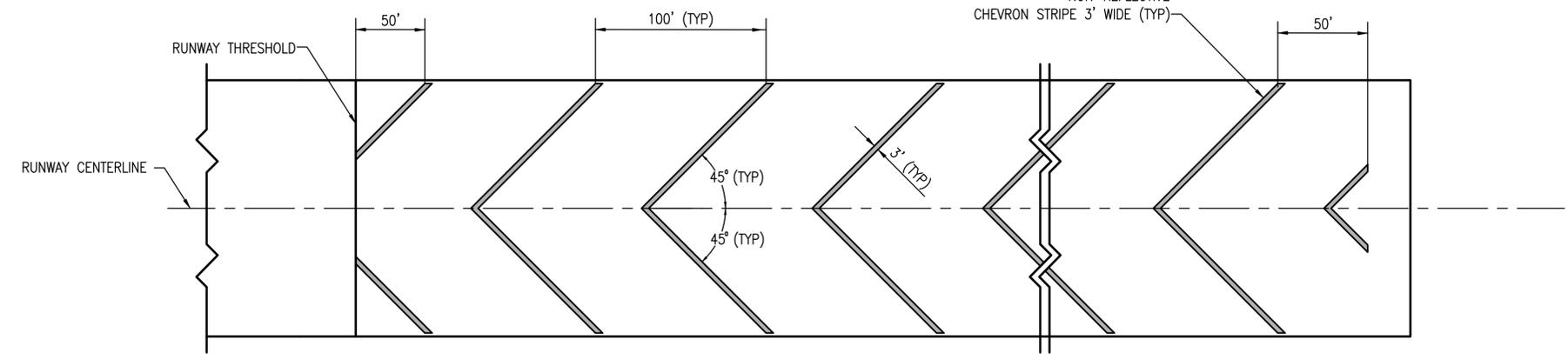
NOTES:
1. LAYOUT POINTS REPRESENT OUTER EDGE OF MARKING.

APPROVED	DATE	APP'R
PER COMMANDER NAVFAC		
ACTIVITY		
SATISFACTORY TO	DATE	
DES: MJT	DRAW: DFD	CHK: ELO
PH/DM		
BRANCH MANAGER		
CHIEF ENG/ARCH		
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC	NAVFAC
NAVAL FACILITIES ENGINEERING COMMAND	NORFOLK, VIRGINIA	
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VIRGINIA	
SPECIAL PROJECT RM10-9004		
REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING		
PAVEMENT MARKING DETAILS		
SCALE: AS NOTED		
PROJECT NO.: 1312624		
CONSTR. CONTR. NO.		
NAVFAC DRAWING NO. 12690154		
SHEET 143 OF 315		
C-411		
DRAWFORM REVISION: 10 MARCH 2009		

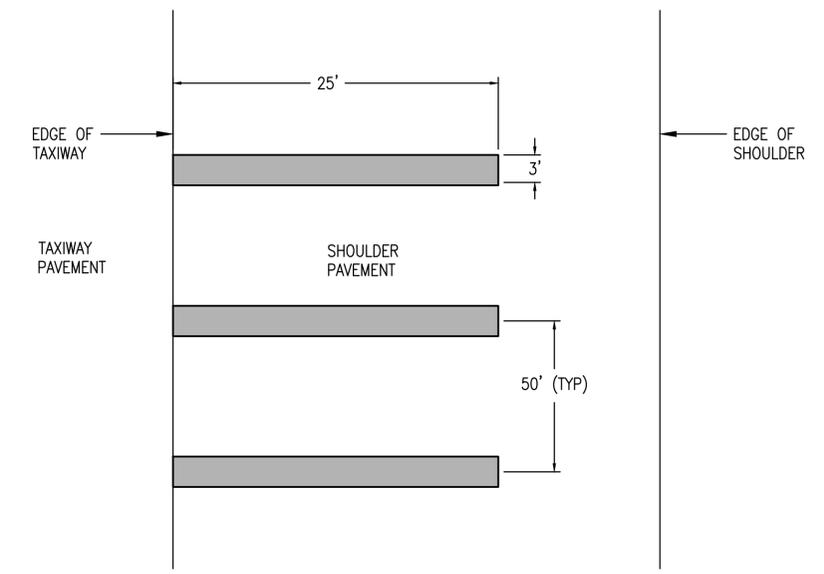


- NOTES:**
1. DIMENSIONS PREPARE EDGES OF WHITE OR YELLOW PAINT, AND DO NOT INCLUDE 12" BLACK BORDER REQUIRED ON PCC PAVEMENT.
 2. CARRIER DECK MARKINGS HAVE PRECEDENCE OVER ANY RUNWAY MARKINGS AND RUNWAY MARKINGS ARE NOT PERMITTED BETWEEN THE CARRIER DECK EDGE MARKINGS.
 3. ALL SIMULATED CARRIER DECK MARKINGS ARE WHITE, UNLESS OTHERWISE NOTED.

SIMULATED CARRIER DECK DETAIL
 NTS C-401 1

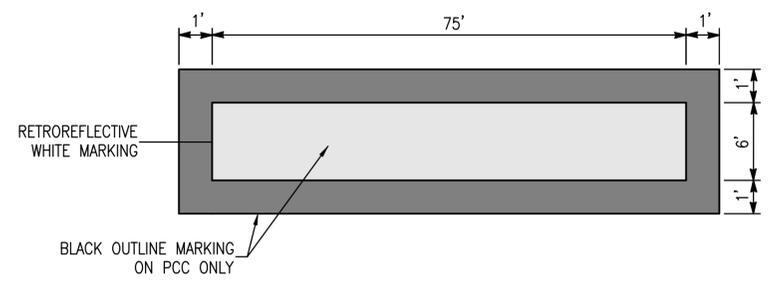


OVERRUN MARKING DETAIL
 NTS C-401, C-406, C-407 2



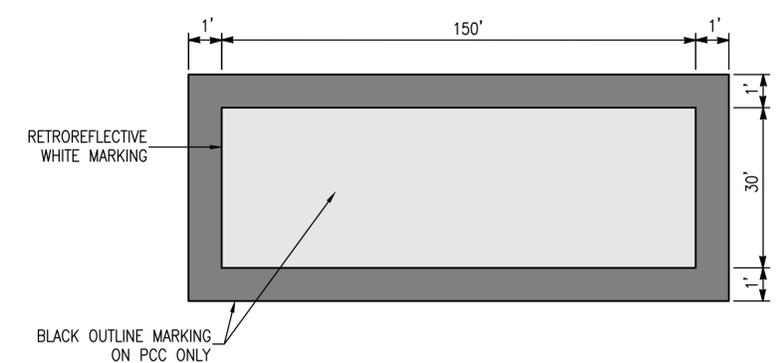
TAXIWAY SHOULDER MARKING
 NTS C-406 3

- NOTES:**
1. MARKINGS SHALL BE NONREFLECTIVE YELLOW PAINT.



TOUCHDOWN ZONE MARKING DETAIL
 NTS C-401, C-402, C-403, C-404, C-405, C-406 4

- NOTES:**
1. ALL WHITE MARKINGS SHALL RECEIVE REFLECTIVE MEDIA
 2. PROVIDE 12" WIDE BLACK BORDER AROUND ALL WHITE TOUCHDOWN ZONE MARKINGS

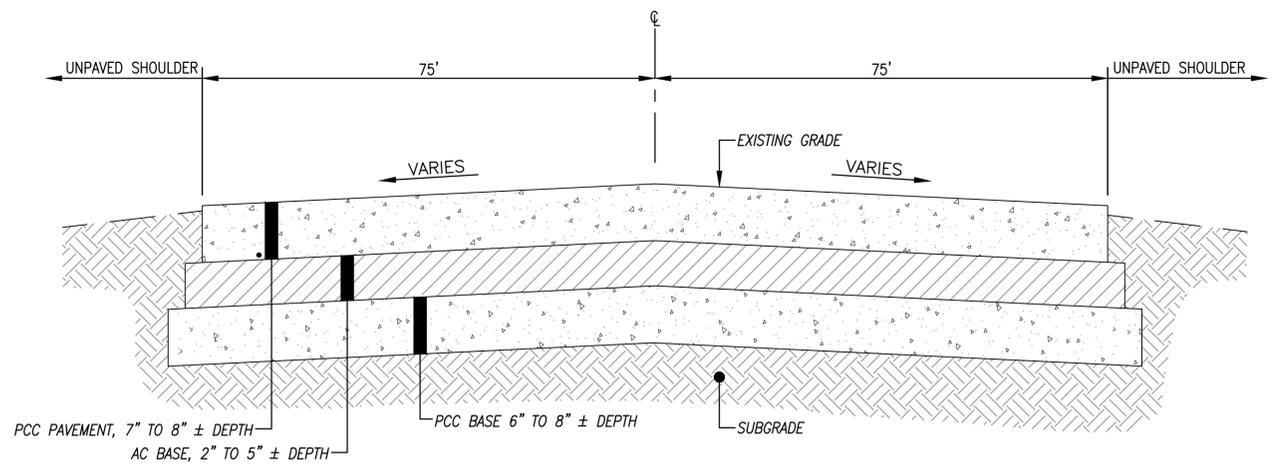


FIXED DISTANCE MARKING DETAIL
 NTS C-401, C-406 5

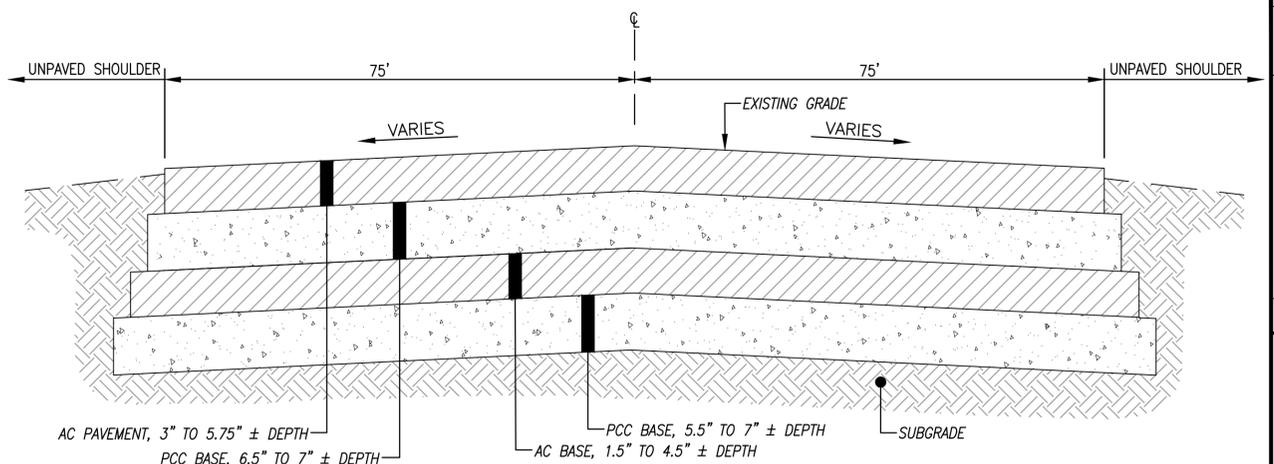
- NOTES:**
1. ALL WHITE MARKINGS SHALL RECEIVE REFLECTIVE MEDIA
 2. PROVIDE 12" WIDE BLACK BORDER AROUND ALL WHITE TOUCHDOWN ZONE MARKINGS

FILE NAME: C:\P\PA\981_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-410.dwg LAYOUT NAME: C-412 PLOTTED: Monday, March 23, 2015 - 2:29pm USER: dabchille

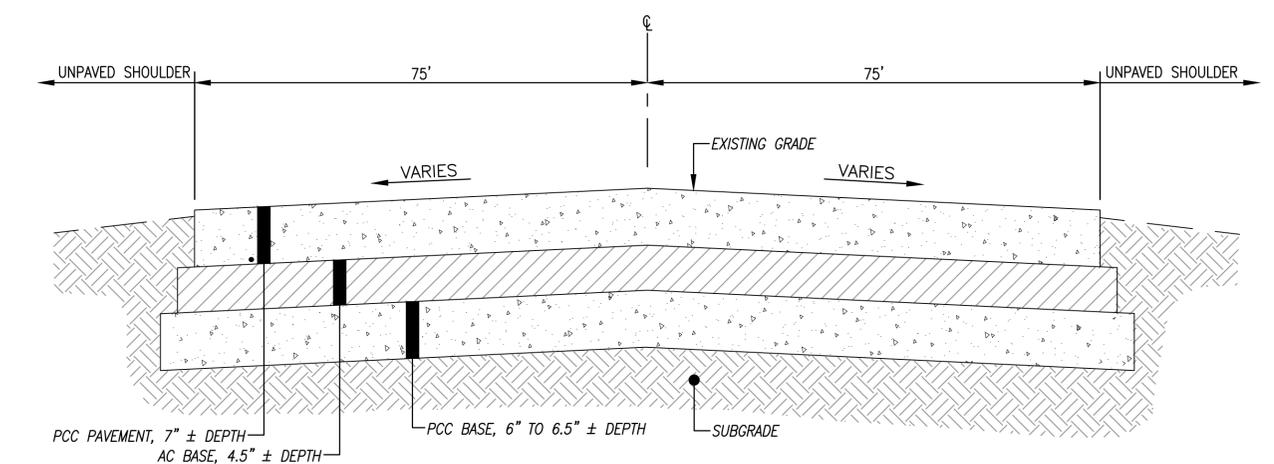
APPROVED	DATE	APP'R
DESCRIPTION	DATE	APP'R
SYN	DATE	APP'R
JOHNSON, MIRMIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 200 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM		
APPROVED: _____ PER: COMMANDER NAVFAC ACTIVITY: _____ SATISFACTORY TO: _____ DATE: _____ DES: MJT DRW: DFD CHK: ELO PM/DW: _____ BRANCH MANAGER: _____ CHIEF ENG/ARCH: _____		
DEPARTMENT OF THE NAVY NAVFAC MID-ATLANTIC VIRGINIA BEACH, VIRGINIA	NAVAL AIR STATION OCEANA SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING	NAVAL FACILITIES ENGINEERING COMMAND VIRGINIA BEACH, VIRGINIA PAVEMENT MARKING DETAILS
SCALE: AS NOTED	PROJECT NO.: 1312624	
CONSTR. CONTR. NO.		
NAVFAC DRAWING NO. 12690155	SHEET 144 OF 315	
C-412		
DRAWING REVISION: 10 MARCH 2009		



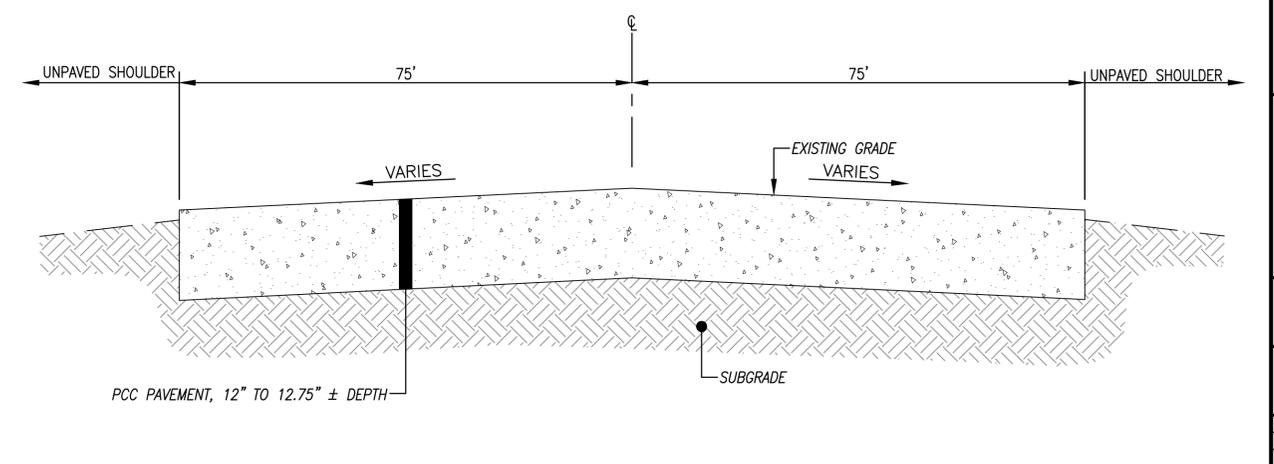
RUNWAY 14L-32R TYPICAL EXISTING PCC PAVEMENT SECTION 1
 NTS STA. 10+00.00 TO STA. 43+25.93 CD101 - CD106



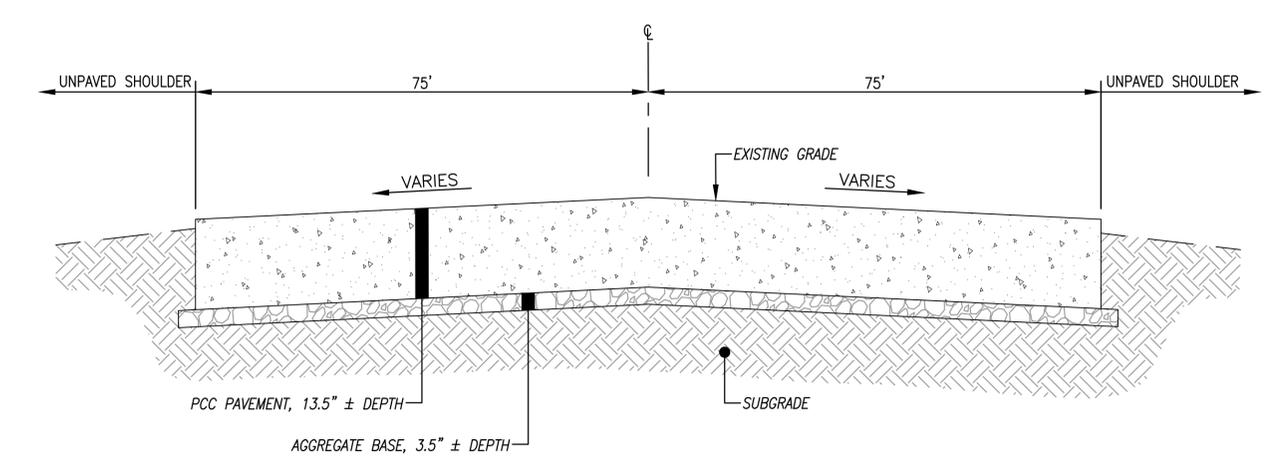
RUNWAY 14L-32R TYPICAL EXISTING AC PAVEMENT SECTION 2
 NTS STA. 43+25.93 TO STA. 59+06.43 CD106 - CD108



RUNWAY 14L-32R TYPICAL EXISTING PCC PAVEMENT SECTION 3
 NTS STA. 59+06.43 TO STA. 70+00.00 CD108, CD109



RUNWAY 14L-32R TYPICAL EXISTING PCC PAVEMENT SECTION 4
 NTS STA. 70+00.00 TO STA. 89+00.08 CD109 - CD112



RUNWAY 14L-32R TYPICAL EXISTING PCC PAVEMENT SECTION 5
 NTS STA. 89+00.08 TO STA. 90+01.00 CD112

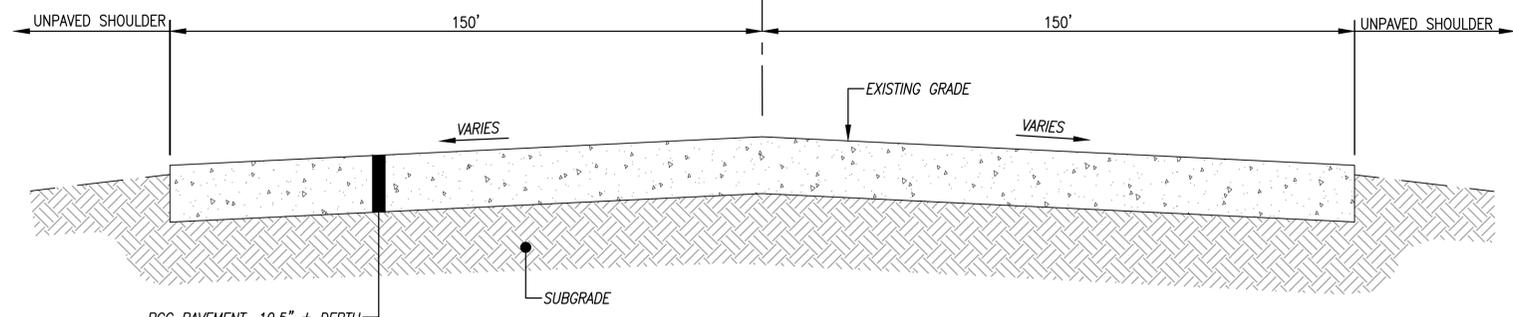
NOTE:

1. THE PAVEMENT TYPES AND LAYER DEPTHS ARE DERIVED FROM BORING AND CORING INFORMATION. SEE SHEET B-001 FOR BORING AND CORING LOCATIONS. SEE SHEETS B-002 THROUGH B-007 FOR BORING AND CORING STRATA DESCRIPTIONS. PAVEMENT LAYER DEPTHS PROVIDED ARE APPROXIMATE BASED ON THE AVAILABLE DATA.
2. WHERE CORING AND BORING DATA DOES NOT EXIST, CONSTRUCTION HISTORY FROM THE AIRFIELD PAVEMENT CONDITION SURVEY PREPARED BY NAVFAC (FEBRUARY 2011) IS UTILIZED.
3. EXISTING CONDITION INFORMATION PROVIDED IS NOT A GUARANTEE OF ACTUAL FIELD CONDITIONS. THE EXISTING PAVEMENT DETAILS ARE PROVIDED FOR INFORMATION ONLY. THE EXISTING PAVEMENT SECTIONS MAY VARY. THE CONTRACTOR SHALL COMPLETE DEMOLITION OF THE EXISTING SECTIONS IN THEIR ENTIRETY, REGARDLESS OF TYPE AND THICKNESS, AT NO ADDITIONAL COST TO THE GOVERNMENT.

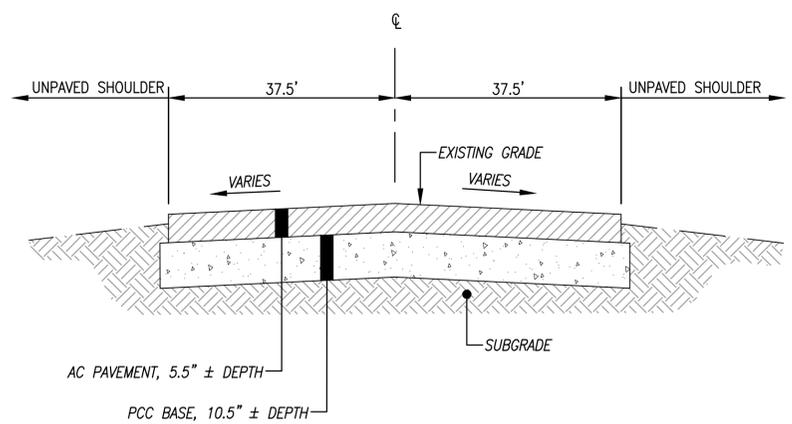
APPROVED	DATE	APP'R
FOR COMMANDER NAVFAC		
ACTIVITY		
SATISFACTORY TO	DATE	
DES. MJT	DRAW DFD	CHK ELO
PM/DM		
BRANCH MANAGER		
CHIEF ENG/ARCH		
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC	NAVFAC
NAVY FACILITIES ENGINEERING COMMAND	NORFOLK, VIRGINIA	
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VIRGINIA	
SPECIAL PROJECT RM10-9004		
REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING		
EXISTING PAVEMENT SECTIONS		
SCALE: AS NOTED		
EPROJCT NO.: 1312624		
CONSTR. CONTR. NO.		
NAVFAC DRAWING NO. 12690157		
SHEET 146 OF 315		
C-501		
DRAWFORM REVISION: 10 MARCH 2009		

FILE NAME: C:\P\PA\981_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-501.dwg LAYOUT NAME: Layout1 PLOTTED: Monday, March 23, 2016 - 2:23pm USER: newson

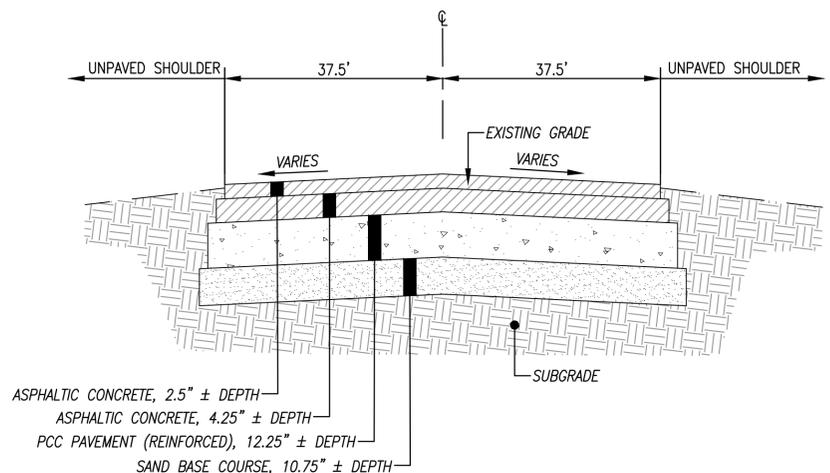
FILE NAME: C:\P\PA\981_Misc\Aviation\Ocean\Task 007\GENERAL-CWA\10-8863-007-C-502.dwg LAYOUT NAME: Layout1 PLOTTED: Monday, March 23, 2015 - 2:23pm USER: newson



RUNWAY 14L END TYPICAL EXISTING PCC HOLD AREA
NTS CD101, CD115 **1**

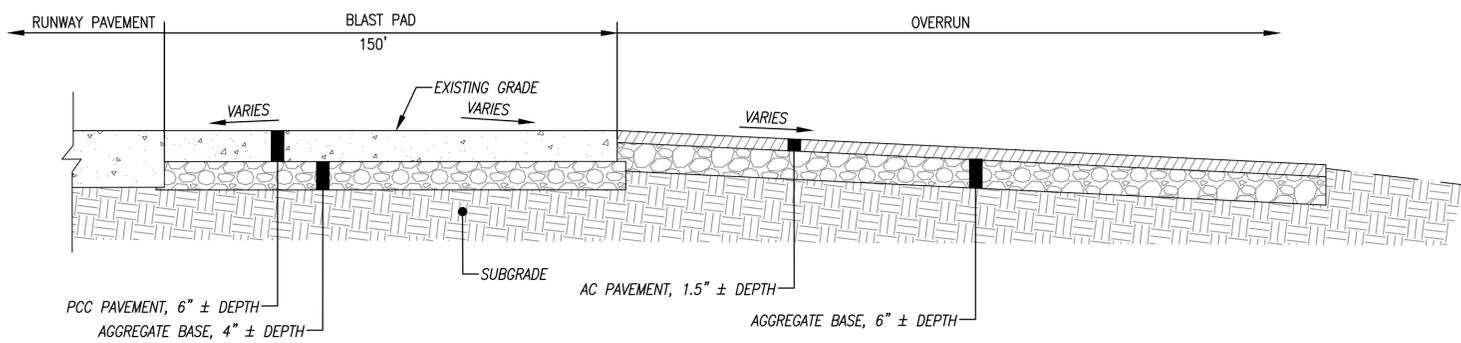


TAXIWAY A TYPICAL EXISTING AC PAVEMENT SECTION
NTS CD108, CD116, CD117 **2**

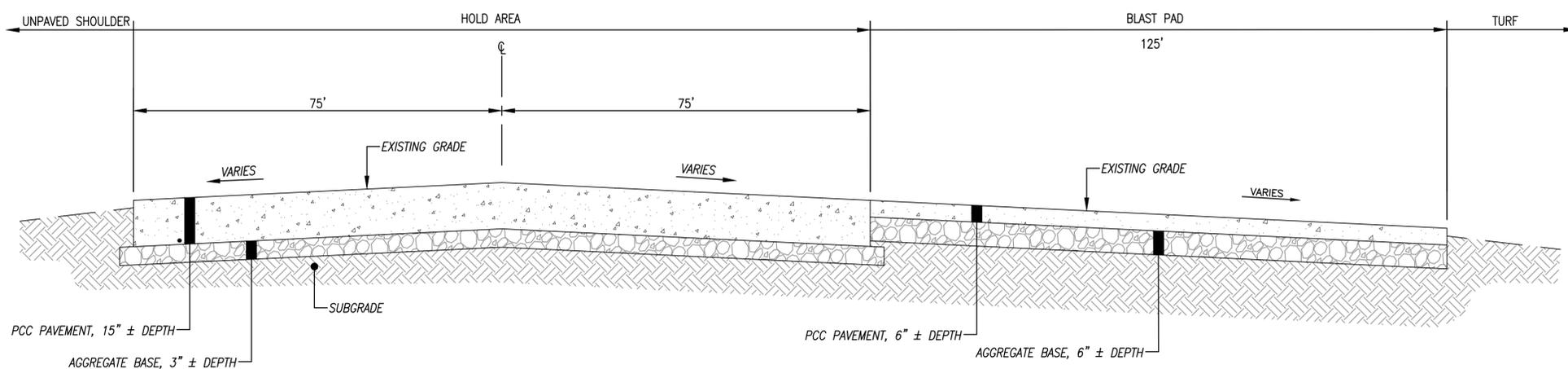


NOTE:
1. DETAIL UTILIZES CONSTRUCTION HISTORY RECORDS FROM THE AIRFIELD PAVEMENT CONDITION SURVEY PREPARED BY NAVFAC DATED FEBRUARY 2011.

TAXIWAY P TYPICAL EXISTING AC PAVEMENT SECTION
NTS CD112, CD118 **3**



RUNWAY 32R END BLAST PAD AND OVERRUN PAVEMENT SECTION
NTS CD112, CD113, CD119 **4**

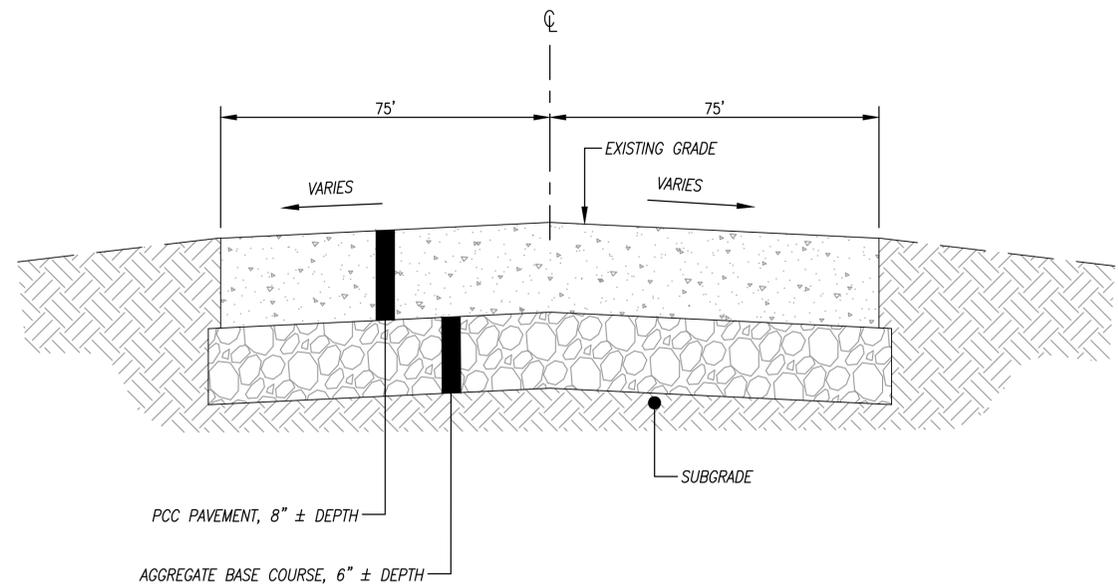


RUNWAY 32R END TYPICAL EXISTING PCC HOLD APRON
NTS CD112, CD113, CD119 **5**

NOTE:

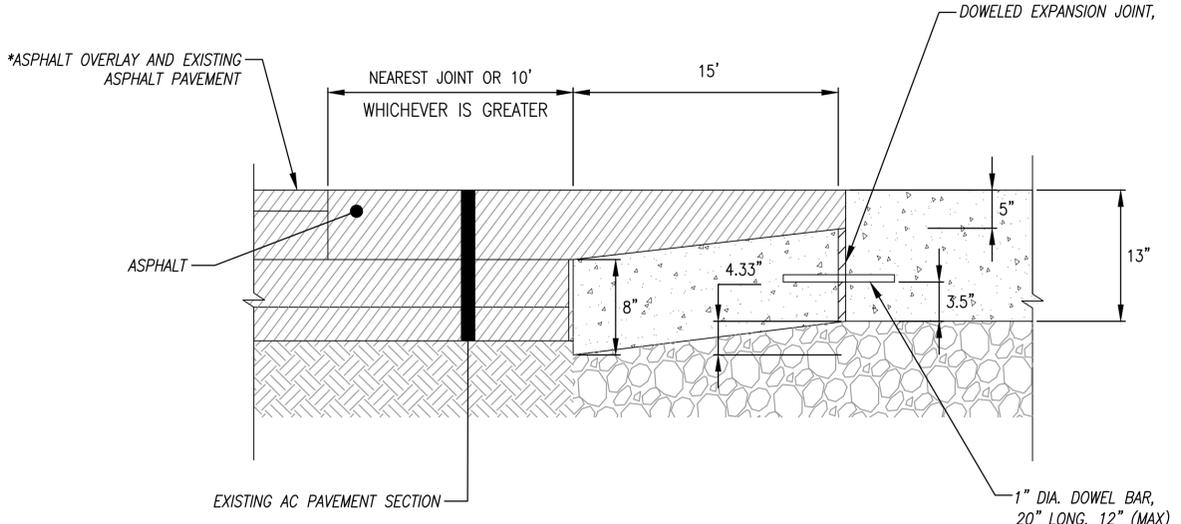
1. THE PAVEMENT TYPES AND LAYER DEPTHS ARE DERIVED FROM BORING AND CORING INFORMATION. SEE SHEET B-001 FOR BORING AND CORING LOCATIONS. SEE SHEETS B-002 THROUGH B-007 FOR BORING AND CORING STRATA DESCRIPTIONS. PAVEMENT LAYER DEPTHS PROVIDED ARE APPROXIMATE BASED ON THE AVAILABLE DATA.
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3. EXISTING CONDITION INFORMATION PROVIDED IS NOT A GUARANTEE OF ACTUAL FIELD CONDITIONS. THE EXISTING PAVEMENT DETAILS ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL COMPLETE DEMOLITION OF THE EXISTING SECTIONS IN THEIR ENTIRETY, REGARDLESS OF TYPE AND THICKNESS, AT NO ADDITIONAL COST TO THE GOVERNMENT.

APPROVED	DATE
FOR COMMANDER NAVFAC	DESCRIPTION
ACTIVITY	SYN
SATISFACTORY TO	DATE
DES: MJT	DRAW: DFD
CHK: ELO	
PM/DM	
BRANCH MANAGER	
CHIEF ENGR/ARCH	
SEAL	
JOHNSON, MIRMIRAN THOMPSON Gannett Fleming A Joint Venture 272 Bendix Road, Suite 260 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVFAC MID-ATLANTIC VIRGINIA BEACH, VIRGINIA NAVAL AIR STATION OCEANA SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING EXISTING PAVEMENT SECTIONS	
SCALE: AS NOTED	
PROJECT NO.: 1312624	
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO. 12690158	
SHEET 147 OF 315	
C-502	
DRAWFORM REVISION: 10 MARCH 2009	



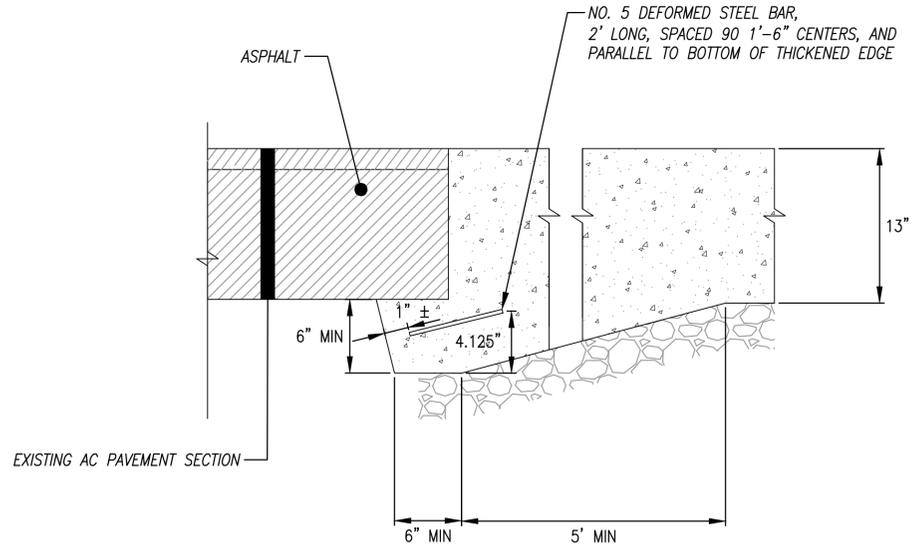
NOTE:
 1. DETAIL UTILIZES CONSTRUCTION HISTORY RECORDS FROM THE AIRFIELD PAVEMENT CONDITION SURVEY PREPARED BY NAVFAC DATED FEBRUARY 2011.

RUNWAY 14L END TYPICAL EXISTING PCC BLAST PAD
 NTS CD101 ①

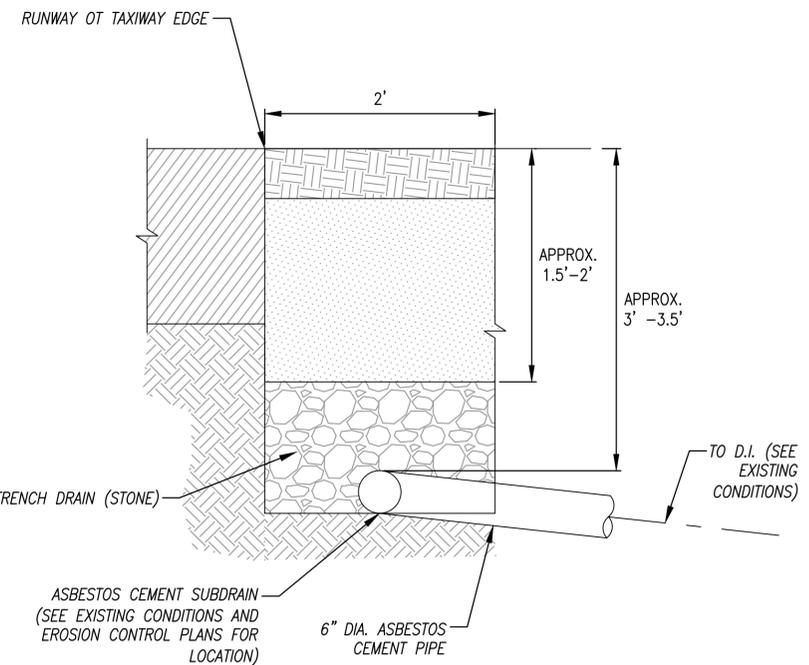


NOTES:
 * ASPHALT OVERLAY THICKNESS VARIES.

EXISTING RIGID-FLEXIBLE PAVEMENT JUNCTION, RUNWAY 5L-23R
 NTS CD106 ②



EXISTING SLEEPER SLAB DETAIL, RUNWAY 5R-23L
 NTS CD107 ③



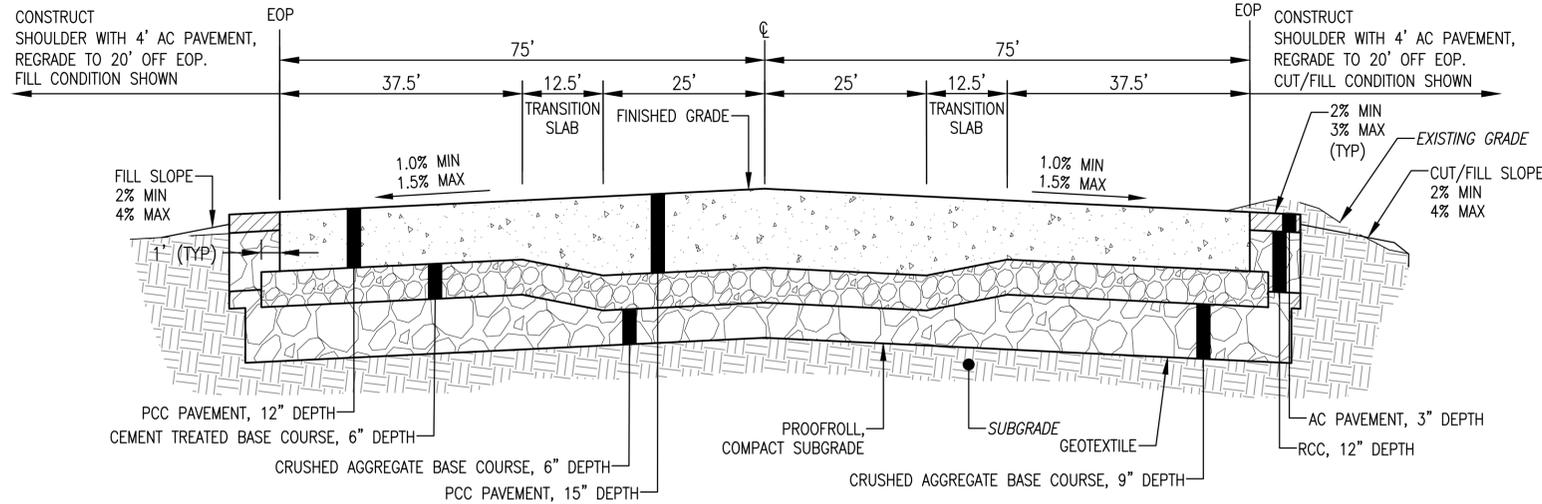
EXISTING ASBESTOS CEMENT SUBDRAIN DETAIL
 NTS ④

NOTE:

1. THE PAVEMENT TYPES AND LAYER DEPTHS ARE DERIVED FROM BORING AND CORING INFORMATION. SEE SHEET B-001 FOR BORING AND CORING LOCATIONS. SEE SHEETS B-002 THROUGH B-007 FOR BORING AND CORING STRATA DESCRIPTIONS. PAVEMENT LAYER DEPTHS PROVIDED ARE APPROXIMATE BASED ON THE AVAILABLE DATA.
2. WHERE CORING AND BORING DATA DOES NOT EXIST, CONSTRUCTION HISTORY FROM THE AIRFIELD PAVEMENT CONDITION SURVEY PREPARED BY NAVFAC (FEBRUARY 2011) IS UTILIZED.
3. EXISTING CONDITION INFORMATION PROVIDED IS NOT A GUARANTEE OF ACTUAL FIELD CONDITIONS. THE EXISTING PAVEMENT DETAILS ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL COMPLETE DEMOLITION OF THE EXISTING SECTIONS IN THEIR ENTIRETY, REGARDLESS OF TYPE AND THICKNESS, AT NO ADDITIONAL COST TO THE GOVERNMENT.

APPROVED	DATE	APP'R
PER COMMANDER NAVFAC		
ACTIVITY		
SATISFACTORY TO	DATE	
DES. MJT	DRAW DFD	CHK ELO
PH/DM		
BRANCH MANAGER		
CHIEF ENG/ARCH		
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC	NAVFAC ENGINEERING COMMAND
NAVFAC	NORFOLK, VIRGINIA	NORFOLK, VIRGINIA
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VIRGINIA	VIRGINIA BEACH, VIRGINIA
SPECIAL PROJECT RM10-9004		
REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING		
EXISTING PAVEMENT SECTIONS		
SCALE:	AS NOTED	
PROJECT NO.:	1312624	
CONSTR. CONTR. NO.		
NAVFAC DRAWING NO.	12690159	
SHEET	148	OF 315
C-503		
DRAWFORM REVISION: 10 MARCH 2009		

FILE NAME: C:\P\PA\98_1\Map\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-503.dwg LAYOUT NAME: Layout1 PLOTTED: Monday, March 23, 2015 - 2:38pm USER: ddbahille

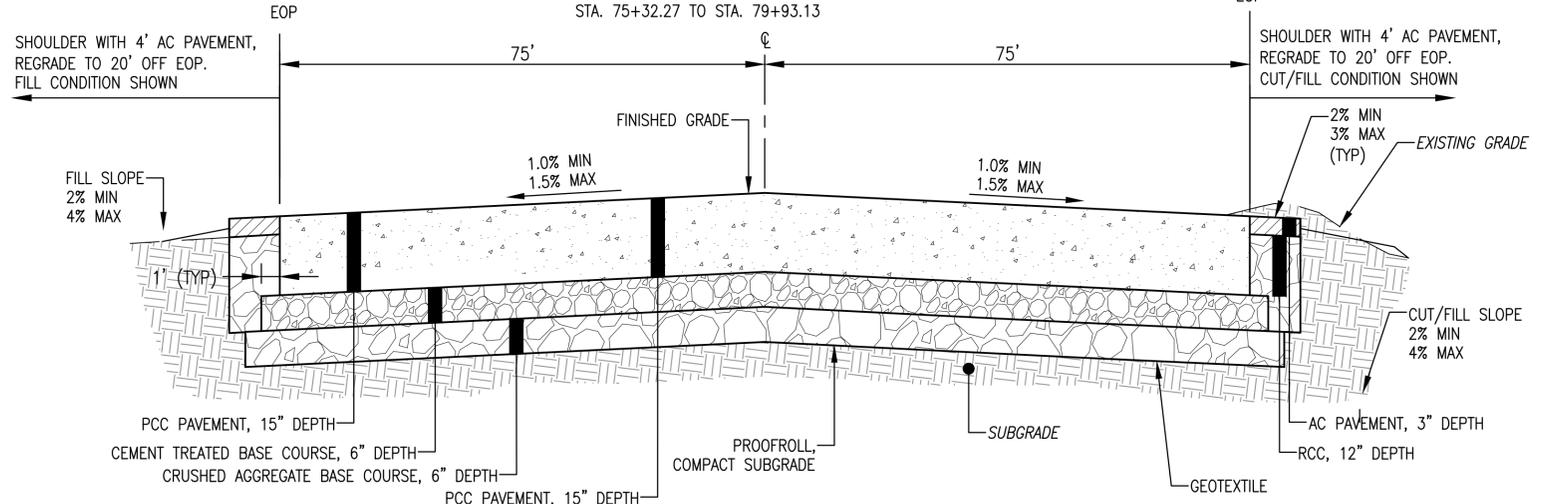


- NOTES:
 1. APPLY TACK COAT ALONG THE VERTICAL JOINT BETWEEN PCC AND AC PAVEMENTS.
 2. AS REQUIRED, EXCAVATE SUBGRADE BELOW EXISTING PAVEMENT SECTION TO NEW SUBGRADE ELEVATION.

RUNWAY 14L-32R PCC PAVEMENT SECTION - VARIABLE THICKNESS

NTS CP102 - CP111

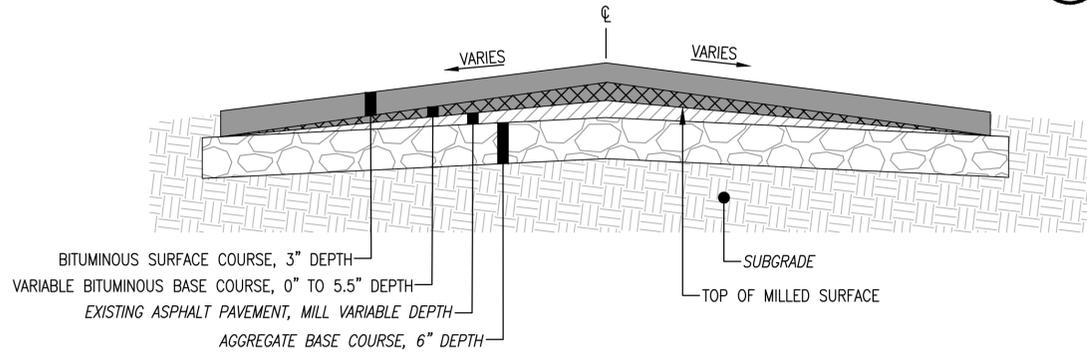
STA. 20+05 TO STA. 24+53.42
 STA. 24+69.46 TO STA. 43+54.02
 STA. 47+60.62 TO STA. 50+10.63
 STA. 62+21.25 TO STA. 75+16.23
 STA. 75+32.27 TO STA. 79+93.13



- NOTES:
 1. APPLY TACK COAT ALONG THE VERTICAL JOINT BETWEEN PCC AND AC PAVEMENTS.
 2. AS REQUIRED, EXCAVATE SUBGRADE BELOW EXISTING PAVEMENT SECTION TO NEW SUBGRADE ELEVATION.

RUNWAY 14L-32R PCC PAVEMENT SECTION - UNIFORM THICKNESS

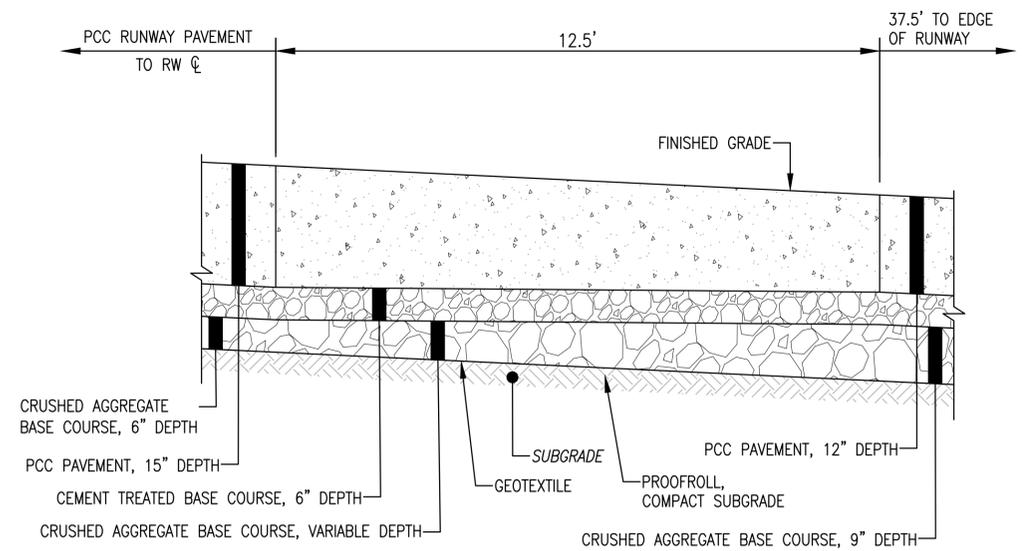
NTS CP101, CP102, CP106 - 108, CP111 - CP113, CP115 - CP119



- NOTES:
 1. APPLY TACK COAT ALONG THE VERTICAL JOINT BETWEEN PCC AND AC PAVEMENTS.
 2. APPLY TACK COAT BETWEEN ALL AC PAVEMENT LIFTS AND ON ALL MILLED SURFACES.

RUNWAY OVERRUN PAVEMENT SECTION - SECTION

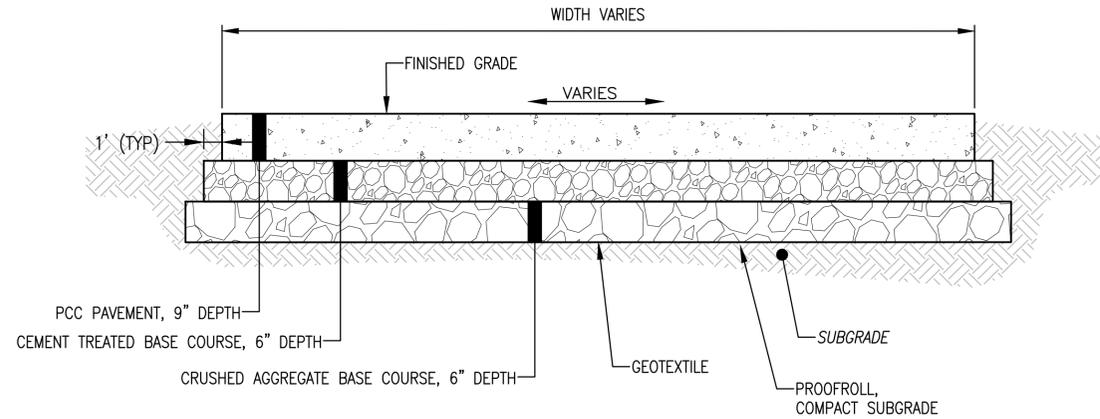
NTS CP113, CP114



- NOTES:
 1. AS REQUIRED, EXCAVATE SUBGRADE BELOW EXISTING PAVEMENT SECTION TO NEW SUBGRADE ELEVATION.

TRAFFIC AREA TRANSITION SLAB

NTS CP102 - CP111



- NOTES:
 1. AS REQUIRED, EXCAVATE SUBGRADE BELOW EXISTING PAVEMENT SECTION TO NEW SUBGRADE ELEVATION.

BLAST PAD TYPICAL PAVEMENT SECTION

NTS CP101, CP112, CP113, CP119

DATE	APPROVED
DESCRIPTION	SYMBOL



JOHNSON, MIRIRAN THOMPSON
Gannett Fleming
 A Joint Venture
 272 Bendix Road, Suite 260
 Virginia Beach, Virginia, 23452
 Telephone: (757)499-1895
 WEB: WWW.JMT.COM

APPROVED	DATE
PER COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO DATE	DESIGN
DESIGN	CHK
BRANCH MANAGER	CHEF ENGR/ARCH

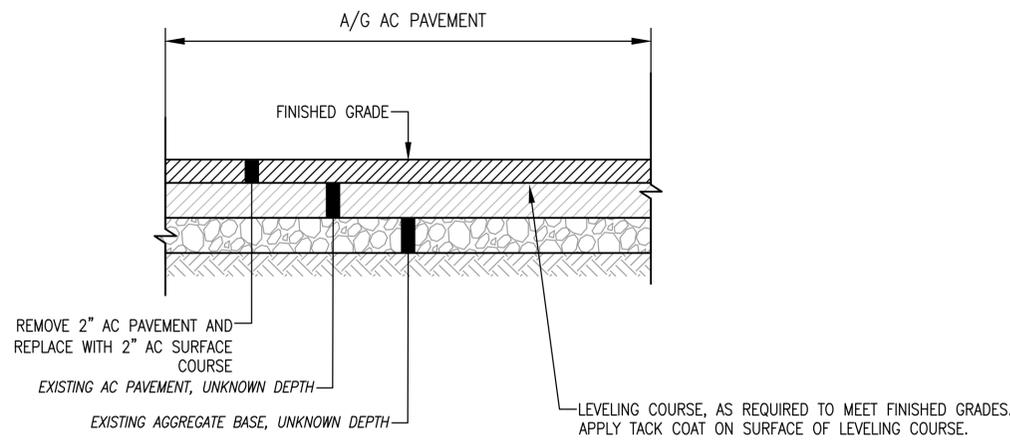
DEPARTMENT OF THE NAVY
 NAVFAC MID-ATLANTIC
 VIRGINIA BEACH, VIRGINIA
 NAVAL AIR STATION OCEANA
SPECIAL PROJECT RM10-9004
REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING
 TYPICAL PAVEMENT SECTIONS

SCALE:	AS NOTED
PROJECT NO.:	1312624
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	12690160
SHEET	149 OF 315

C-504

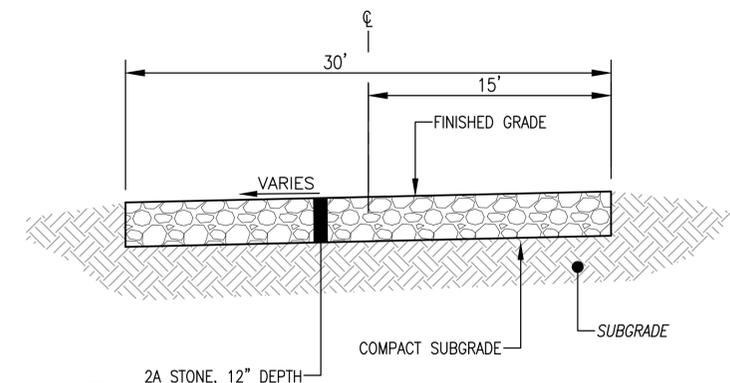
DRAWFORM REVISION: 10 MARCH 2009

FILE NAME: C:\P\PA\981_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-504.dwg LAYOUT NAME: Layout1 PLOTTED: Monday, March 23, 2015 - 2:23pm USER: newson



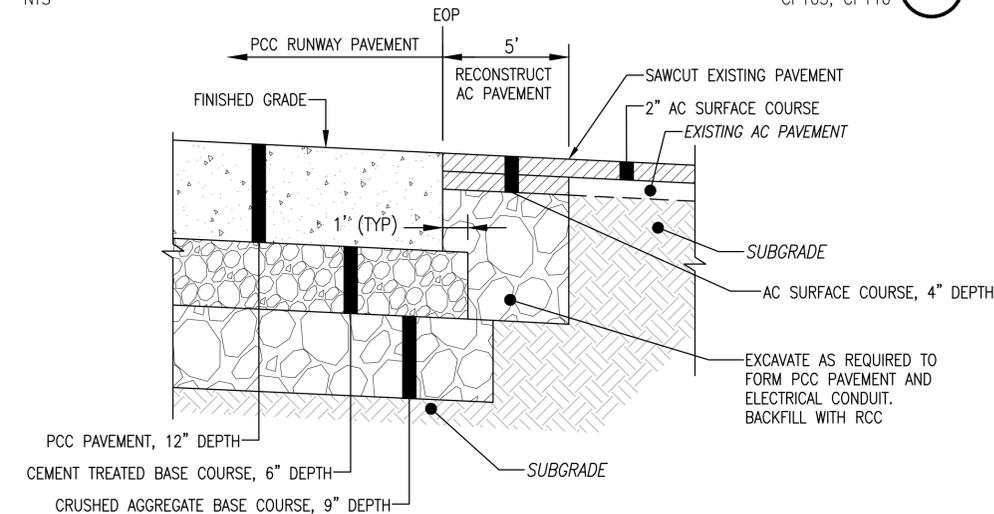
NOTES:
1. APPLY TACK COAT ON ALL MILLED SURFACES PRIOR TO PLACING AC PAVEMENT.

ARRESTING GEAR - 2" AC PAVEMENT MILL AND REPLACE CP103, CP110 ①



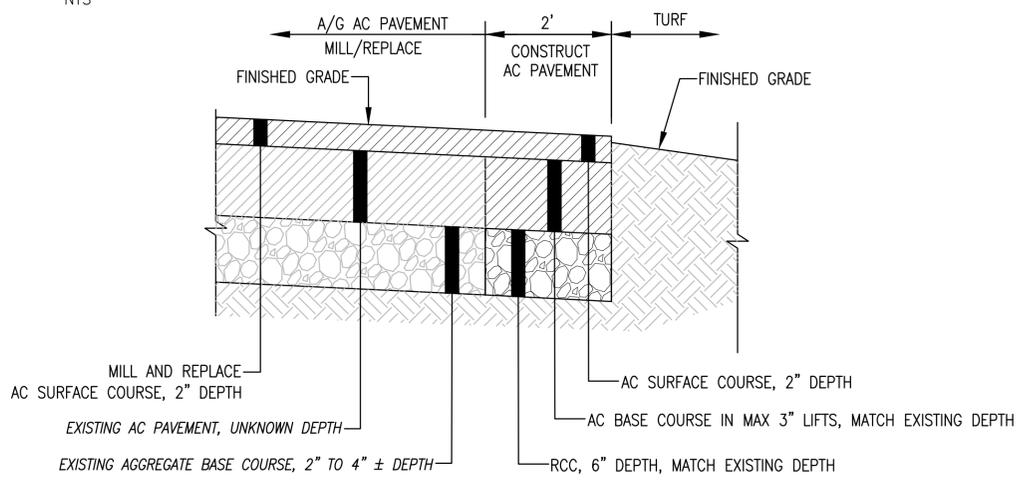
NOTES:
1. CRUSHED CONCRETE AND AC MILLINGS MAY BE USED TO CONSTRUCT THE HAUL ROUTE.
2. MAINTAIN THE HAUL ROUTE THROUGHOUT THE CONSTRUCTION PROJECT. REMOVE THE HAUL ROUTE AND RETURN AREA TO PREVIOUS TURF LAND COVER AT THE COMPLETION OF THE PROJECT.

HAUL ROUTE TYPICAL AC PAVEMENT SECTION G-101 ②



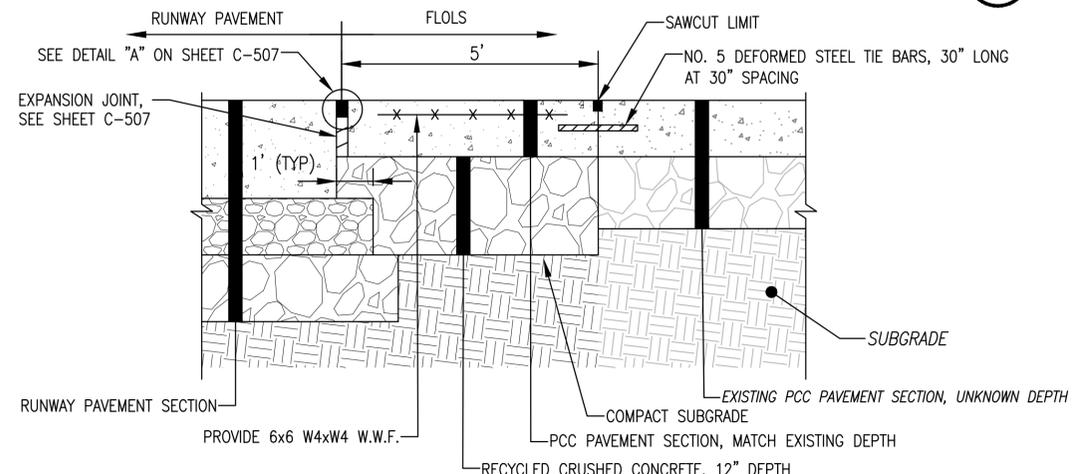
NOTES:
1. APPLY TACK COAT ALONG THE VERTICAL JOINT BETWEEN PCC AND AC PAVEMENTS.
2. APPLY TACK COAT BETWEEN ALL AC PAVEMENT LIFTS.

RUNWAY AND ARRESTING GEAR PAVEMENT INTERFACE CP103, CP110 ③

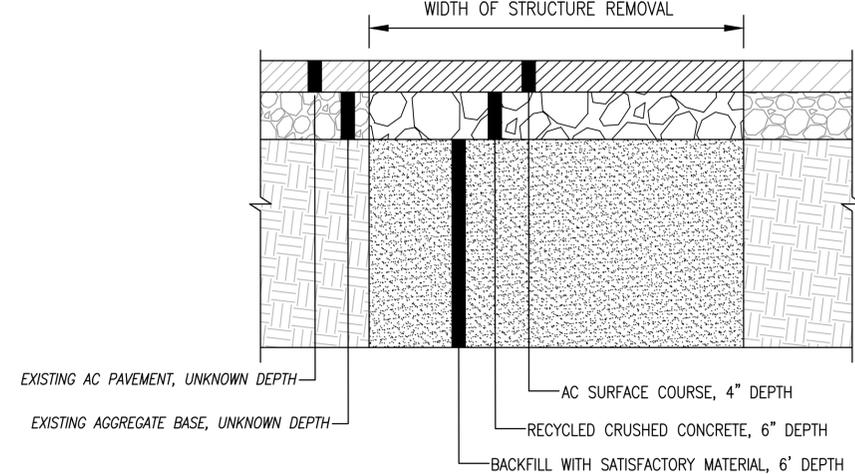


NOTES:
1. APPLY TACK COAT ON ALL MILLED SURFACES PRIOR TO PLACING AC PAVEMENT.
1. APPLY TACK COAT BETWEEN ALL AC PAVEMENT LIFTS.

ARRESTING GEAR PAVEMENT WIDENING CP103, CP110 ④



CONCRETE PAD RESTORATION AT FLOLS CP102, CP111 ⑤

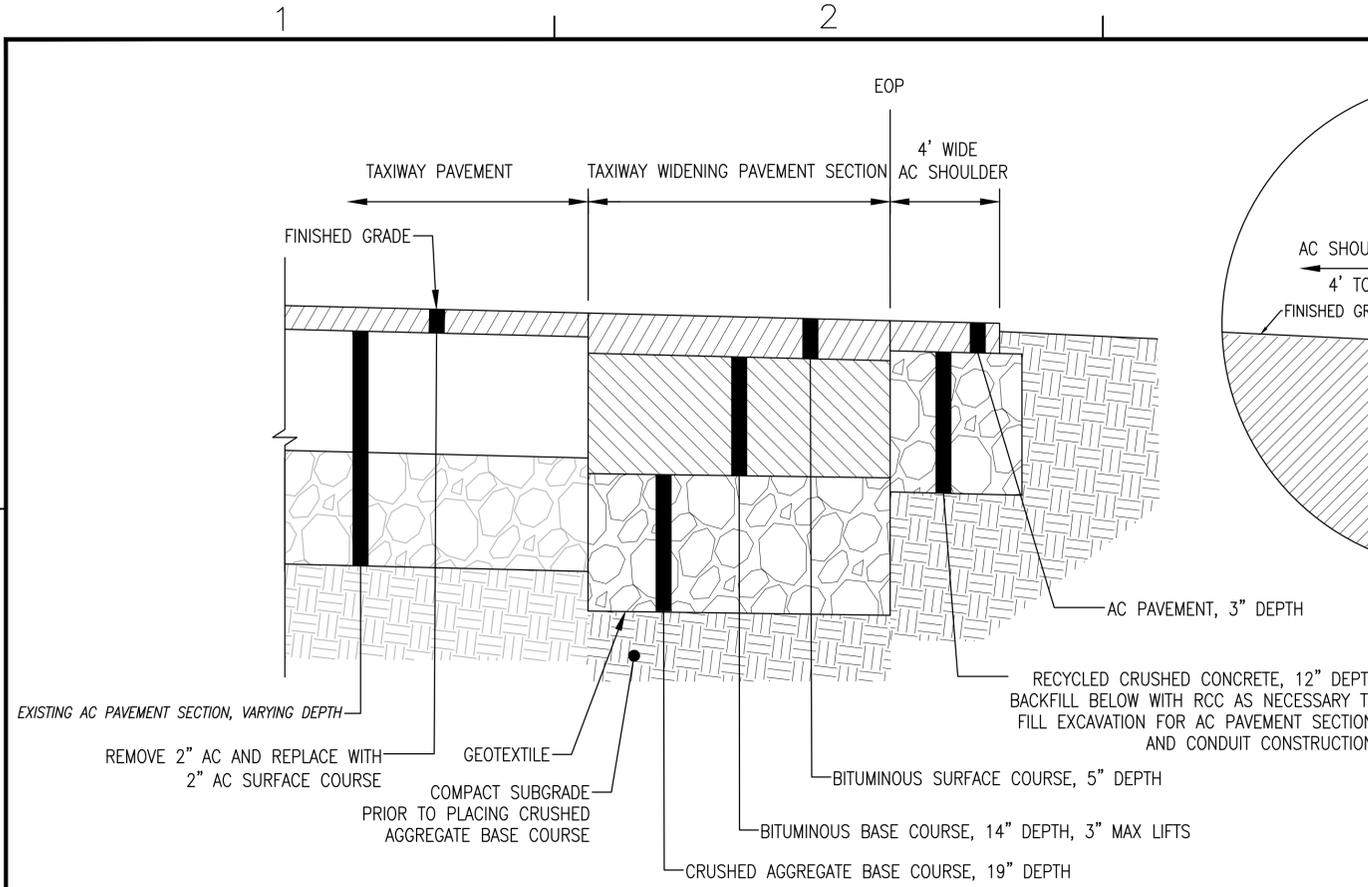


AC RESTORATION AT FLOLS CP102 ⑥

FILE NAME: C:\P\PA\981_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-505.dwg LAYOUT NAME: C-505 PLOTTED: Monday, March 23, 2015 - 2:23pm USER: kwatson

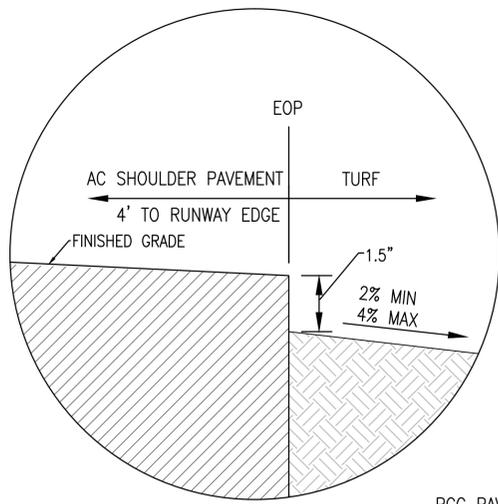
DATE	APPR
DESCRIPTION	SW
	
SEAL JOHNSON, MIRMIRAN THOMPSON Gannett Fleming A Joint Venture 272 Bendix Road, Suite 260 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
APPROVED	A/E INFO
PER COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO DATE	
DES: MJT	DRAW: DFD
CHK: ELO	
PM/DM	
BRANCH MANAGER	
CHIEF ENG/ARCH	
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC
NAVY FACILITIES ENGINEERING COMMAND	NORFOLK, VIRGINIA
NAVFAC	VIRGINIA BEACH, VIRGINIA
NAVAL AIR STATION OCEANA	SPECIAL PROJECT RM10-9004
REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING	TYPICAL PAVEMENT SECTIONS
SCALE: AS NOTED	PROJECT NO.: 1312624
EPROJCT NO.:	CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12690161	
SHEET 150 OF 315	
C-505	
DRAWFORM REVISION: 10 MARCH 2009	

FILE NAME: C:\P\PA\98_ Mca\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-506.dwg LAYOUT NAME: Layout1 PLOTTED: Monday, March 23, 2015 - 2:23pm USER: newson

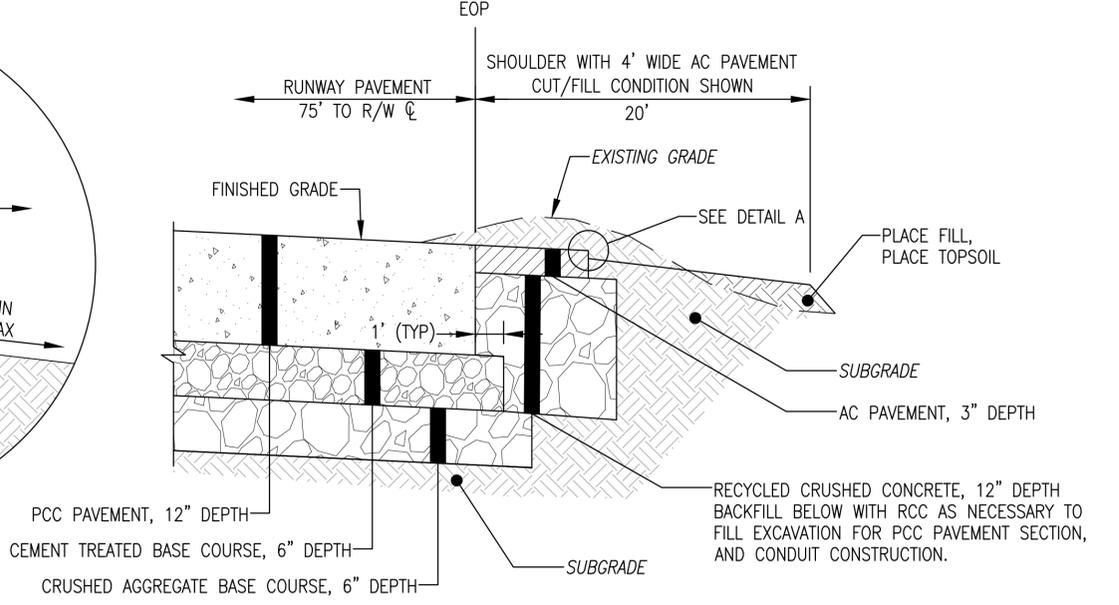


NOTES:
 1. APPLY TACK COAT ON MILLED SURFACES PRIOR TO PLACING AC PAVEMENT.
 2. APPLY TACK COAT BETWEEN ALL AC PAVEMENT LIFTS.

TYPICAL TAXIWAY WIDENING PAVEMENT SECTION
 NTS CP115 - CP118 **1**

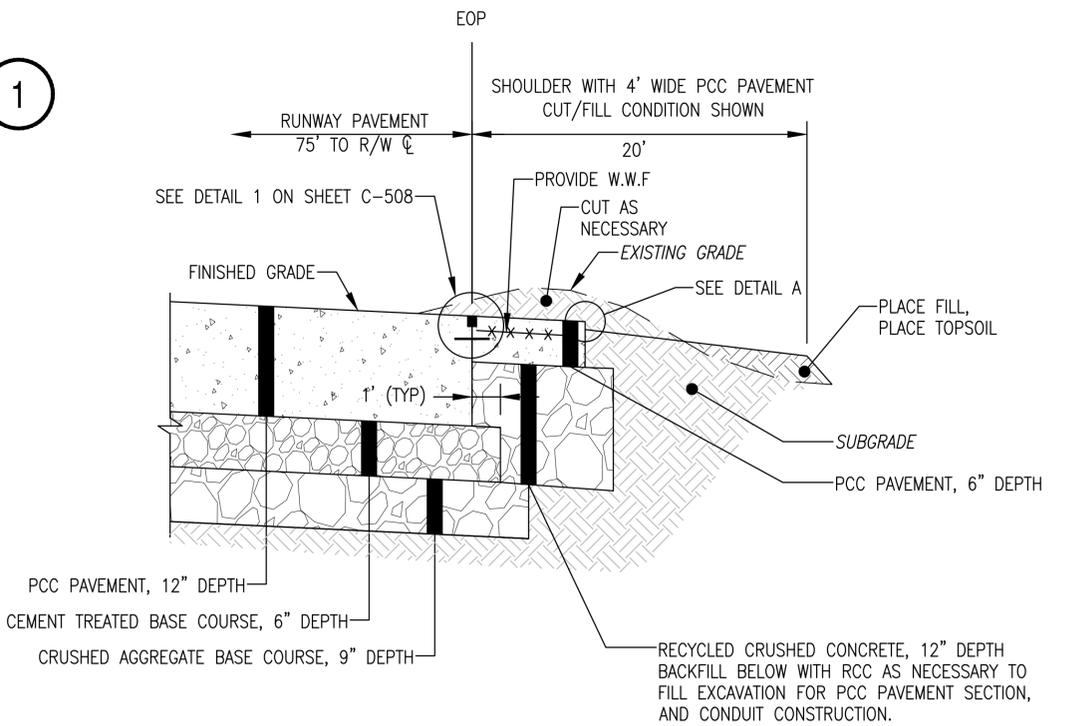


DETAIL "A"
 NTS



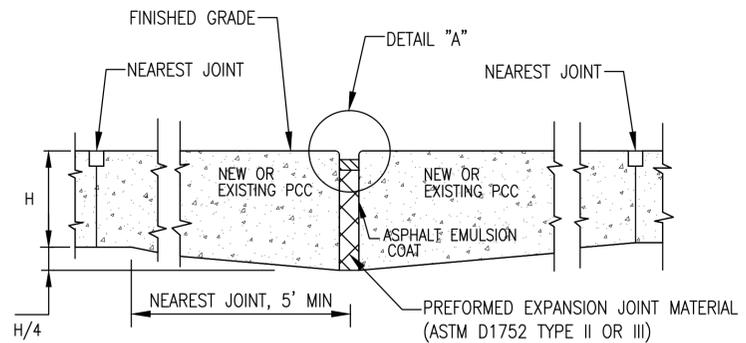
NOTES:
 1. APPLY TACK COAT ALONG THE VERTICAL JOINT BETWEEN PCC AND AC PAVEMENTS.

RUNWAY 14L-32R TYPICAL AC SHOULDER WITH CUT/FILL CONDITION
 NTS CP101 - CP112, CP115 - CP119 **2**

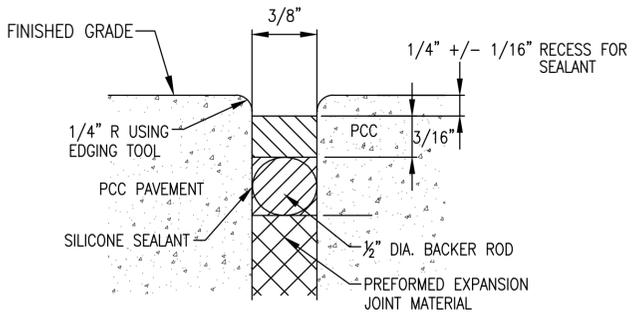


BID OPTION 1
TYPICAL PCC SHOULDER WITH CUT/FILL CONDITION
 NTS CP101 - CP112, CP115 - CP119 **3**

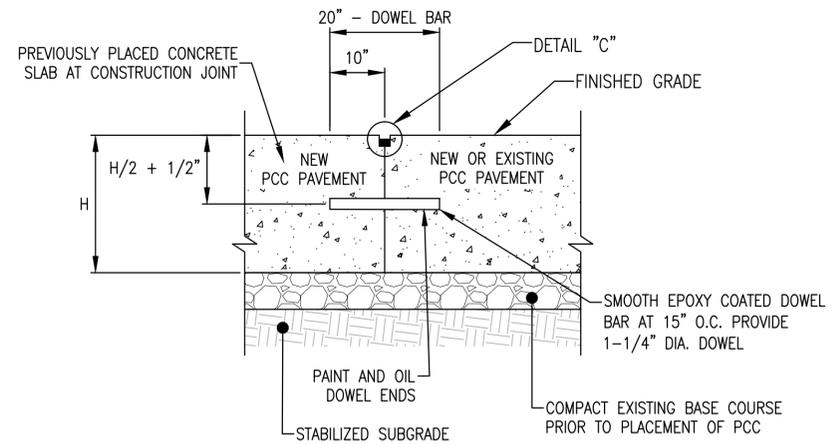
DATE	APPR
DESCRIPTION	SW
SEAL JOHNSON, MIRIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 260 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
APPROVED	A/E INFO
PER COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES	CHK
MJT	DFD
PH/DM	ELC
BRANCH MANAGER	
CHIEF ENG/ARCH	
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC
NAVFACILITIES ENGINEERING COMMAND	NORFOLK, VIRGINIA
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VIRGINIA
SPECIAL PROJECT RM10-9004	
REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING	
TYPICAL PAVEMENT SECTIONS	
SCALE:	AS NOTED
PROJECT NO.:	1312624
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	12690162
SHEET	151 OF 315
C-506	
DRAWFORM REVISION: 10 MARCH 2009	



THICKENED EDGE/EXPANSION JOINT (TE/EJ)
 NTS CP101, CP106 - CP108, CP112, CP113, CP115 - CP119

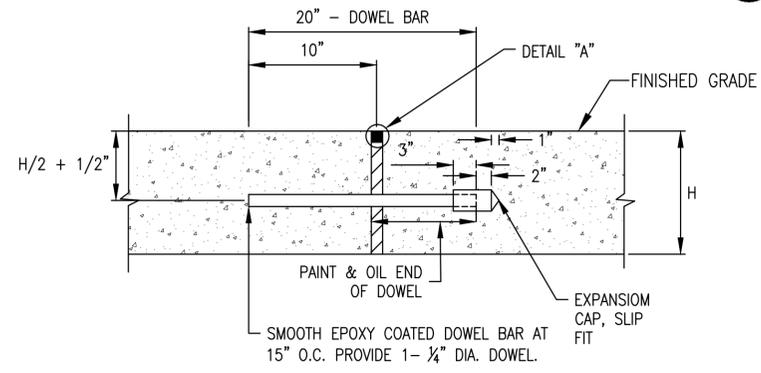


DETAIL "A"
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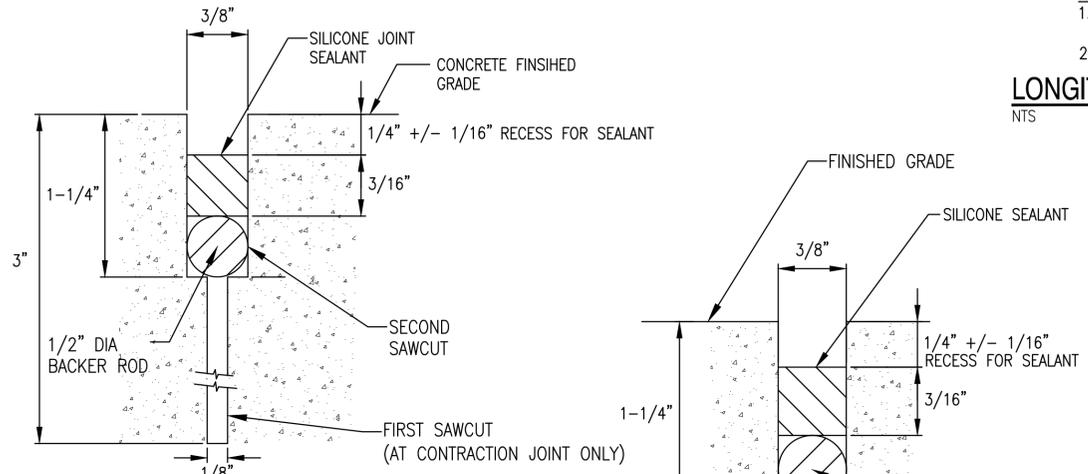


LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINT (LKJ,TKJ)
 NTS CP101 - CP113, CP115 - CP119

- NOTES:
 1. AT EXISTING PCC, DRILL AND GROUT DOWEL AT MID-DEPTH OF EXISTING PCC. AT NEW PCC, PLACE DOWEL AT MID-DEPTH OF NEW PCC.
 2. DOWELS SHALL BE NO CLOSER THAN 16" TO INTERSECTING JOINTS.



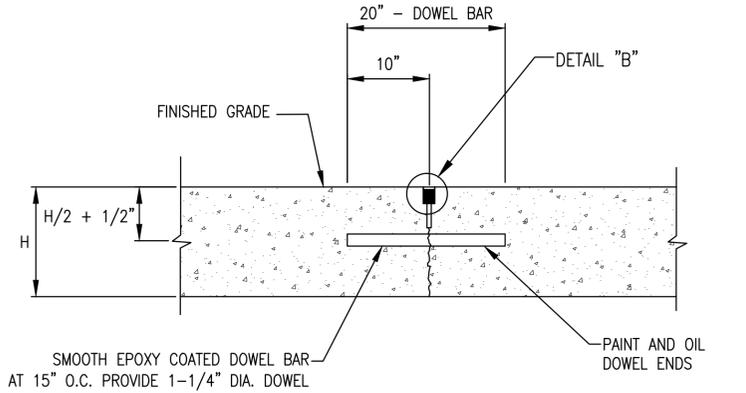
DOWELED EXPANSION JOINT
 NTS CP101, CP106 - CP108, CP112, CP113, CP115 - CP119



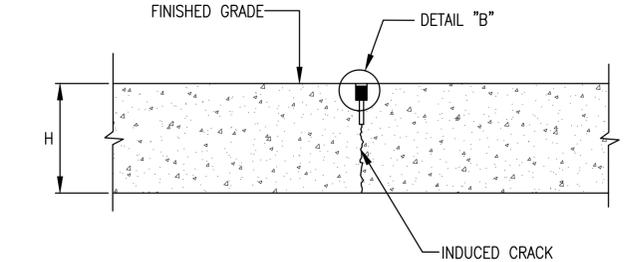
- NOTES:
 1. THE BACKER ROD SHALL BE CLOSED CELL POLYETHYLENE.
 2. THE INITIAL SAWCUT SHALL BE MADE WITHIN 8 TO 10 HOURS OF THE CONCRETE PLACEMENT.
 3. PRIOR TO PLACEMENT OF BACKER ROD AND SEALANT, JOINT SHALL BE WATER BLASTED TO REMOVE ALL CUTTING PASTE AND DEBRIS. PLACE BACKER ROD AND SEALANT IN DRY JOINT ONLY.

DETAIL "B"
 NTS

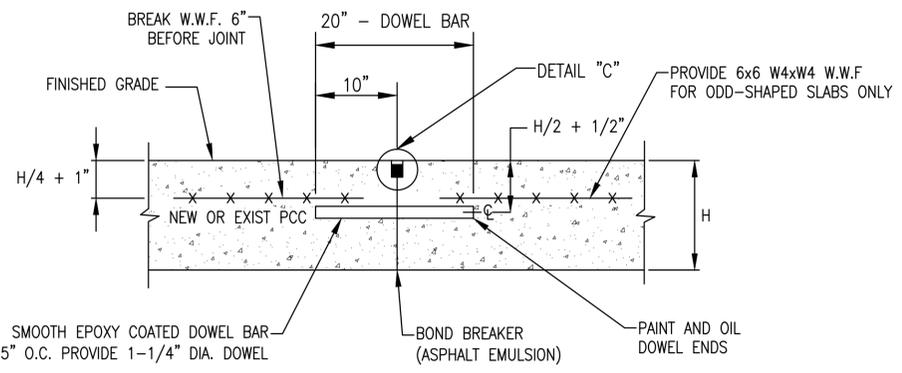
DETAIL "C"
 NTS



DOWELED CONTRACTION JOINT (DCJ)
 NTS CP101 - CP113, CP115 - CP119

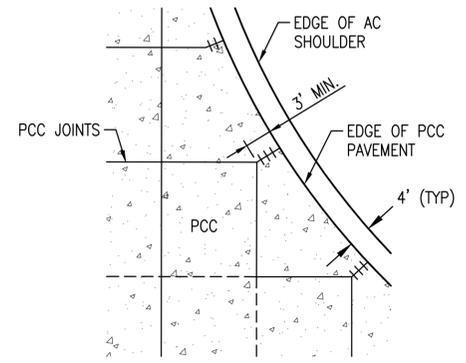


SAWCUT CONTRACTION JOINT (LCJ, TCJ)
 NTS CP101 - CP113, CP115 - CP119

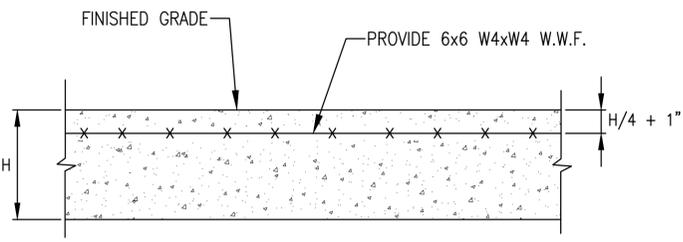


- NOTES:
 1. AT EXISTING PCC, DRILL AND GROUT DOWEL AT MID-DEPTH OF EXISTING PCC.
 2. DOWELS SHALL BE NO CLOSER THAN 16" TO INTERSECTING JOINTS.

REINFORCED DOWELED CONSTRUCTION JOINT
 NTS CP101, CP106 - CP108, CP112, CP116 - CP118



JOINT LAYOUT WITHIN FILLET
 NTS CP101, CP106 - CP108, CP112, CP116 - CP118



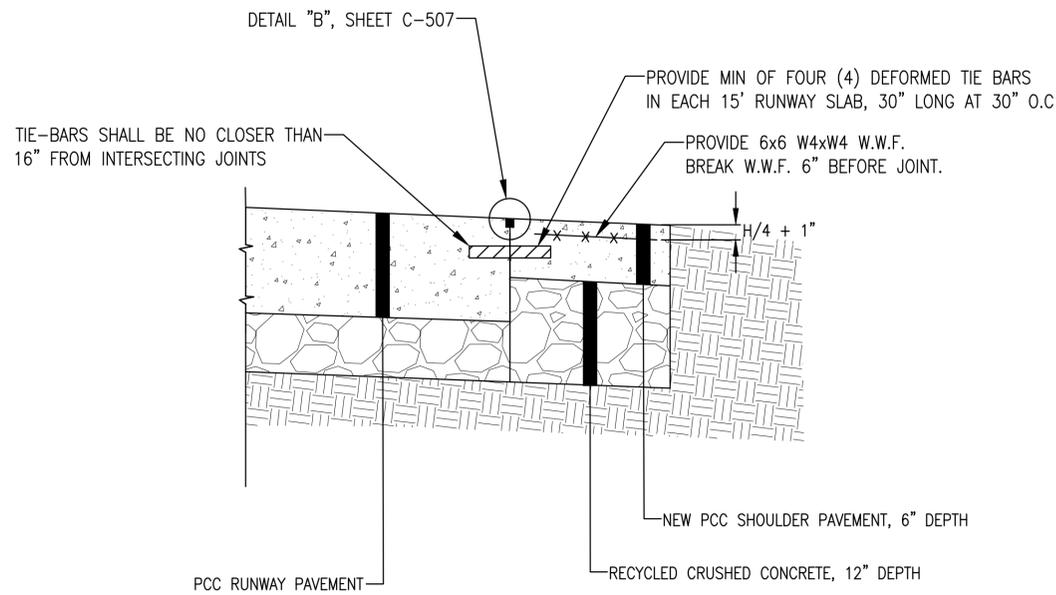
- NOTES:
 1. CONCRETE PAVEMENT STEEL REINFORCEMENT SHALL BE WELDED WIRE FABRIC.
 2. WELDED WIRE FABRIC SHALL BE MATS, NOT ROLLED.
 3. STEEL REINFORCEMENT SHALL END 3" FROM JOINTS.
 4. USE WELDED WIRE FABRIC IN ODD SHAPED SLABS, WHETHER INDICATED OR NOT.
 5. REINFORCED SLABS SHALL BE DOWELED AT LOCATIONS SHOWN ON PLANS.

REINFORCED SLAB (R)
 NTS CP101, CP106 - CP108, CP112, CP115 - CP118

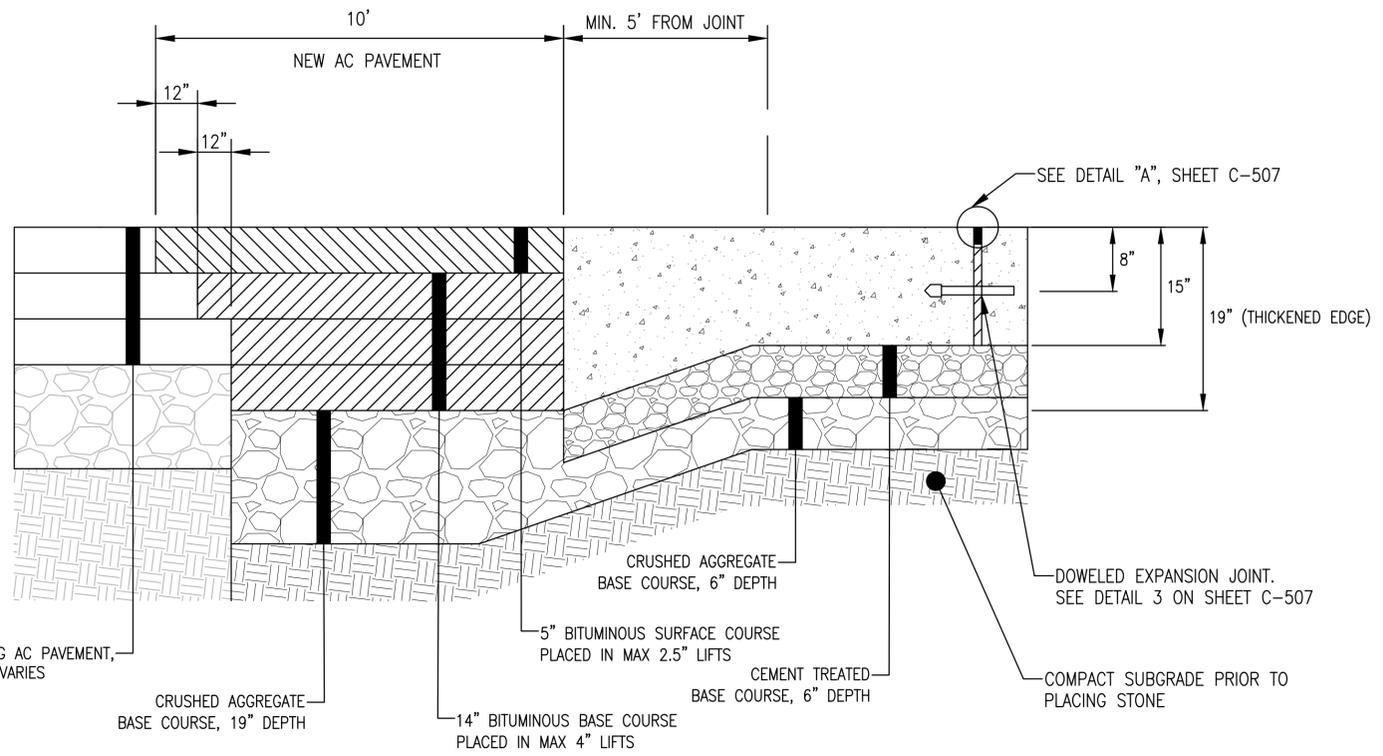
APPROVED	DATE	APP'R
DESCRIPTION	DATE	APP'R
SYMBOL	DATE	APP'R
JOHNSON, MIRIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 260 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM		
APPROVED	DATE	APP'R
FOR COMMANDER NAVFAC		
ACTIVITY		
SATISFACTORY TO	DATE	
DES: MJT	DRAW: DFD	CHK: ELO
PA/DM		
BRANCH MANAGER		
CHIEF ENGR/ARCH		
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC	NAVFAC VIRGINIA BEACH, VIRGINIA
NAVAL FACILITIES ENGINEERING COMMAND		
NAVAL AIR STATION OCEANA		
SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING		
CONSTRUCTION DETAILS		
SCALE:	AS NOTED	
PROJECT NO.:	1312624	
CONSTR. CONTR. NO.		
NAVFAC DRAWING NO.	12690163	
SHEET	152	OF 315
C-507		
<small>DRAWN/REVISED: 10 MARCH 2009</small>		

FILE NAME: C:\P\PA\981_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-507.dwg LAYOUT NAME: C-507 PLOTTED: Monday, March 23, 2015 - 2:23pm USER: kwatson

FILE NAME: C:\P\PA\91... DATE: 2/23/2015 2:23pm USER: hwtison

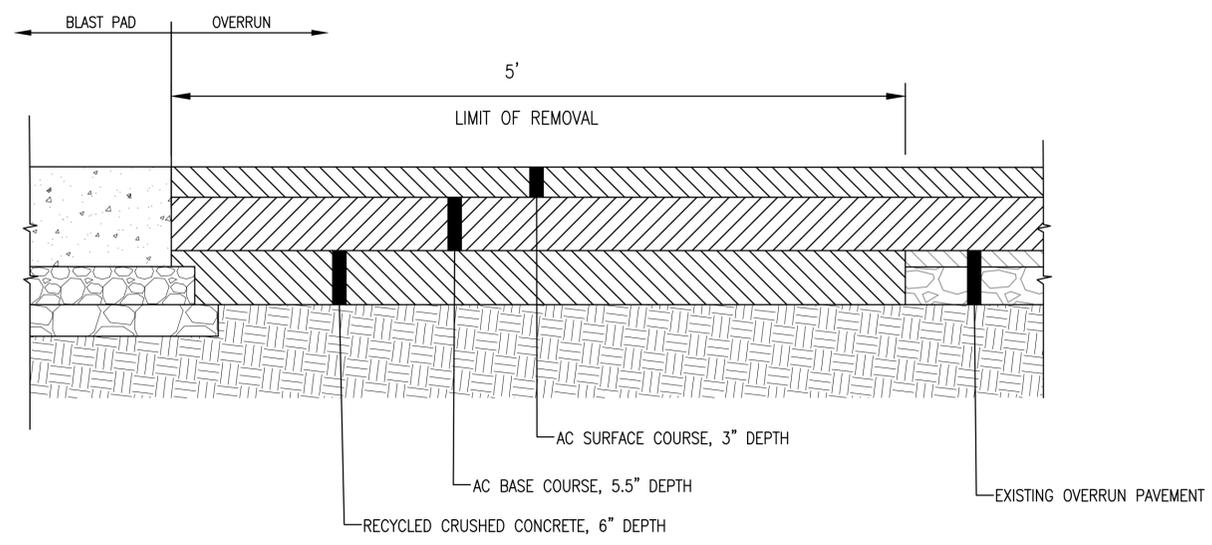


PCC TIE-IN AT RUNWAY - SHOULDER ①
 NTS CP101 - CP112, CP115 - CP119



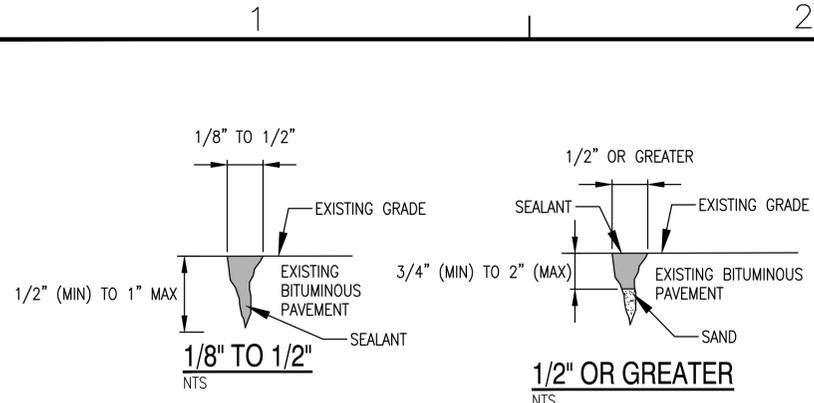
TRANSITION FROM PCC TO AC PAVEMENT, FULL STRENGTH ②
 NTS CP106, CP107, CP116 - CP118

NOTES:
 1. APPLY TACK COAT ALONG THE VERTICAL JOINT BETWEEN PCC AND AC PAVEMENTS.
 2. APPLY TACK COAT BETWEEN AC PAVEMENT LIFTS.
 3. APPLY TACK COAT ON ALL MILLED SURFACES PRIOR TO PLACING AC PAVEMENT.



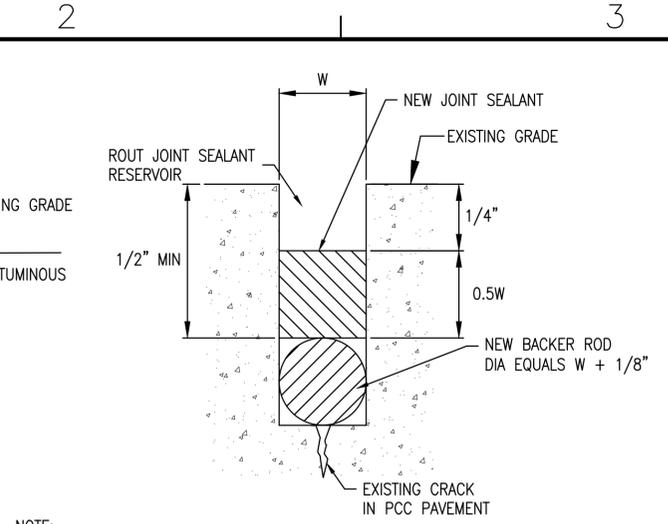
RUNWAY 32R BLAST PAD/OVERRUN TRANSITION ③
 NTS CP113

APPROVED	DATE	APPR
FOR COMMANDER NAVFAC	DESCRIPTION	SYN
ACTIVITY	SEAL	
SATISFACTORY TO	DATE	
DES: MJT	DRAW: DFD	CHK: ELO
PM/DM		
BRANCH MANAGER		
CHIEF ENG/ARCH		
DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND	
NAVFAC MID-ATLANTIC	NORFOLK, VIRGINIA	
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VIRGINIA	
SPECIAL PROJECT RM10-9004		
REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING		
CONSTRUCTION DETAILS		
SCALE: AS NOTED	PROJECT NO.: 1312624	
CONSTR. CONTR. NO.		
NAVFAC DRAWING NO. 12690164		
SHEET 153 OF 315		
C-508		
DRAWFORM REVISION: 10 MARCH 2009		



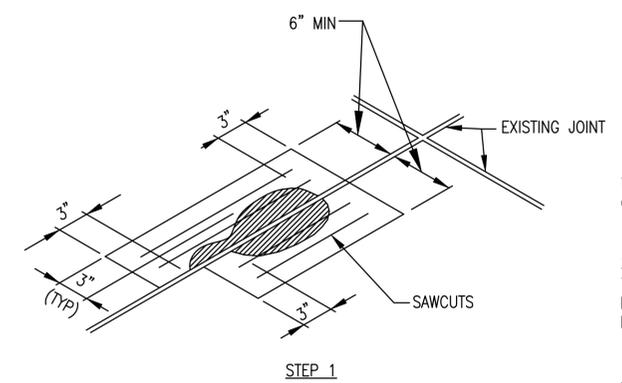
NOTES:
 1. REMOVE DEBRIS AND VEGETATION FROM CRACKS, BY AIR BLASTING PRIOR TO SEALING.
 2. SEAL CRACKS IN PAVEMENT PRIOR TO SEAL COAT.
 3. IN AREA OF MILL/OVERLAY, SEALANT TO BE LEVEL WITH MILLED SURFACE PRIOR TO OVERLAY.

CRACK SEALING IN BITUMINOUS PAVEMENT
 NTS CP103, CP110, CP116 - CP118

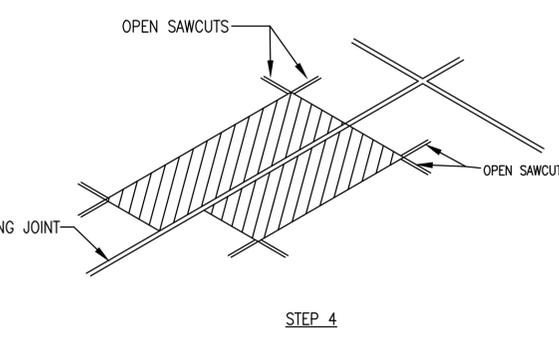
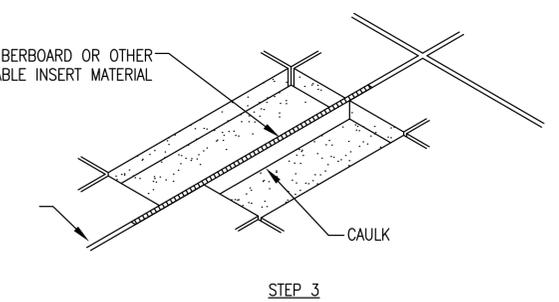
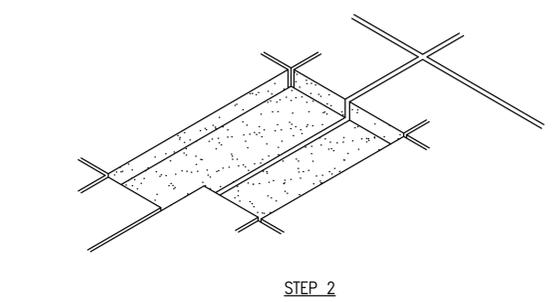


NOTE:
 1. SEE DETAIL 3 ON SHEET C-510 FOR DIRECTIONS TO PERFORM CRACK SEAL WORK.

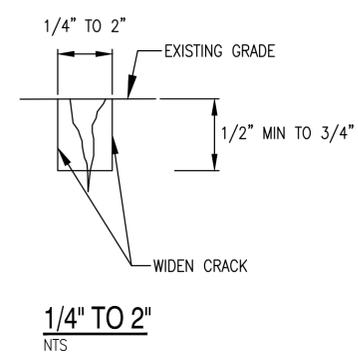
SAW CRACK DETAIL IN PCC PAVEMENT
 NTS CP119



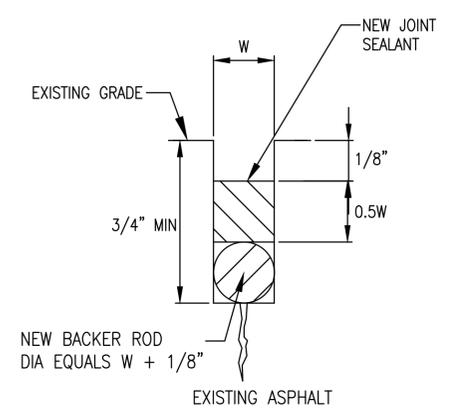
- MAKE SAWCUT AT LEAST 3" BEYOND THE OUTER EDGE OF THE AREA OF DAMAGED CONCRETE, SAWING NOT LESS THAN 2" DEEP.
- REMOVE ALL SPALLED PCC DOWN TO FIRM SOUND CONCRETE (INDICATED BY A RINGING TONE WHEN TAPPED WITH A STEEL BAR), PROVIDING A MINIMUM OF 3" DEPTH OF CONCRETE REMOVAL AND A UNIFORMLY LEVEL EXPOSED SURFACE. REMOVE ALL LOOSE MATERIAL AND DUST FROM THE AREA BY AIR BLASTING.
- MAINTAIN THE WORKING JOINT BY USE OF A FIBERBOARD OR OTHER SUITABLE INSERT MATERIAL. CAULK THE BASE OF THE INSERT TO PREVENT MATERIAL FROM ENTERING THE VOID AREA BETWEEN THE INSERT AND THE CONCRETE TO REMAIN. OILS, WAXES, GREASE, OR SILICONES SHOULD NOT BE USED ON THE INSERT SINCE BONDING OF THE JOINT SEALING MATERIALS WOULD BE PREVENTED.
- THOROUGHLY CLEAN THE AREA BY AIR JET TO REMOVE ALL RESIDUAL FINES. CAREFULLY CHECK THAT NO TRACE OF OIL, GREASE, OR MATERIALS THAT WOULD PREVENT CONCRETE FROM BONDING IS PRESENT.
- IMMEDIATELY PRIOR TO PLACEMENT OF REPAIR MATERIAL, THE SURFACE OF THE CAVITY (EXCEPT THE FACE OF THE WORKING JOINT) SHALL BE PREPARED PER REPAIR MATERIAL MANUFACTURER'S INSTRUCTIONS.
- CAREFULLY REMOVE THE INSERT BEFORE THE REPAIR MATERIAL HARDENS TO A HIGH BOND. SLIGHTLY TOOL THE EDGES.
- REPAIR MATERIAL SHALL BE AS SPECIFIED IN THE SPECIFICATIONS.
- FINISH REPAIR MATERIAL TO GRADE. EXCESS MORTAR OR BINDER CARRIED OVER THE PAVEMENT SHALL BE REMOVED. FINALLY, OPEN SAW CUTS ARE TO BE FILLED WITH A SAND AND EPOXY RESIN BINDER.



SPALL REPAIR STEPS
 NTS CP119



ROUT CRACK DETAIL - BITUMINOUS PAVEMENT
 NTS CP103, CP110, CP116 - CP118



EXPANSION JOINT
 NTS

CONTRACTION/CONSTRUCTION JOINT
 NTS

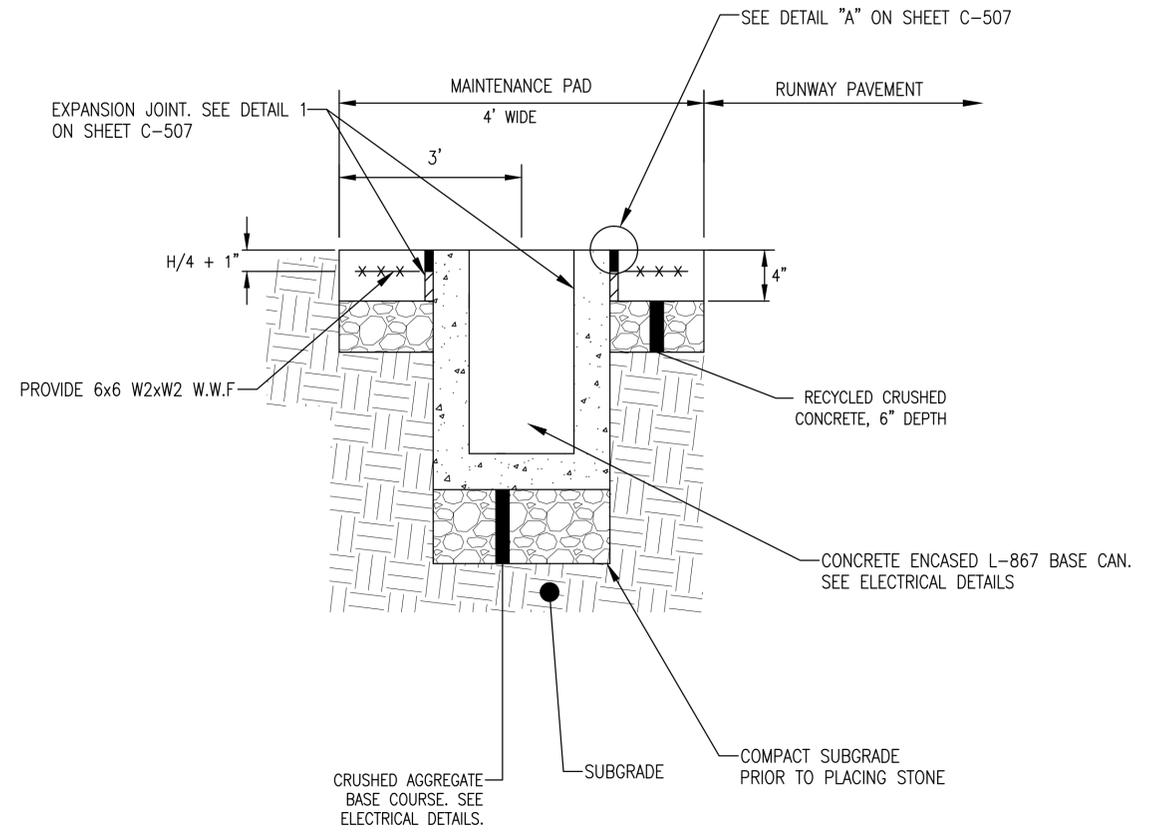
NOTES:
 1. EXISTING JOINT MATERIAL SHALL BE ENTIRELY REMOVED. HAND TOOLS (E.G., WIRE BRUSH) SHOULD BE USED AS NECESSARY TO ENSURE COMPLETE SEALANT REMOVAL.
 2. JOINTS SHALL BE CLEANED THROUGH SANDBLASTING PRIOR TO RESEALING.

RESEALING EXISTING JOINTS IN PCC PAVEMENT
 NTS CP119

DATE	APPR
DESCRIPTION	SW
JOHNSON, MIRMIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 260 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
APPROVED	A/E INFO
PER COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO DATE	
DES	DRW
MJT	DFD
CHK	ELO
PM/DM	
BRANCH MANAGER	
CHIEF ENGR/ARCH	
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC
NAVFAC	NORFOLK, VIRGINIA
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VIRGINIA
SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING	
CONSTRUCTION ISOMETRIC VIEWS AND DETAILS	
SCALE:	AS NOTED
PROJECT NO.:	1312624
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	12690165
SHEET	154 OF 315
C-509 <small>DRAWFORM REVISION: 10 MARCH 2009</small>	

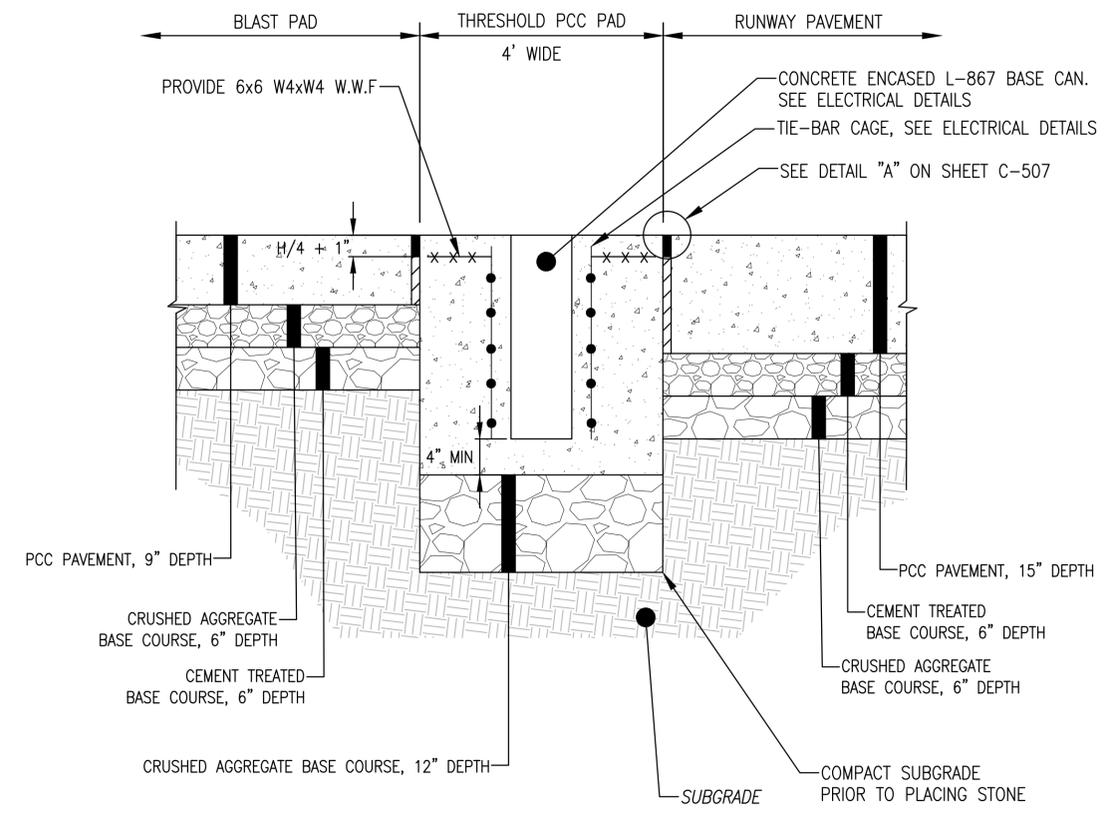
FILE NAME: C:\PHVA\91_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-509.dwg LAYOUT NAME: C-509 PLOTTED: Monday, March 23, 2015 - 2:23pm USER: hwtison

FILE NAME: C:\P\PA\98_1\Drawings\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-512.dwg LAYOUT NAME: C-512 PLOTTED: Monday, March 23, 2015 - 2:24pm USER: hudson

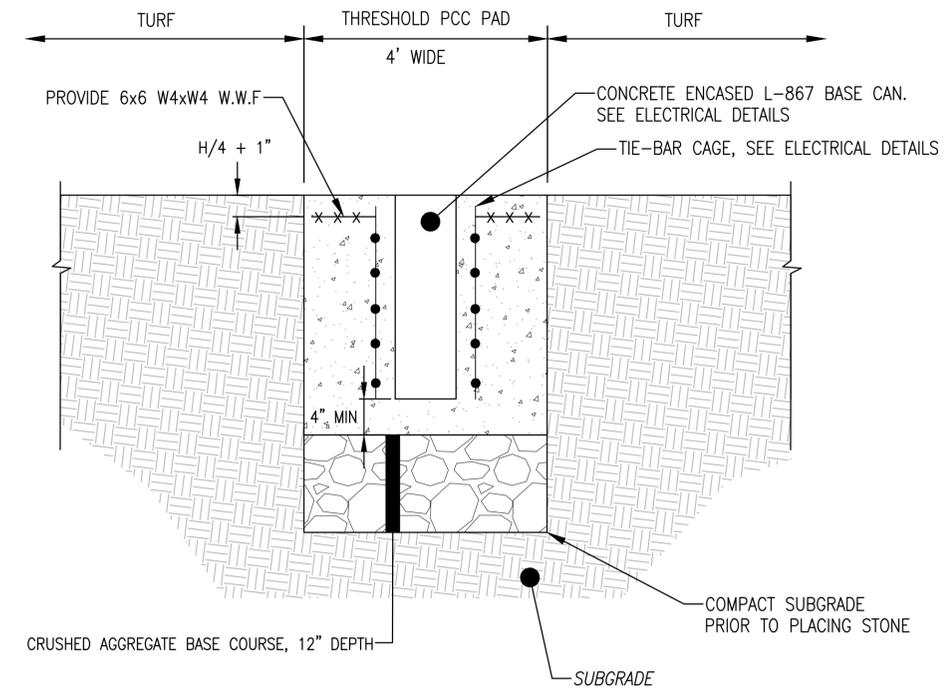


CONCRETE WAVE-OFF LIGHT MAINTENANCE PAD
 NTS CP102, CP104, CP109, CP111 **1**

- NOTES:**
1. MAINTENANCE PAD SHALL BE 4'x4' CONCRETE SLABS WITH CONTRACTION JOINT SEPARATING THE INDIVIDUAL SLABS.
 2. INSTALL EXPANSION JOINT AT THE INTERFACE OF THE CONCRETE PAD AND THE ABUTTING RUNWAY PAVEMENT
 3. PROVIDE POSITIVE DRAINAGE ON CONCRETE AND ADJACENT TURF FROM CONCRETE PAD.
 4. CONTRACTOR MAY USE REJECTED CONCRETE FROM THE PROJECT FOR MAINTENANCE PAD.

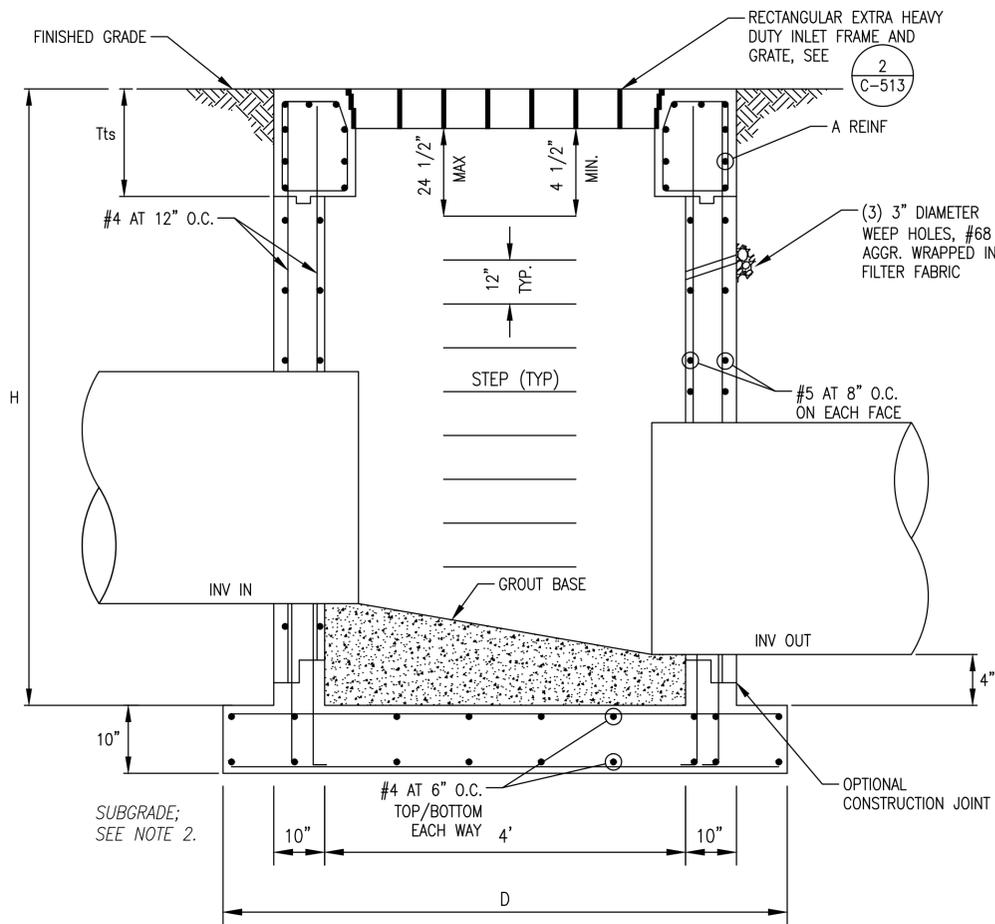


THRESHOLD LIGHTBAR CONCRETE PAD
 NTS CP101, CP112 **2**



THRESHOLD LIGHTBAR CONCRETE PAD
 NTS CP101 **3**

APPROVED	DATE	APP'R
FOR COMMANDER NAVFAC		
ACTIVITY		
SATISFACTORY TO	DATE	
DES. MJT	DRAW DFD	CHK ELO
PM/DM		
BRANCH MANAGER		
CHIEF ENG/ARCH		
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC	NAVFAC
NAVAL FACILITIES ENGINEERING COMMAND	NORFOLK, VIRGINIA	
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VIRGINIA	
SPECIAL PROJECT RM10-9004		
REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING		
CONSTRUCTION DETAILS		
SCALE: AS NOTED		
EPROJCT NO.: 1312624		
CONSTR. CONTR. NO.		
NAVFAC DRAWING NO. 12690168		
SHEET 157 OF 315		
C-512		
DRAWFORM REVISION: 10 MARCH 2009		



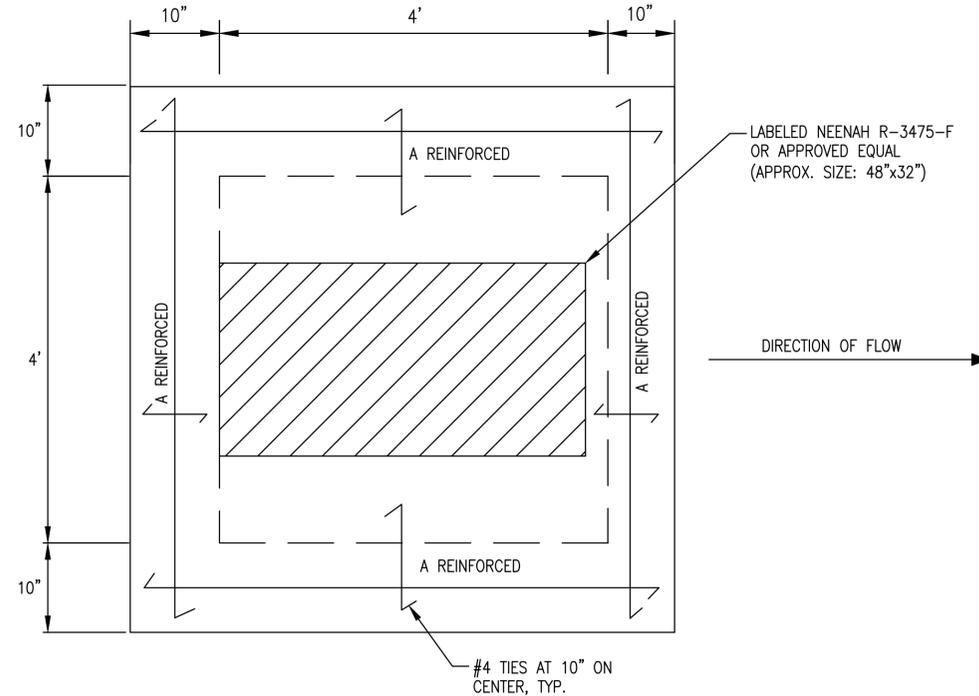
SQUARE INLET STRUCTURE

NTS

1

NOTES:

- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR PRECAST STRUCTURE COMPONENTS. COMPONENTS SHALL INTEGRATE WITH AIRCRAFT-RATED FRAME AND GRATE. SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.
- PROVIDE 6" MINIMUM #57 STONE IN ALL AREAS AT SUBGRADE DISTURBED BY EXCAVATION TO PLACE STRUCTURE.



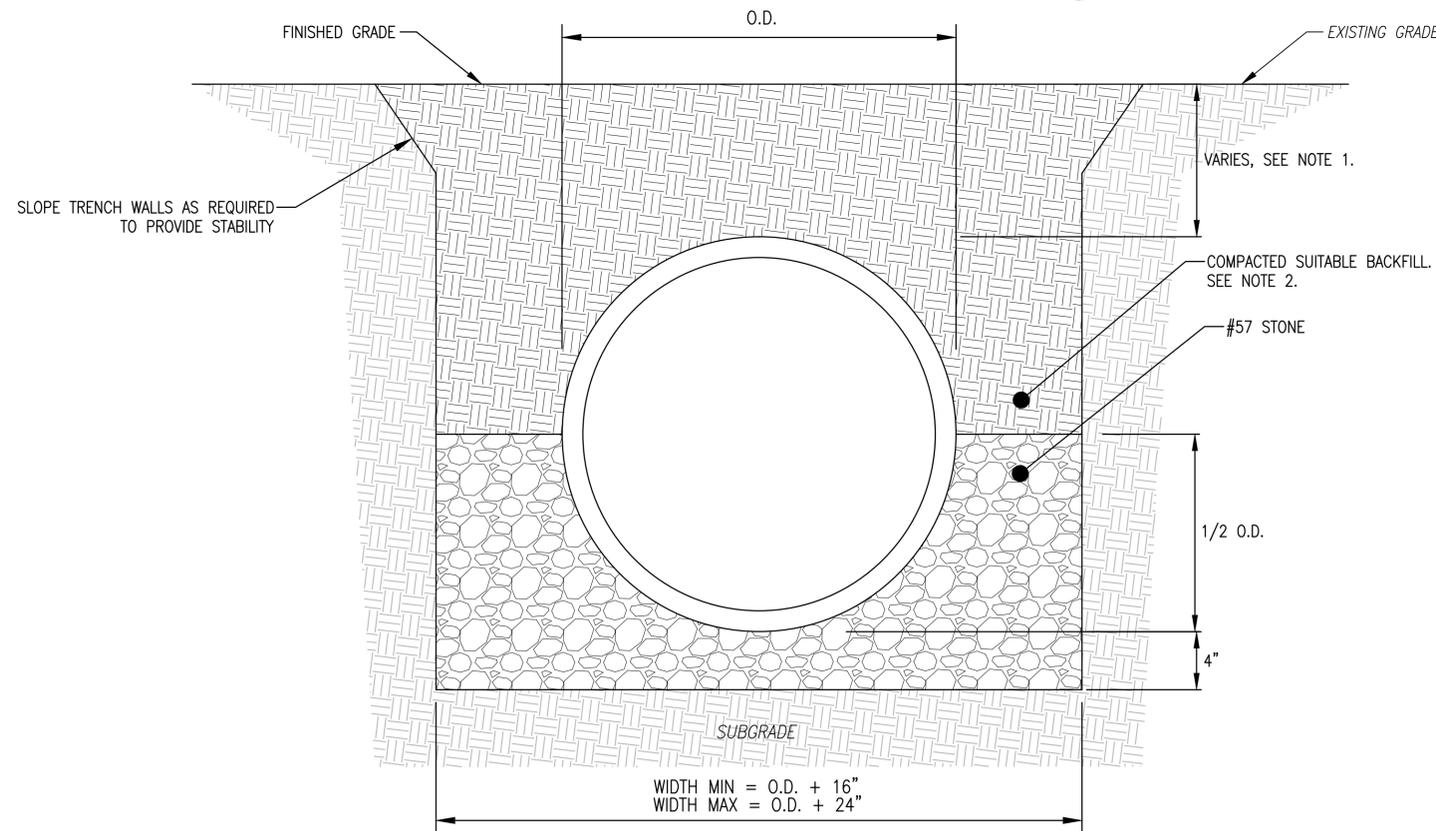
NOTES:

- CONTRACTOR TO CONFIRM DIMENSIONS WITH PROPOSED FRAME AND GRATE.

TOP SLAB REINFORCING

NTS

2



NOTES:

- PROVIDE MINIMUM COVER OF 24" OR 1/2 OF THE PIPE DIAMETER, WHICHEVER IS GREATER.
- BACKFILL PIPE TRENCH AS PER CONTRACT SPECIFICATIONS.

PIPE BEDDING DETAIL

NTS

3

DATE	APPR
DESCRIPTION	SYN
JOHNSON, MIRMIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 2600 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
APPROVED	DATE
PER COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO	DATE
DES: MJT	DRAW: DFD
CHK: ELO	
PM/DM	
BRANCH MANAGER	
CHIEF ENGR/ARCH	
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC
NAVFAC	NORFOLK, VIRGINIA
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VIRGINIA
SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING	
DRAINAGE DETAILS	
SCALE:	AS NOTED
PROJECT NO.:	1312624
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	12690169
SHEET	158 OF 315
C-513	
<small>DRAWFORM REVISION: 10 MARCH 2009</small>	

FILE NAME: C:\PHIPA\981_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-513.dwg LAYOUT NAME: C-512 PLOTTED: Monday, March 23, 2015 - 2:24pm USER: hwtison

EXISTING CONCRETE PAD TO BE LIFTED OFF OR DEMOLISHED PRIOR TO STRUCTURAL ADJUSTMENTS. REPLACE WITH NEW PAD AT NEW ELEVATION.

CONCRETE TO BE SAWCUT AND REMOVED

NEW PAD

EXISTING GRADE

FINISHED GRADE

HEIGHT VARIES (SEE EXISTING STRUCTURE SCHEDULE)

GROUT (1) #6 BAR 8" LONG INTO EXISTING STRUCTURE AT EACH CORNER

EXISTING TOP SLAB TO BE REPLACED AND GROUTED IN PLACE

EXISTING STRUCTURE LOWERING DETAIL

NTS

1

EXISTING TOP SLAB TO BE REPLACED AND GROUTED IN PLACE

FINISHED GRADE

NEW PAD

C.I.P. CONCRETE OR PRECAST COLLAR. FOR PRECAST COLLAR DETAILS, SEE THIS SHEET

EXISTING GRADE

HEIGHT VARIES (SEE EXISTING STRUCTURE SCHEDULE)

GROUT (1) #6 BAR 8" LONG INTO EXISTING STRUCTURE AT 1' O.C.

EXISTING TOP SLAB TO BE REMOVED

EXISTING C.I.P. CONCRETE PAD TO BE DEMOLISHED PRIOR TO STRUCTURAL ADJUSTMENTS. REPLACE WITH NEW PAD AT NEW ELEVATION.

T_w = EXISTING THICKNESS

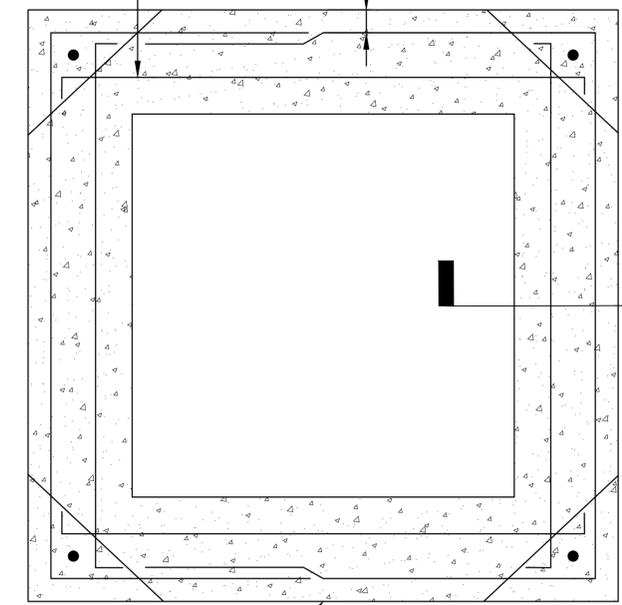
EXISTING STRUCTURE RAISING DETAIL

NTS

3

6 BAR (TYP)

1-1/2" (TYP)



4
C-514

SEE NOTE 1

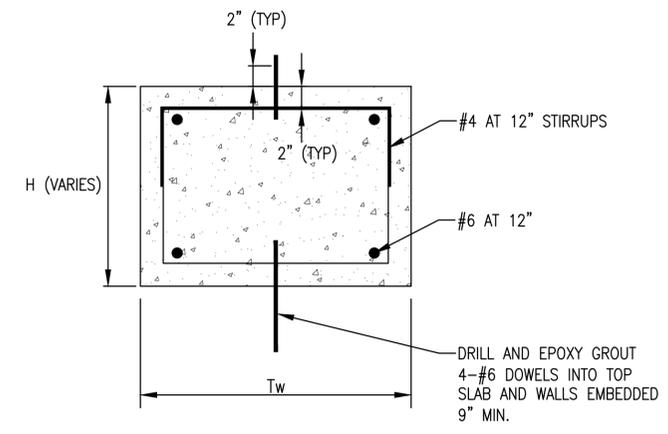
NOTES:

- 1. PROVIDE TWO-PIECE COLLAR FOR ADJUSTED STRUCTURES WITH TALLER SECTIONS IF NECESSARY FOR HANDLING.

PRECAST COLLAR PLAN

NTS

2



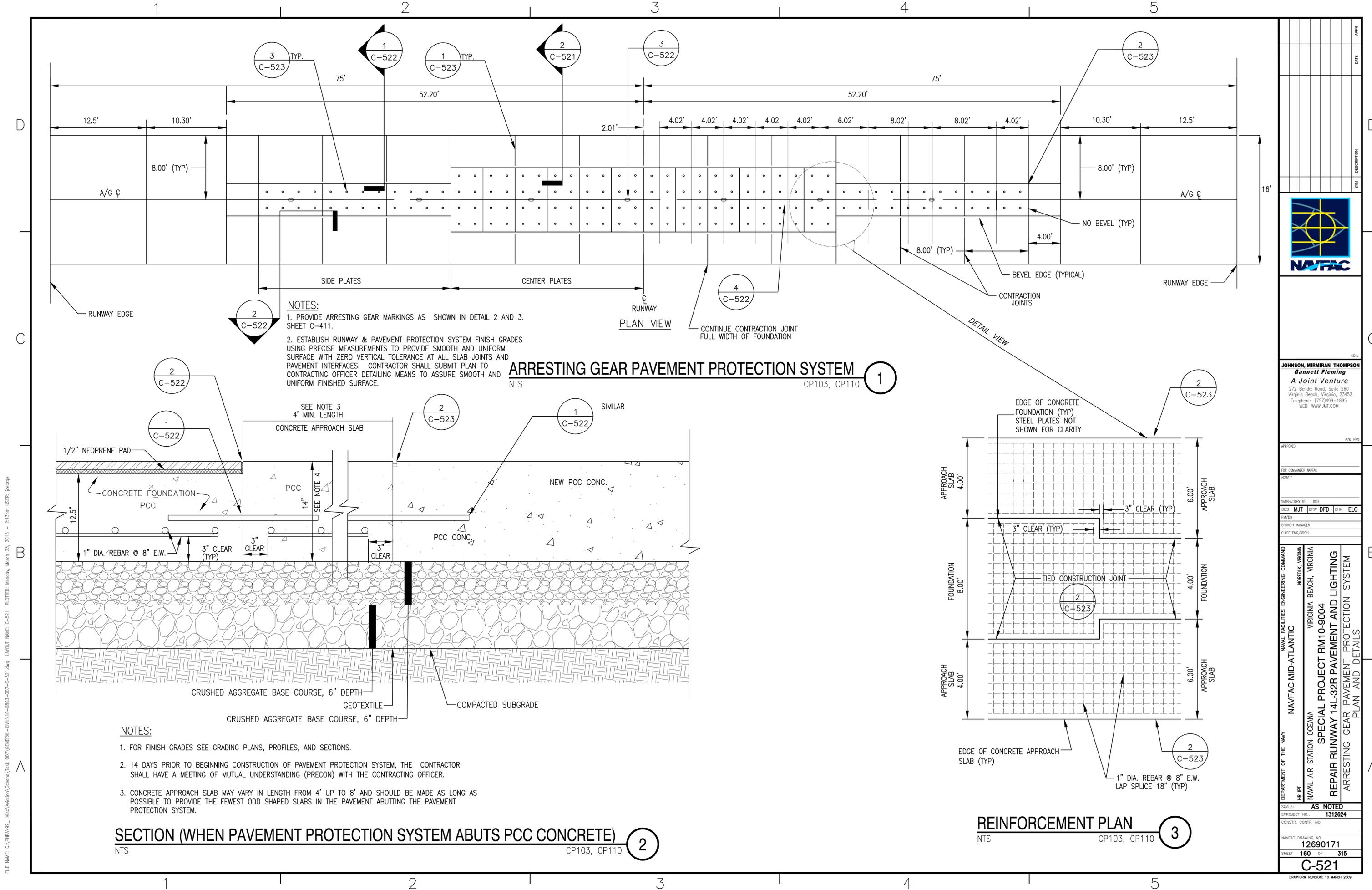
PRECAST COLLAR SECTION

NTS

4

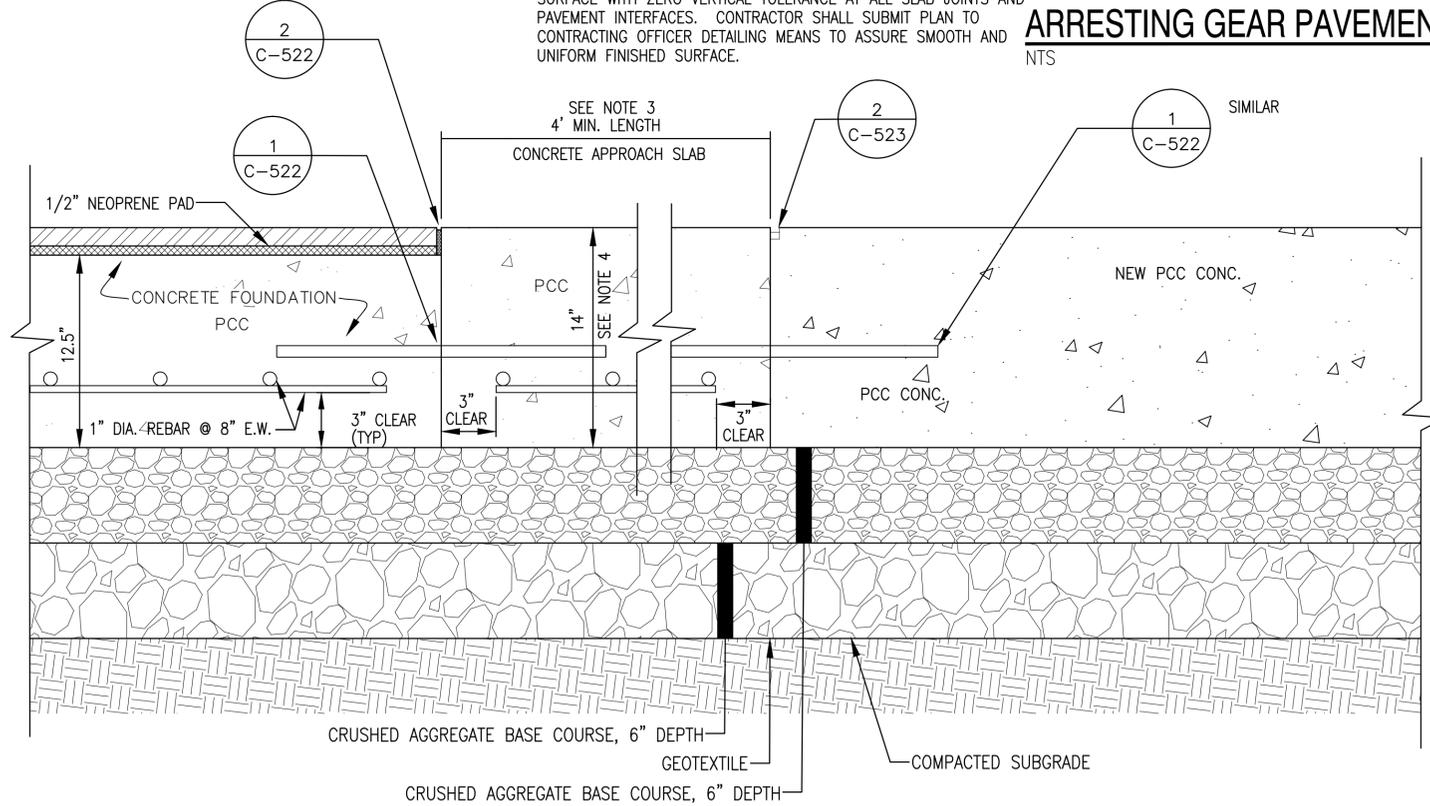
FILE NAME: C:\P\PA\98_163\aviation\ocean\Task 007\GENERAL-CMA\10-8863-007-C-514.dwg LAYOUT NAME: C-514 PLOTTED: Monday, March 23, 2010 - 2:24pm USER: hwtison

DATE	APPR
DESCRIPTION	SYN
<p>JOHNSON, MIRMIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 200 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM</p>	
<p>APPROVED: _____ PER: COMMANDER NAVFAC ACTIVITY: _____ SATISFACTORY TO: _____ DATE: _____ DES: MJT DRW: DFD CHK: ELO PM/DM: _____ BRANCH MANAGER: _____ CHIEF ENG/ARCH: _____</p>	
<p>DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVFAC MID-ATLANTIC NORFOLK, VIRGINIA VIRGINIA BEACH, VIRGINIA NAVAL AIR STATION OCEANA SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING DRAINAGE DETAILS</p>	
<p>SCALE: NONE EPROJECT NO.: 1312624 CONSTR. CONTR. NO. _____ NAVFAC DRAWING NO. 12690170 SHEET 159 OF 315 C-514 <small>DRAWFORM REVISION: 10 MARCH 2009</small></p>	



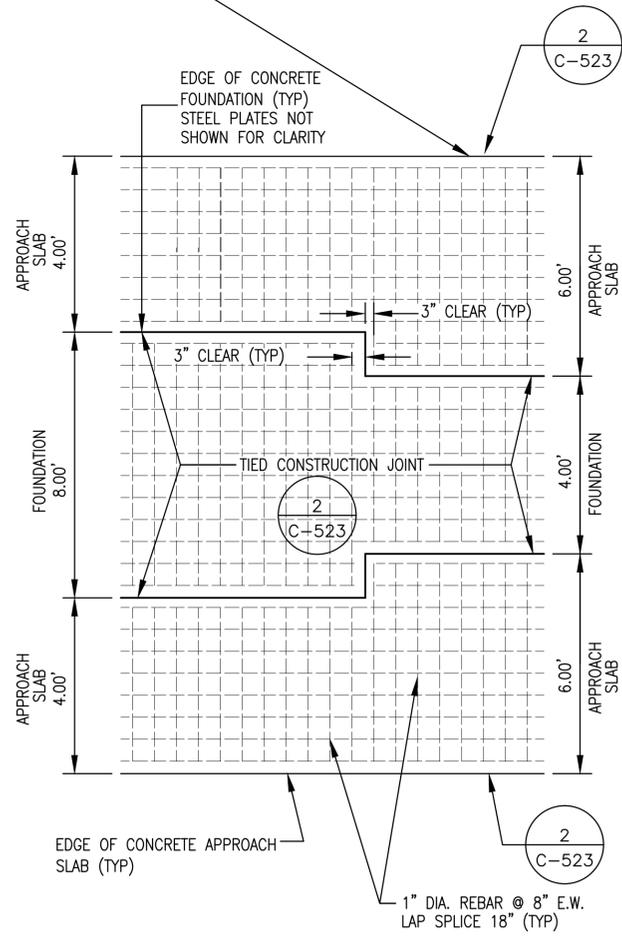
NOTES:
 1. PROVIDE ARRESTING GEAR MARKINGS AS SHOWN IN DETAIL 2 AND 3. SHEET C-411.
 2. ESTABLISH RUNWAY & PAVEMENT PROTECTION SYSTEM FINISH GRADES USING PRECISE MEASUREMENTS TO PROVIDE SMOOTH AND UNIFORM SURFACE WITH ZERO VERTICAL TOLERANCE AT ALL SLAB JOINTS AND PAVEMENT INTERFACES. CONTRACTOR SHALL SUBMIT PLAN TO CONTRACTING OFFICER DETAILING MEANS TO ASSURE SMOOTH AND UNIFORM FINISHED SURFACE.

ARRESTING GEAR PAVEMENT PROTECTION SYSTEM
 NTS CP103, CP110



NOTES:
 1. FOR FINISH GRADES SEE GRADING PLANS, PROFILES, AND SECTIONS.
 2. 14 DAYS PRIOR TO BEGINNING CONSTRUCTION OF PAVEMENT PROTECTION SYSTEM, THE CONTRACTOR SHALL HAVE A MEETING OF MUTUAL UNDERSTANDING (PRECON) WITH THE CONTRACTING OFFICER.
 3. CONCRETE APPROACH SLAB MAY VARY IN LENGTH FROM 4' UP TO 8' AND SHOULD BE MADE AS LONG AS POSSIBLE TO PROVIDE THE FEWEST ODD SHAPED SLABS IN THE PAVEMENT ABUTTING THE PAVEMENT PROTECTION SYSTEM.

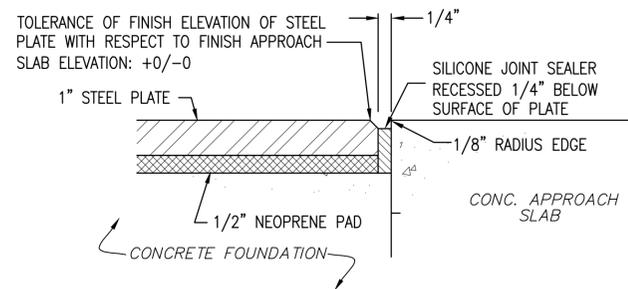
SECTION (WHEN PAVEMENT PROTECTION SYSTEM ABUTS PCC CONCRETE)
 NTS CP103, CP110



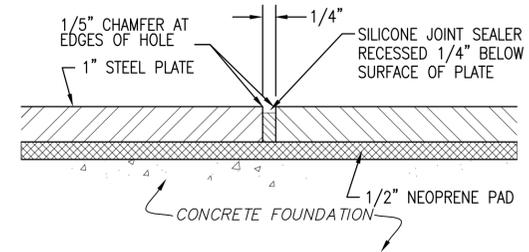
REINFORCEMENT PLAN
 NTS CP103, CP110

DATE	APPR
DESCRIPTION	SYN
JOHNSON, MIRMIRAN THOMPSON Gannett Fleming A Joint Venture 272 Bendix Road, Suite 200 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM	
APPROVED	A/E INFO
PER COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO DATE	
DES: MJT	DRAW: DFD
CHK: ELO	
PH/DM	
BRANCH MANAGER	
CHIEF ENGR/ARCH	
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC
NAVFAC FACILITIES ENGINEERING COMMAND	NORFOLK, VIRGINIA
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VIRGINIA
SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING ARRESTING GEAR PAVEMENT PROTECTION SYSTEM PLAN AND DETAILS	
SCALE: AS NOTED	
EPROJECT NO.: 1312624	
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO. 12690171	
SHEET 160 OF 315	
C-521	
<small>DRAWN/REVISED: 10 MARCH 2009</small>	

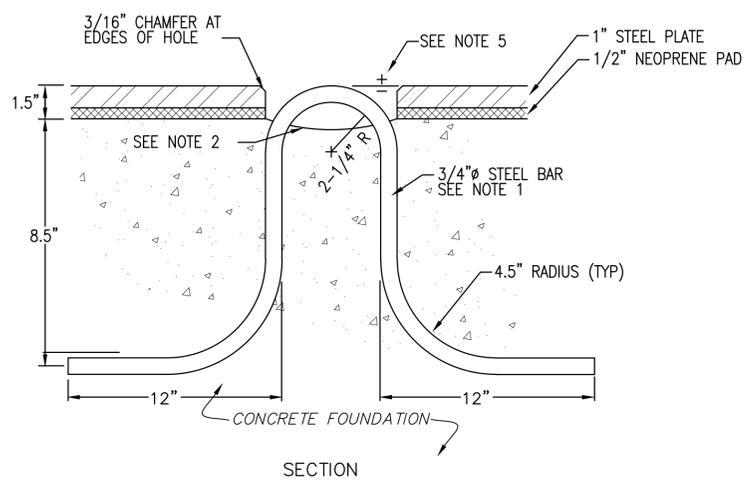
FILE NAME: C:\P\PAVA\91_Misc\Aviation\Ocean\Task 007\GENERAL-CMA\10-8863-007-C-521.dwg LAYOUT NAME: C-521 PLOTTED: Monday, March 23, 2015 - 2:43pm USER: jperge



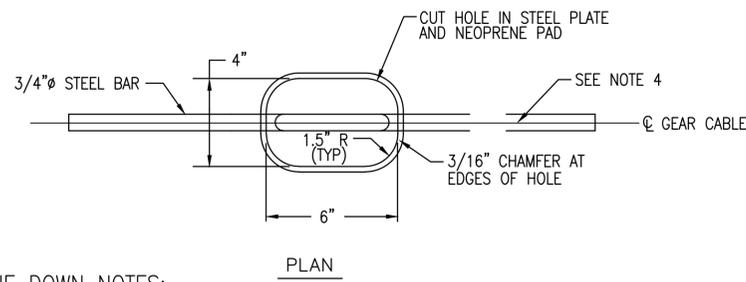
DETAIL
NTS CP103, CP110 **1**



DETAIL
NTS CP103, CP110 **2**



SECTION

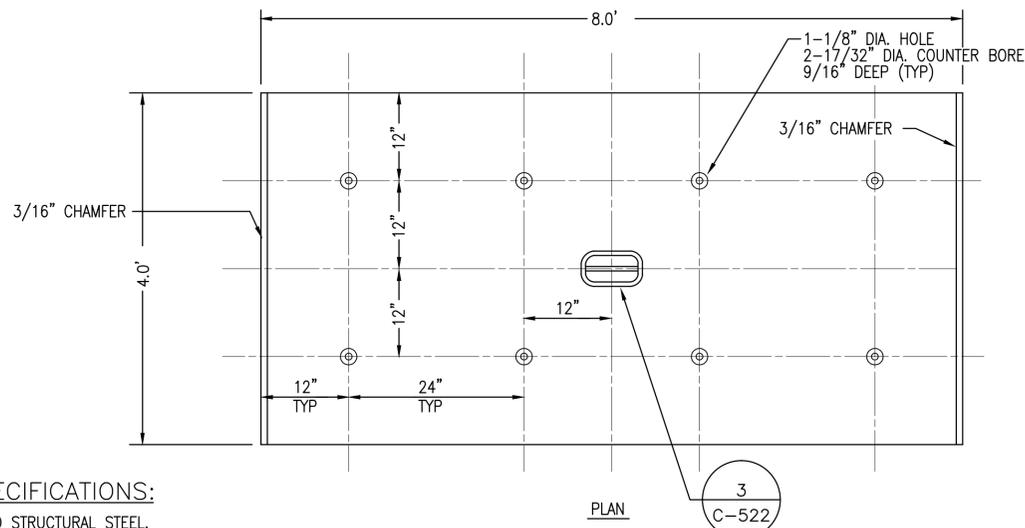


PLAN

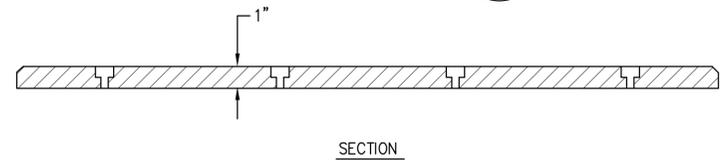
TIE DOWN NOTES:

1. PROVIDE 3/4" PLAIN STEEL BAR CONFORMING TO ASTM A615, GRADE 60 HOT DIP GALVANIZE IN ACCORDANCE WITH ASTM A123 AFTER BENDING.
2. CUP CONCRETE TO INSURE 1.5" CLEARANCE BETWEEN INSIDE OF TIE DOWN BAR AND CONCRETE SURFACE.
3. ALIGN CENTERLINE OF STEEL BAR WITH CENTERLINE OF THE ARRESTING GEAR CABLE.
4. TOLERANCE OF TOP OF PADEYE WITH RESPECT TO STEEL PLATE SURFACE IS +0/-3/16".

TIE DOWN DETAILS
NTS CP103, CP110 **3**



PLAN



SECTION

STEEL PLATE SPECIFICATIONS:

TYPE: ASTM A-36 HOT ROLLED STRUCTURAL STEEL.
PAINT STEEL PLATES WITH A CORROSION RESISTANT PAINT, SUCH AS HYTECH METAL SHIELD OR EQUIVALENT CURED FILM THICKNESS SHALL BE 0.005".

TOLERANCES: LENGTH AND WIDTH DIMENSIONS: +1/32"/-3/32"
BOLT SPACING: ±1/16"
HOLE DIAMETER: +1/32"/-0
COUNTER BORE DIAMETER: +1/32"/-0
COUNTER BORE DEPTH: +1/32"/-0

STEEL PLATES
NTS CP103, CP110 **4**

DATE	APPR
DESCRIPTION	SYN
<p>JOHNSON, MIRMIRAN THOMPSON <i>Gannett Fleming</i> A Joint Venture 272 Bendix Road, Suite 200 Virginia Beach, Virginia, 23452 Telephone: (757)499-1895 WEB: WWW.JMT.COM</p>	
APPROVED	DATE
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DATE
DES: MJT	DRAW: DFD
CHK: ELO	
PH/DM	
BRANCH MANAGER	
CHIEF ENGR/ARCH	
DEPARTMENT OF THE NAVY	NAVFAC MID-ATLANTIC
NAVFAC	NORFOLK, VIRGINIA
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VIRGINIA
<p>SPECIAL PROJECT RM10-9004 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING ARRESTING GEAR PAVEMENT PROTECTION SYSTEM</p>	
SCALE:	AS NOTED
PROJECT NO.:	1312624
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	12690172
SHEET	161 OF 315
<p>C-522</p>	
DRAWFORM REVISION: 10 MARCH 2009	

FILE NAME: C:\P\PA\98..._Meca\Aviation\Ocean\Task_007\GENERAL-CMA\10-8863-007-C-522.dwg LAYOUT NAME: C-522 PLOTTED: Monday, March 23, 2015 - 2:43pm USER: jperge

EROSION AND SEDIMENT CONTROL NARRATIVE

Project Description:

NAS Oceana is the United States Navy's East Coast Master Jet Base. The RM 10-9004 project is located at the Oceana Naval Air Station (NAS) in Virginia Beach, Virginia. The project is located in the northeastern quadrant of the Air Station property. Runway 14L-32R is 8,000 feet long and 150' wide, with no paved shoulders. The purpose of the project is to renew airfield pavements, renew airfield electrical lighting and signage systems, and repair electrical infrastructure for optical landing and approach lighting systems.

This project will repair Runway 14L-32R pavement and runway access points at NAS Oceana, by demolition, removing and rebuilding existing pavement. Overlaying will also occur on Taxiway A and Taxiway P, where pavement widening is needed to correct the geometric layout of each taxiway. The taxiways will be constructed in Portland cement concrete between the runway and the hold short line while the remainder of the widening will be asphalt. The Hold Apron pavement at the Runway 14L end will be demolished and replaced with Portland concrete cement. The Hold Apron at the Runway 32R end will be demolished and replaced to meet revised grading adjacent to the Runway edges. The remainder of the Hold Apron at the Runway 32R end will be patched and the joints sealed. This project will provide all airfield markings for the Runway, the crossing runways in the work area, each connecting taxiway, and the arresting gear. This project will replace the arresting gear pavement protection system and rehabilitate and widen the asphalt concrete pavement around the arresting gear equipment, tape wedges, and access roads.

In an effort to support this major construction operation, laydown and storage areas are proposed outside of the airfield limits. Those areas are required to be placed outside of the airfield limits per UFC and FAA criteria. The main Contractor access point for construction will be from Potters Road through the existing shooting range and RV storage area. In addition to laydown and material storage a batch concrete plant and concrete crushing facility will be constructed in the area as well.

The total anticipated disturbed area for the project is 93.1 acres

Existing Site Conditions:

The existing airfield pavements were constructed in 1952. The airfield performs minor concrete repair on a regular basis. The last major rehabilitation work was 60- 65 years ago, exclusive of the crossing Runways. The Runway 5L crossing was repaired in 2011 and the Runway 5R crossing was repaired in 2010. The Taxiway A crossing of Runway 14L-32R has also been recently repaired. The center length of the Runway at the 5L, 5R, and Taxiway A is asphalt pavement. The two Runway ends are PCC pavement, with a paved Runway 14L overrun.

A majority of the airfield is flat with established grass vegetation. There is very little topographic relief over the site. Stormwater runoff sheet flows into drop inlets and stormwater is conveyed via closed pipe system into three large drainage ditches that exit the limits of the military installation. Two of the drainage ditches flows north and cross Potters Road and eventually outfall into the Lynnhaven Bay. The third ditch flows south along Oceana Boulevard and ultimately discharges into Back Bay.

Adjacent Areas:

Areas adjacent to the areas of disturbance are still within the limits of NAS Oceana. Those areas are void of any civilian residential or commercial buildings. Most waterways are located more than 500 feet from any land disturbing activities. There is a low probability that any sediment laden runoff will sheet flow into the existing waterways.

Off-site Areas:

Material will be brought in for this project and material will be hauled away. Excavated material shall be disposed of offsite in a legal manner at an approved construction waste facility. Clean fill shall be obtained from an off-site source and delivered to the site. The contractor is responsible for making sure that all material coming to the project is obtained from a permitted facility. All construction activities are contained within the project limits.

Critical Areas:

There are critical areas within the project limits. The critical areas are wetland areas. To avoid disturbance to the wetland area, directional drilling will be used to install an electrical ductbank instead of the traditional open trench method. The wetland area is located south of the departure end of Runway 32R.

Soil:

The soil with the proposed limits of disturbance is all Udorthents-Urban Land Complex. Much of the runway and surrounding areas is comprised of fill material from the original construction of Oceana Below the fill material is a layer of clay and sand below that.

Erosion and Sediment Control Measures:

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices shall be constructed and maintained according to minimum standards and specifications of the VESCR handbook.

3.02 Temporary Stone Construction Entrance

A stabilized stone pad with a filter fabric underliner located at points of vehicular ingress and egress on a construction site. The purpose of the entrance is to reduce the amount of mud transported onto paved public roads by motor vehicles or runoff.

Maintenance:

The entrance shall be maintained in a condition which will prevent tracking or flow of mud onto public rights-of-way. This may require periodic top dressing with additional stone or the washing and reworking of existing stone conditions demand and repair and/or cleanout of any structures used to trap sediment. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately. The use of water trucks to remove materials dropped, washed, or tracked onto roadways will not be permitted under any circumstances.

3.05 Silt Fence

A temporary sediment barrier consisting of a synthetic fabric stretched across and attached to supporting posts and entrenched. The purpose of the silt fence is to intercept and detain small amounts of sediment from disturbed areas during construction operations in order to prevent sediment from leaving the site.

Maintenance:

Silt fences shall be inspected immediately after each rain and at least daily during prolonged rainfall. Any required repairs shall be made immediately. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective prior to the end of the expected usable life and the barrier still be necessary, the fabric shall be replaced promptly. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier. Any sediment deposits remaining in place after the silt fence is no longer required shall be dressed to conform to the existing grade, prepared and seeded.

3.07 Storm Drain Inlet Protection

A sediment filter or an excavated impounding area around a storm drain drop inlet or curb inlet. The purpose of a storm drain inlet protection is to prevent sediment from entering storm drainage systems prior to permanent stabilization of the disturbed area.

Maintenance:

The structure shall be inspected after each rain and repairs made as needed. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one half the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode. Structures shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.

3.08 Culvert Inlet Protection

To prevent sediment from entering, accumulating in and being transferred by a culvert and associated drainage systems prior to permanent stabilization of a disturbed project area. Culvert inlet protection is also used to provide erosion control at culverts inlets during the phase of a project where elevation and drainage patterns change original control measures to be ineffective or in need of removal.

Maintenance:

The structure shall be inspected after each rain and repairs made as needed. Aggregate shall be replaced or cleaned when inspection reveals that clogged voids are causing ponding problems which interfere with on-site construction. Sediment shall be removed and the impoundment restored to its original dimensions when sediment has accumulated to one-half the design depth. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode and cause sedimentation problems. Temporary structures shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.

3.18 Outlet Protection

To prevent the scour at stormwater outlets, to protect the outlet structure, and to minimize the potential for downstream erosion by reducing the velocity and energy of concentration stormwater flows. This measure is applicable to the outlets of all pipes and engineered channel sections.

Maintenance:

Outlet protection should be inspected after major storm events to insure that none of the stone has been washed away. Special attention should be paid to the transition from the flared end section, endwall, or other end pipe treatment and the stone outlet protection. This area is susceptible to scour and undermining. If scour and undermining occurs the area should be filled and compacted and stone replaced onto of the fill area. If scour and undermining keeps occurring the stone shall be grouted.

3.26 Dewatering Structure

A temporary settling and filtering device for sediment laden water that is discharge via pump from dewatering associated with demolition and grading activities.

Application:

The dewatering structures shall be the sediment bag type. The structure shall be placed on an area with a slope less than 2% and no closer than 75-feet to the nearest stormwater inlet. Vegetation between the structure and inlet shall be in good condition, free of erosion, and covered in vegetation. The size of the dewatering structure and pump is based on the volume of sediment laden water. The contractor is responsible for the sizing of both the pump and dewatering structure.

Maintenance: The contractor shall follow the manufactures recommendation for disposal and replacement. The vegetative area between the dewatering structure and the nearest stormwater inlet shall remain in good condition. If erosion occurs the Contract will have to stabilize the area and should consider moving the structure to another location.

3.30 Topsoiling

Methods of preserving and using the surface layer of undisturbed soil, often enriched in organic matter, in order to obtain a more desirable planting and growth medium.

Application:

Topsoil shall not be placed on a subgrade that is frozen, muddy, or excessively wet, or in a condition that may otherwise be detrimental to proper grading or proposed sodding or seeding. The topsoil shall be uniformly distributed to a minimum compacted depth of 2- inches on 3:1 or steeper slopes and 4 inches on flatter slopes. Any irregularities in the surface, resulting from topsoiling or other operations, shall be corrected in order to prevent the formation of depressions or water pockets. It is necessary to compact the topsoil enough to ensure good contact with the underlying soil and to obtain a level seedbed for the establishment of high maintenance turf. However, undue compaction is to be avoided as it increases runoff velocity and volume, and deters seed germination.

3.31 Temporary Seeding

The establishment of a temporary vegetative cover on disturbed areas by seeding with appropriate rapidly growing

annual plants. The purpose of temporary seeding is to reduce erosion and sedimentation by stabilizing disturbed areas that will not be brought to final grade for a period of more than 30 days. The measure can also reduce damage from sediment and runoff to downstream or off-site areas, and to provide protection to bare soils exposed during construction until permanent vegetation or other erosion control measures can be established.

Application:

Seed shall be evenly applied with a broadcast seeder, drill, cultipacker seeder or hydroseeder. Small grains shall be planted no more than 1 1/2 inches deep. Small seeds, such as Kentucky Bluegrass, should be planted no more than 1/4 inch deep. Other Grasses and Legumes should be planted from 1/4 inch to 1/2 inch deep.

3.32 Permanent Seeding

The establishment of perennial vegetative cover on disturbed areas by planting seed. The purpose of this measure is to reduce erosion and decrease sediment yield from disturbed areas. It also permanently stabilizes disturbed areas in a manner that is economical, adaptable to site conditions, and allows selection of the most appropriate plant material.

Application:

The soil on a disturbed site must be modified to provide an optimum environment for seed germination and seeding growth. The surface soil must be loose enough for water infiltration and root penetration. The pH of the soil must be such that it is not toxic and nutrients are available, usually between pH 6.0-7.0. Sufficient nutrients must be present. After seeding is in place, it must be protected with mulch to hold moisture and modify temperature extremes, and to prevent erosion while seedlings are growing.

Maintenance:

Even with careful, well-planned seeding operations, failures can occur. When it is clear that plants have not germinated on an area or have died, these areas must be reseeded immediately to prevent erosion damage. However it is extremely important to determine the reason that germination did not take place and make any corrective action necessary prior to reseeding of the area. Newly seeded areas shall be watered twice a day for a minimum of two weeks or until vegetation is established.

3.35 Mulching

Application of plant residues or other suitable materials to the soil surface. The purpose of this measure is to prevent erosion by protecting the soil surface from raindrop impact and reducing the velocity of overland flow. It also fosters the growth of vegetation by increasing available moisture and providing insulation against extreme heat and cold.

Application:

Mulch shall be spread uniformly, by hand or machine.

Maintenance:

All mulches and soil coverings should be inspected periodically to check for erosion. Where erosion is observed in mulched areas, additional mulch should be applied. If washouts or breakage occur, re-install netting or matting as necessary after repairing damage to the slope or ditch. Inspections should take place up until grasses are firmly established. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface; repair as needed.

Stockpiling

To store excess material onsite for future use such as topsoil, aggregate, and mulch, or for future removal of construction debris. The maximum side slopes of the stockpile shall not be greater the 2: 1.

Topsoil shall be stockpiled in such a manner that natural drainage is not obstructed and no offsite sediment drainage shall result. Stabilize or protect stockpiles in accordance with MS #2. Perimeter controls such as silt fence, diversions, and or other measures shall be immediately installed once a stockpile area is established. Stockpiles are subject to the stabilization requirements detailed above and within the Virginia Stormwater Management Permit.

Concrete Washout

Concrete washouts are designated areas in which concrete trucks and other equipment can wash excess concrete into. The washout contains the concrete laden water and allows for it to settle out and collect at the bottom. Water within the washout can be discharged from the top and the sediment collected at the bottom is to be disposed in a legal manner. The Contractor shall use a manufactured concrete washout system.

Maintenance:

The Contractor shall follow the manufactures specifications for maintenance and cleanout interval.

Stormwater Runoff Considerations:

The proposed construction activities will increase the amount of impervious area due to new four foot wide paved shoulders along the length of the runway. To offset for this increase in impervious area, large areas of old idle, runoff producing, pavement will be removed. By removing the idle pavement the total post development impervious area is lower than the pre development impervious area. Removing the idle pavement reduces the pollutant load but does not reduce it by the 20% of preexisting levels as required.

As stated above the runway that is being reconstructed is 8,000 feet long. Adjacent to the runway pavement, paved and unpaved shoulders are required by Unified Facilities Criteria (UFC) standards. The total shoulder maintains a width of 150 feet from the edge of runway pavement. Per UFC criteria, the unpaved portion (146 feet in the proposed conditions), must be transversely graded between 2% and 4%. Due to existing site conditions, grades waiver below the 2% minimum, but never above the 4% maximum. Also, common airfield practice, which is generally practiced at Naval Air Station Oceana, keeps drainage structures outside the 150 foot offset from the runway. For this project, typical slopes for the 150 foot shoulder are 2% or less. This means that runoff from the runway must sheetflow over a densely vegetative, grass, surface at a slope not greater than 2% for a minimum of 150 feet before entering into the closed pipe stormwater conveyance channel. The clear zone effectively acts as a sheetflow to open space BMP.

DATE	APPROVED
DESCRIPTION	DATE
DATE	APPROVED
DESCRIPTION	DATE



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APPROVED: _____
PER COMMANDER NAVFAC

ACTIVITY

SAISFACTORY TO DATE

DES. MUT | DRAW DFD | CHK ELO

PH/DM

BRANCH MANAGER

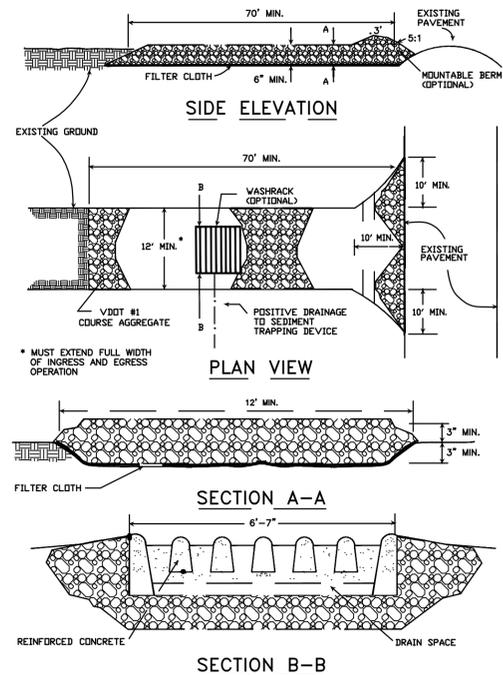
CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVFAC MID-ATLANTIC
NAVFAC OCEANA
NAVFAC VIRGINIA BEACH, VIRGINIA
SPECIAL PROJECT RM10-9004
REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING
EROSION AND SEDIMENT CONTROL NARRATIVE

SCALE: NONE
PROJECT NO.: 1312624
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12690174
SHEET 163 OF 315
C-531
DRAWING REVISION: 10 MARCH 2009

FILE NAME: C:\P\PA\904_Mech\Aviation\Oceana\Task 007\GENERAL\DWG\10-9004-007-C-531.dwg LAYOUT NAME: C-531 PLOTTED: Monday, March 23, 2010 - 2:49pm USER: jperge

STONE CONSTRUCTION ENTRANCE

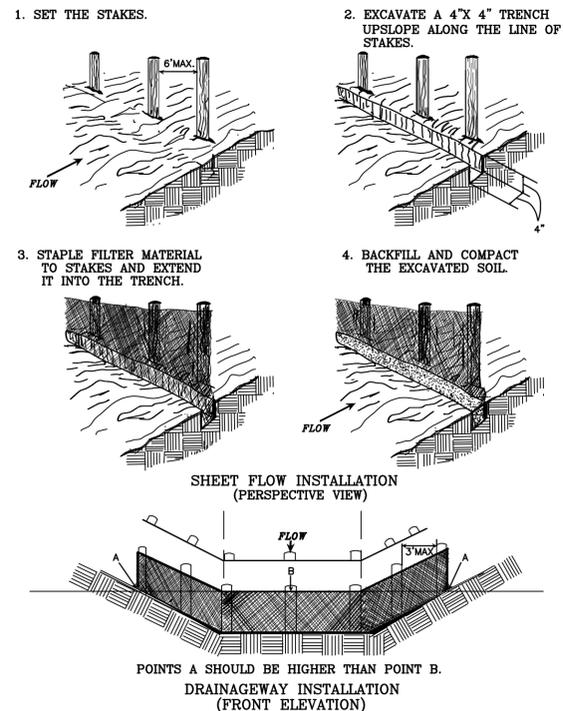


SOURCE: ADAPTED FROM 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC Plate 3.02-1

PLAN SHEET SYMBOL



CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)

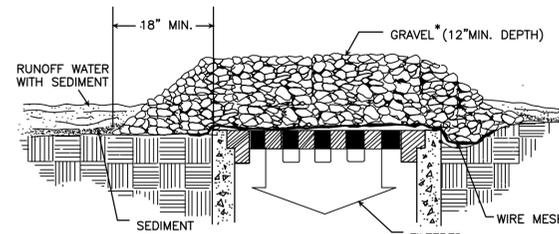


SOURCE: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, VA. DSWC Sherwood and Wyant Plate 3.05-2

PLAN SHEET SYMBOL



GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE.

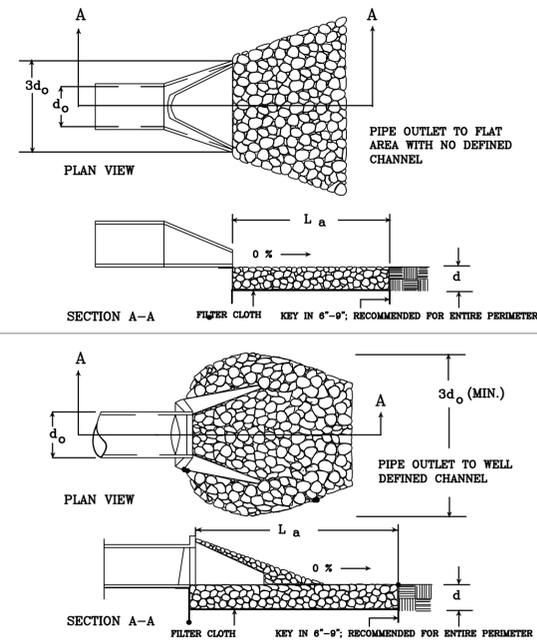
SOURCE: VA. DSWC

PLATE 3.07-2

PLAN SHEET SYMBOL



PIPE OUTLET CONDITIONS

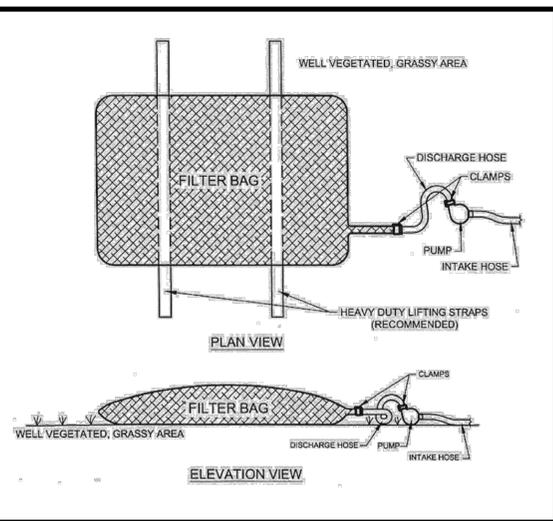


NOTES: 1. APRON LINING MAY BE RIPRAP, GROUDED RIPRAP, GABION BASKET, OR CONCRETE.
2. L_a IS THE LENGTH OF THE RIPRAP APRON AS CALCULATED USING PLATES 3.18-3 AND 3.18-4.
3. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN 6 INCHES.

Source: Va. DSWC

Plate 3.18-1

PLAN SHEET SYMBOL



SEDIMENT FILTER BAG / DEWATERING DEVICE

PLAN SHEET SYMBOL

DW



Note: All non pavement areas within the LOD shall be stabilized with topsoil, mulch, and seeding

TABLE 3.35-A ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCHES:	RATES:		NOTES:
	Per Acre	Per 1000 sq. ft.	
Straw or Hay	1 1/2 - 2 tons (Minimum 2 tons for winter cover)	70 - 90 lbs.	Free from weeds and coarse matter. Must be anchored. Spread with mulch blower or by hand.
Fiber Mulch	Minimum 1500 lbs.	35 lbs.	Do not use as mulch for winter cover or during hot, dry periods.* Apply as slurry.
Corn Stalks	4 - 6 tons	185 - 275 lbs.	Cut or shredded in 4-6" lengths. Air-dried. Do not use in fine turf areas. Apply with mulch blower or by hand.
Wood Chips	4 - 6 tons	185 - 275 lbs.	Free of coarse matter. Air-dried. Treat with 12 lbs nitrogen per ton. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.
Bark Chips or Shredded Bark	50 - 70 cu. yds.	1-2 cu. yds.	Free of coarse matter. Air-dried. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.

* When fiber mulch is the only available mulch during periods when straw should be used, apply at a minimum rate of 2000 lbs./ac. or 45 lbs./1000 sq. ft.

MULCHING SCHEDULE

PLAN SHEET SYMBOL



TABLE 3.32-E PERMANENT SEEDING SPECIFICATIONS FOR COASTAL PLAIN AREA

LAND USE	SEED ¹		APPLICATION RATES
	SPECIES		
Minimum Care Lawn (Commercial or Residential)	Tall Fescue ¹ or Bermudagrass ¹		175-200 lbs.
High-Maintenance Lawn	Tall Fescue ¹ or Bermudagrass ¹ (seed) or Bermudagrass ¹ (by other vegetative establishment method, see Std. & Spec. 3.34)		75 lbs. 200-250 lbs. 40 lbs. (unhulled) or 30 lbs. (hulled)
General Slope (3:1 or less)	Tall Fescue ¹ or Red Top Grass or Creeping Red Fescue or Seasonal Nurse Crop ²		128 lbs. 2 lbs. 20 lbs. TOTAL: 150 lbs.
Low-Maintenance Slope (Sleeper than 3:1)	Tall Fescue ¹ or Bermudagrass ¹ or Red Top Grass or Creeping Red Fescue or Seasonal Nurse Crop ² or Sericea Lespedeza ³		93-108 lbs. 0-15 lbs. 2 lbs. 20 lbs. 20 lbs. TOTAL: 150 lbs.

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4884 or at: <http://www.vcra.org/vcra/HTML/TurfgrassPublicationsPublications2.html>
2 - Use seasonal nurse crop in accordance with seeding dates as stated below:
February, March - April Annual Ryegrass
May 1st - August Foxtail Millet
September, October - November 15th Annual Ryegrass
November 16th - January Winter Rye
3 - May through October, use hulled seed. All other seeding periods, use unhulled seed. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30-40 lbs/acre.

FERTILIZER & LIME

- Apply 10-20-10 fertilizer at a rate of 600 lbs./acre (or 12 lbs./1,000 sq. ft.)
- Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs./1,000 sq. ft.)

NOTE:
- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at <http://www.dcr.state.va.us/swie&s.htm#pubs>

PERMANENT SEEDING SCHEDULE

PLAN SHEET SYMBOL



TABLE 3.31-B TEMPORARY SEEDING SPECIFICATIONS QUICK REFERENCE FOR ALL REGIONS

APPLICATION DATES	SEED		APPLICATION RATES
	SPECIES		
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)		50 - 100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (lolium multi-florum)		60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet		50 (lbs/acre)

FERTILIZER & LIME
 • Apply 10-10-10 fertilizer at a rate of 450 lbs./acre (or 10 lbs./1,000 sq. ft.)
 • Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs./1,000 sq. ft.)
 NOTE:
 1 - A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
 2 - Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means.
 3 - When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at <http://www.dcr.state.va.us/swie&s.htm#pubs>

TEMPORARY SEEDING SCHEDULE

TABLE 3.30-A CUBIC YARDS OF TOPSOIL REQUIRED FOR APPLICATION TO VARIOUS DEPTHS

Depth (inches)	Per 1,000 Square Feet	Per Acre
1	3.1	134
2	6.2	268
3	9.3	403
4	12.4	537
5	15.5	672
6	18.6	806

TOPSOIL SCHEDULE

PLAN SHEET SYMBOL



APPROVED: _____ DATE: _____
 SEAL: _____
 DESCRIPTION: _____
 SEAL: _____
 NAVFAC
 JOHNSON, MIRMAN THOMPSON
 Gannett Fleming
 A Joint Venture
 272 Bendix Road, Suite 2600
 Virginia Beach, Virginia, 23452
 Telephone: (757)499-1895
 WEB: WWW.JMT.COM
 A/E INFO: _____
 APPROVED: _____
 PER COMMANDER NAVFAC
 ACTIVITY: _____
 SATISFACTORY TO DATE: _____
 DES: MJT | DW: DFD | CHK: ELO
 PW/DW: _____
 BRANCH MANAGER: _____
 CHIEF ENGR/ARCH: _____
 DEPARTMENT OF THE NAVY
 NAVFAC MID-ATLANTIC
 VIRGINIA BEACH, VIRGINIA
 NAVAL AIR STATION OCEANA
 SPECIAL PROJECT RM10-9004
 REPAIR RUNWAY 14L-32R PAVEMENT AND LIGHTING
 EROSION AND SEDIMENT CONTROL DETAILS

SCALE: NONE
 PROJECT NO.: 1312624
 CONSTR. CONTR. NO.: _____
 NAVFAC DRAWING NO.: 12690176
 SHEET 165 OF 315
 C-533
 DRAWN/REVISED: 10 MARCH 2009