

CITY OF SAINT LOUIS
MISSOURI



CONSTRUCTION PLANS FOR

EXTEND NORTH DOCK ST. LOUIS MUNICIPAL TERMINAL

ONE NORTH MARKET STREET

INDEX OF DRAWINGS

CIVIL

C-1 GRADING PLAN

STRUCTURAL

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- S-4 SECTIONS AND DETAILS
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City of St. Louis
Vincent C. Schoemehl, Jr.
Mayor

Department of the President
Board of Public Service
Norbert A. Groppe, P.E.
President

City of St. Louis
Port Authority
Dennis G. Coleman

Thomas J. Sworn
Director

PREPARED BY

Booker

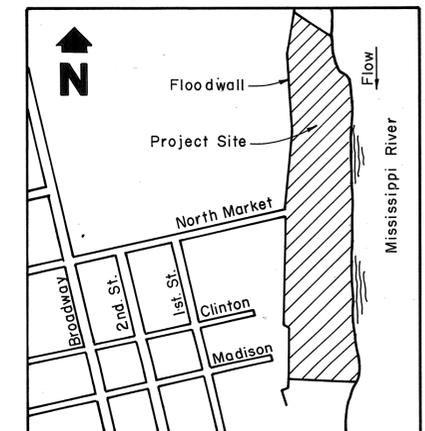
Engineers Architects Planners

1139 OLIVE STREET
ST. LOUIS, MISSOURI
63101

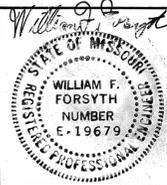
FOR
CITY OF ST. LOUIS
MISSOURI

PORT AUTHORITY PROJECT No. 89-01, CONTRACT No. 1

MISSOURI HIGHWAY AND TRANSPORTATION DEPT. PROJECT No. WTR-89-04(05)

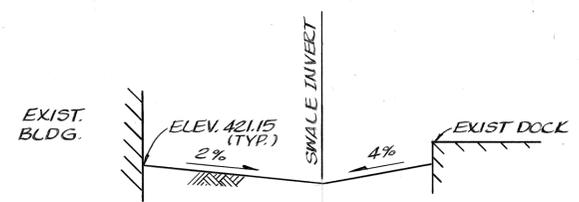
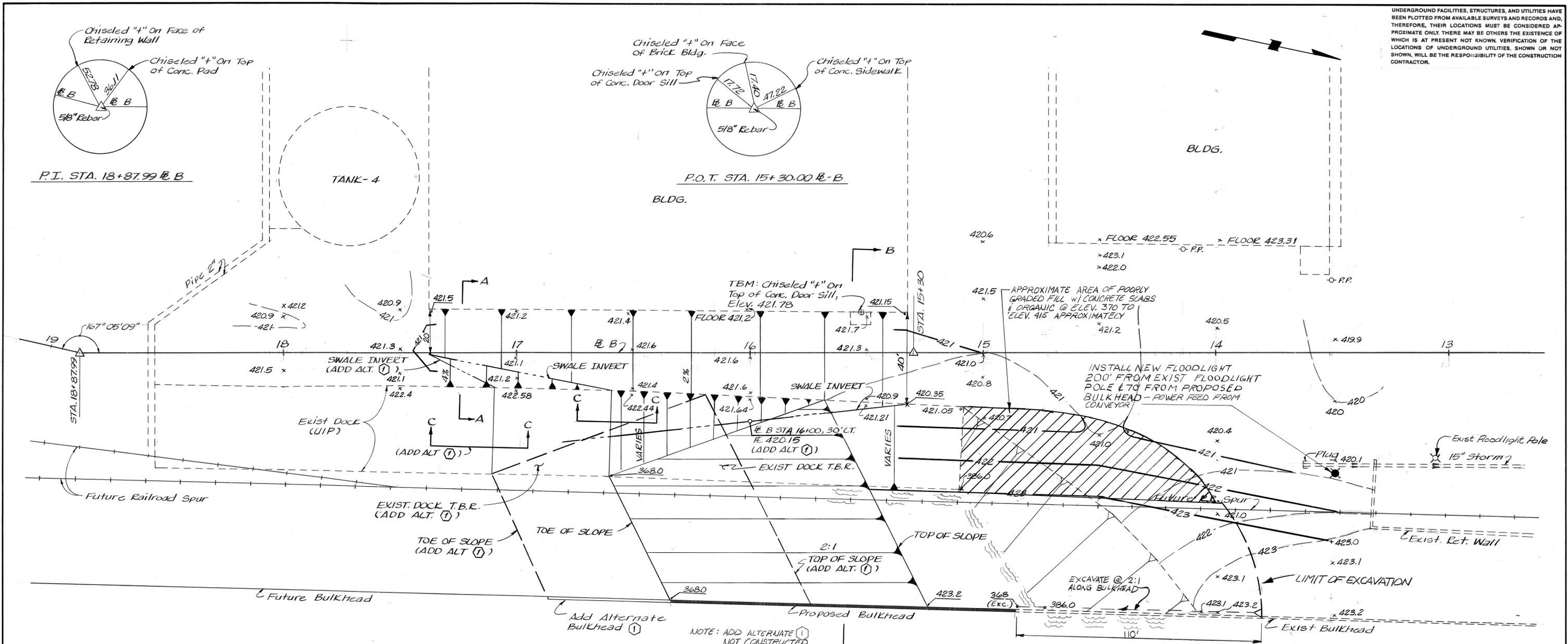


Location Map

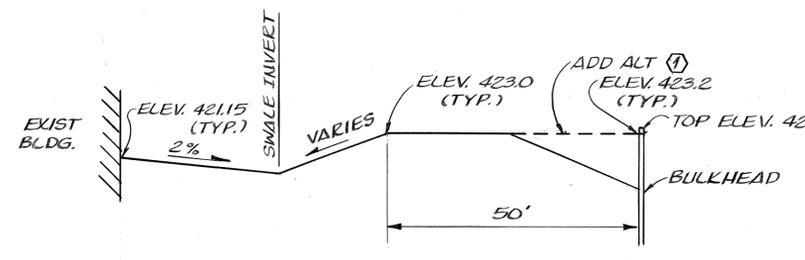


AUGUST 28, 1989

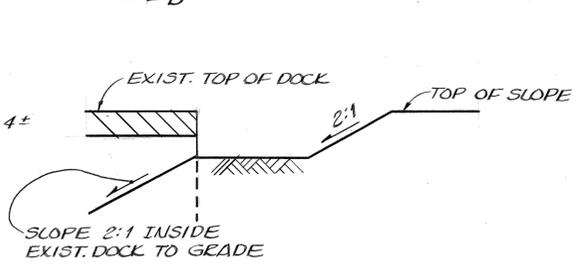
UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS AND, THEREFORE, THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS THE EXISTENCE OF WHICH IS AT PRESENT NOT KNOWN. VERIFICATION OF THE LOCATIONS OF UNDERGROUND UTILITIES, SHOWN OR NOT SHOWN, WILL BE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR.



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.

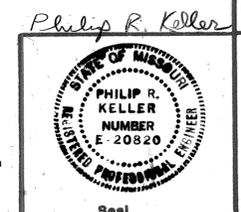
NOTE: ADD ALTERNATE NOT CONSTRUCTED

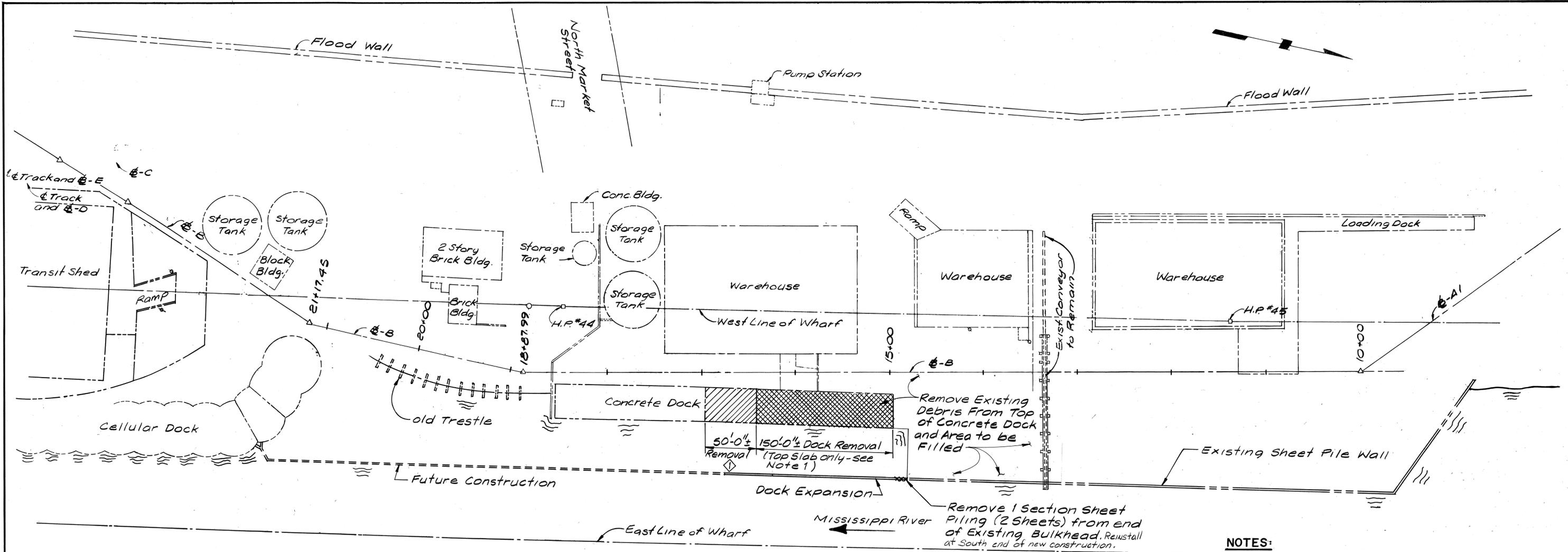
REV NO	DRAWN	CHKD	APPD	DESCRIPTION	DATE
NONE				AS BUILT	1-22-71
GRADING PLAN					Sheet No. C-1
					Total Sheets 1 of 7

**EXTEND NORTH DOCK
ST. LOUIS MUNICIPAL TERMINAL
ONE NORTH MARKET STREET**

CITY OF ST. LOUIS Mayor Vincent C. Schoemhl, Jr.

Department of the President Board of Public Service Norbert A. Grope, P.E. President	Booker Associates, Inc. 1139 Olive Street St. Louis, Missouri 63101 Date 8/28/89	City of St. Louis Port Authority Dennis G. Coleman Director
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DEMOLITION PLAN
Scale: 1"=50'

NOTE: ADDITIVE ALTERNATE
Ⓛ NOT CONSTRUCTED

LEGEND

-  Base Bid Demolition
-  Additive Alternate Demolition
-  Additive alternate designation - See Specs.

NOTES:

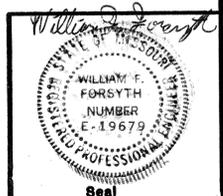
1. Concrete dock demolition is limited to the top slab and all construction down to elevation 416.4'. All dock construction is to be removed to approximately 2'-0" below new grade - see sectional view on sheet S-4. Approximately 5'-0' height of existing construction is to be removed.
2. See Sheet S-6 for General Notes.

LOQUE	AS BUILT	1-22-91			
REV. NO.	DRAWN	CHKD.	APPD.	DESCRIPTION	DATE

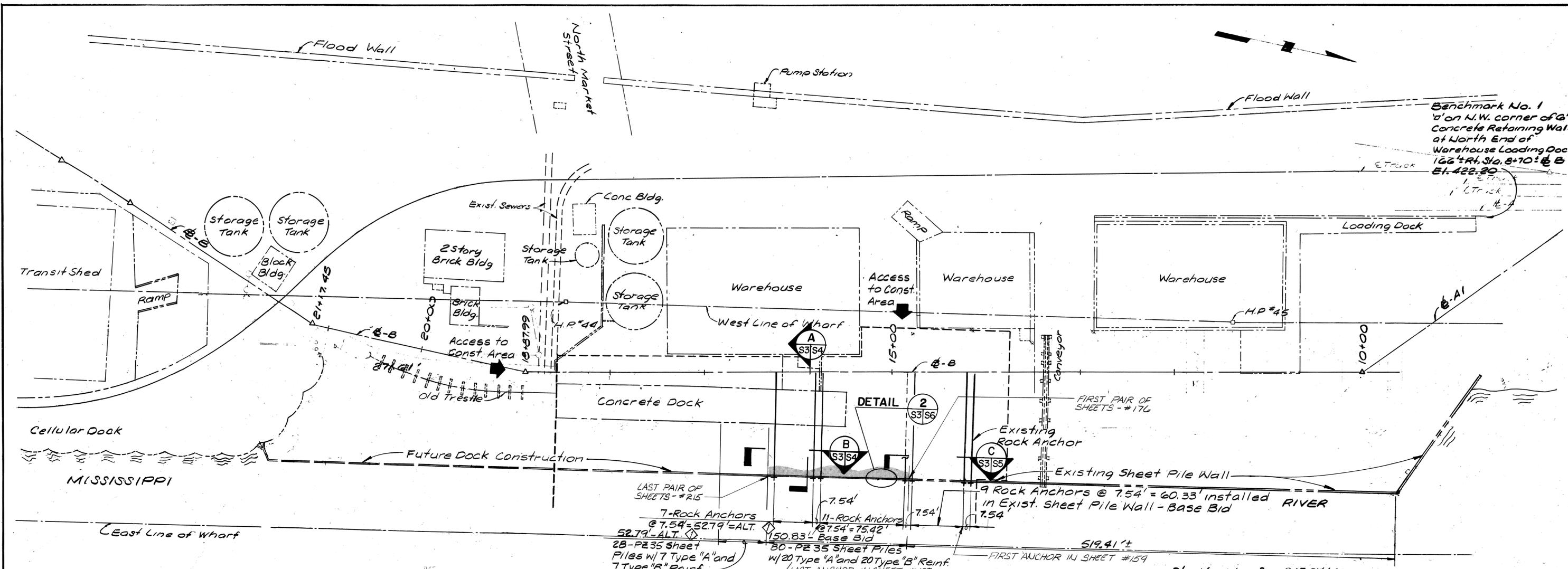
DEMOLITION PLAN		Sheet No. S2	Total Sheets 3 of 7
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**EXTEND NORTH DOCK
ST. LOUIS MUNICIPAL TERMINAL
ONE NORTH MARKET STREET**

CITY OF ST. LOUIS Mayor Vincent C. Schoemehl, Jr.



Department of the President Board of Public Service Norbert A. Groppe, P.E. President	Booker Associates, Inc. 1139 Olive Street St. Louis, Missouri 63101 Date 8/28/89	City of St. Louis Port Authority Dennis G. Coleman Director
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Benchmark No. 1
 10' on N.W. corner of 6"
 Concrete Retaining Wall
 at North End of
 Warehouse Loading Dock -
 100' x 41' Sta. 8+70 = @ B
 El. 422.20

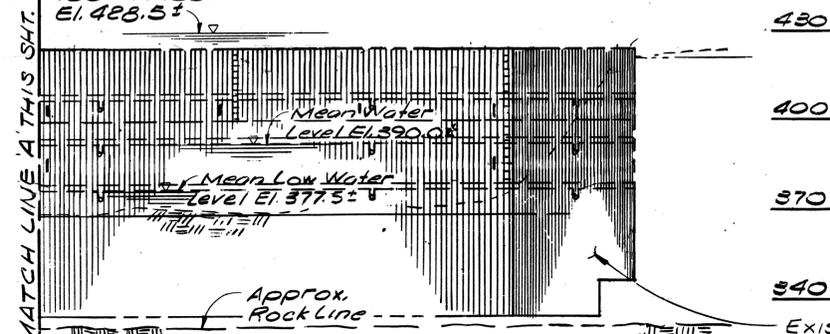
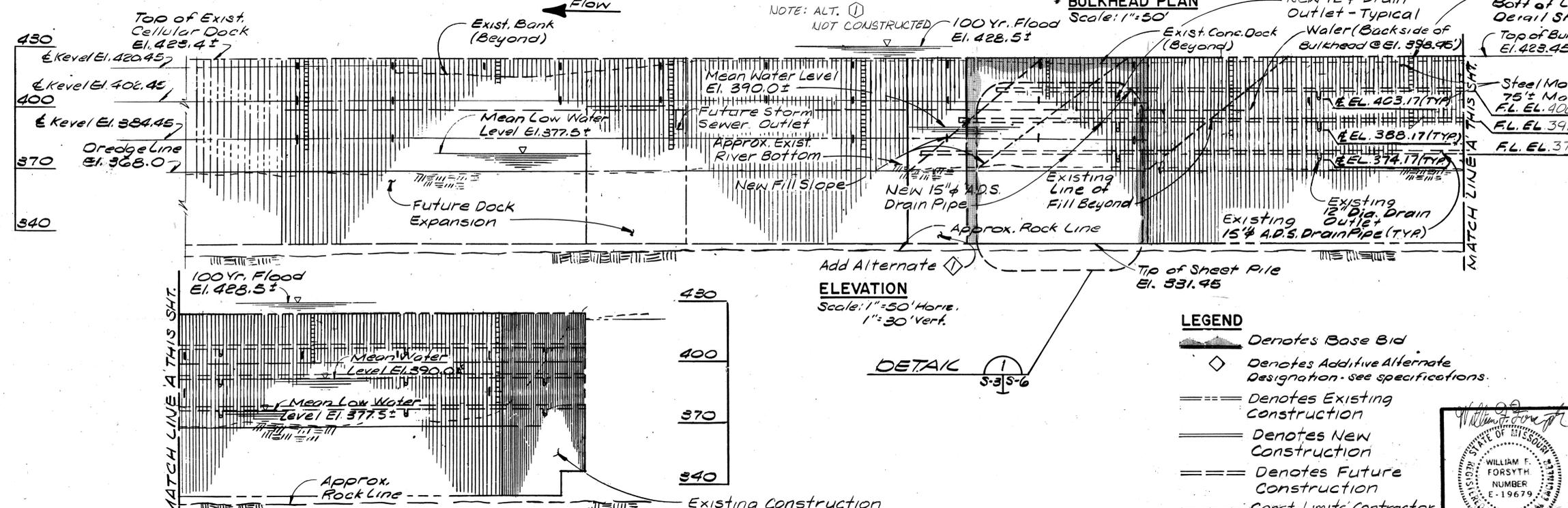
BULKHEAD PLAN
 Scale: 1"=50'

7-Rock Anchors @ 7.54' = 52.79' = ALT. 52.79' - ALT.
 28-PZ35 Sheet Piles w/ 7 Type "A" and 7 Type "B" Reinf.

11-Rock Anchors @ 7.54' = 75.42' = ALT. 75.42' - ALT.
 80-PZ35 Sheet Piles w/ 20 Type "A" and 20 Type "B" Reinf.
 LAST ANCHOR IN SHEET # 197

9 Rock Anchors @ 7.54' = 60.33' installed in Exist. Sheet Pile Wall - Base Bid

519.41' ±
 FIRST ANCHOR IN SHEET # 159



NOTE: ALT. ① NOT CONSTRUCTED

ELEVATION
 Scale: 1"=50' Horiz.
 1"=30' Vert.

DETAIL ① S-3/S-6

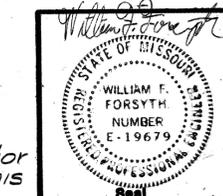
- LEGEND**
- Denotes Base Bid
 - ◇ Denotes Additive Alternate Designation - see specifications.
 - Denotes Existing Construction
 - ==== Denotes New Construction
 - ==== Denotes Future Construction
 - Const. Limits Contractor Confine Activities to this Area.

- NOTES:**
1. See Sheet 3-6 for General Notes.
 2. River levels shown are approximate only.
 3. Contractor to verify quantities of all construction items - see specifications.

REV. NO.	DRAWN	CHKD.	APPD.	DESCRIPTION	DATE
NONE				AS-BUILT	1-22-91
BULKHEAD PLAN AND ELEVATION					
Sheet No. S3					Total Sheets 4 of 7

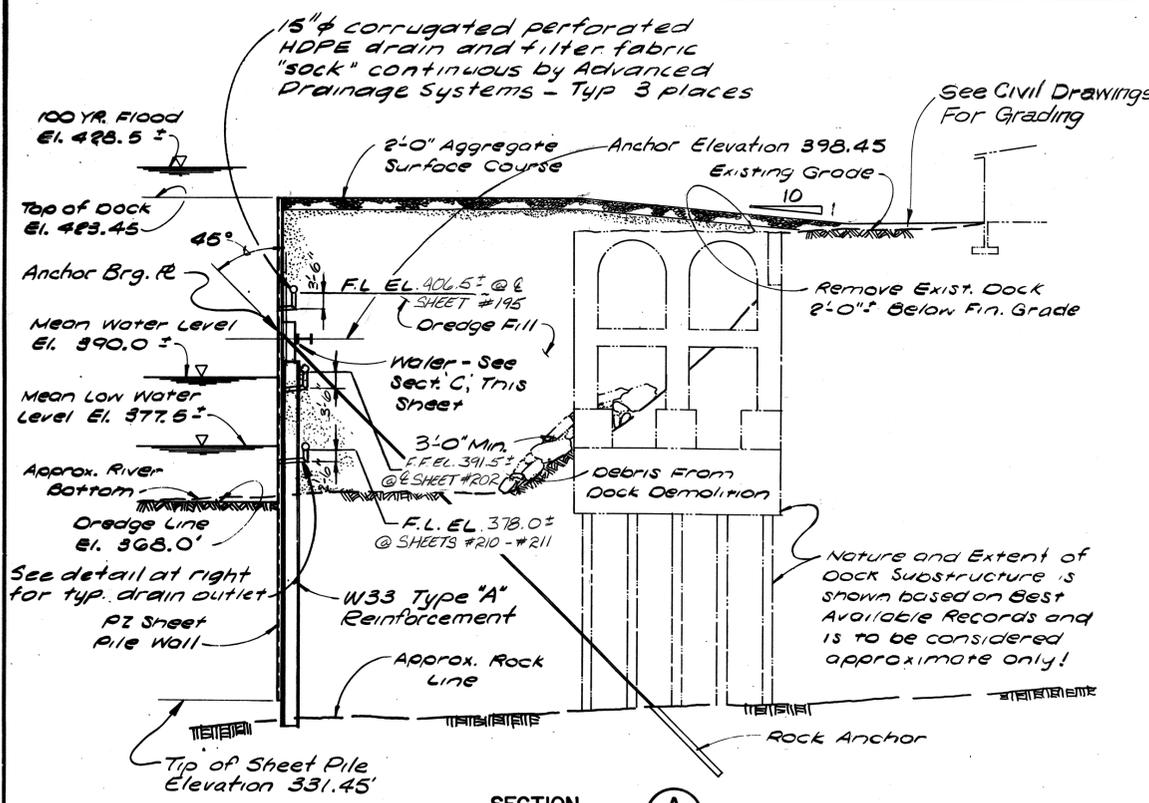
**EXTEND NORTH DOCK
 ST. LOUIS MUNICIPAL TERMINAL
 ONE NORTH MARKET STREET
 CITY OF ST. LOUIS Mayor Vincent C. Schoemeht, Jr.**

Department of the President Board of Public Service Norbert A. Gropp, P.E. President	Booker Associates, Inc. 1139 Olive Street St. Louis, Missouri 63101 Date 8/28/89	City of St. Louis Port Authority Dennis G. Coleman Director
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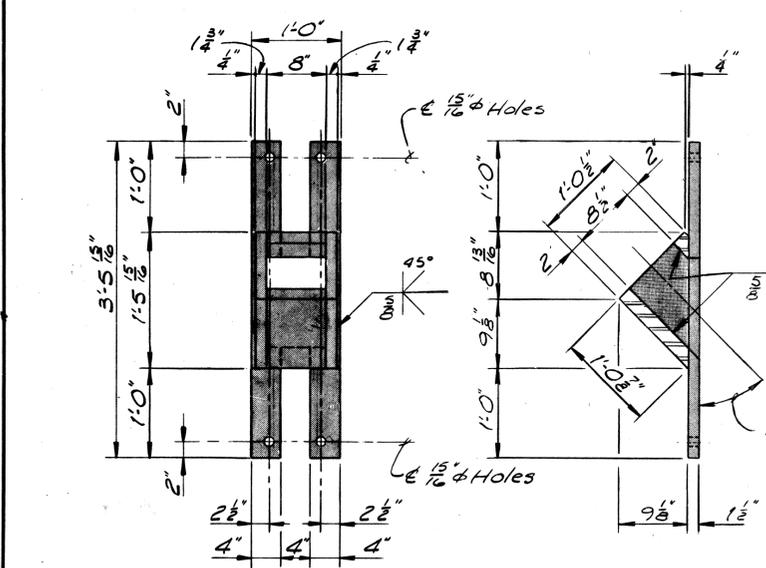


ROCK ANCHOR SCHEDULE							COMMENTS
ESTIMATED LENGTH TO ROCK	MAX. WORKING LOAD INCLUDING 30% SAFETY FACTOR	PROOF LOAD 120% OF MAX. WORKING LOAD	LOCK-OFF LOAD NOT INCLUDING LOSSES*		TOTAL N ^o REQ'D		
			BASE BID	ADDITIVE ALTERNATE	BASE BID	ADDITIVE ALTERNATE	
100'	798	958	48	490	20	7	ADDITIVE ALTERNATE
							NOT CONSTRUCTED

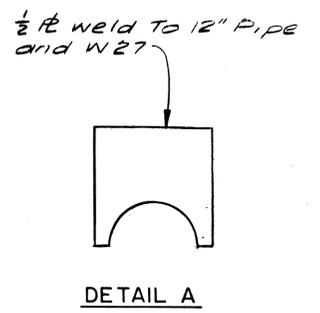
* Smaller value is Interim Lockoff
See Construction Notes, Sheet S-6.
Lock-off Loads do not include 30% safety factor.



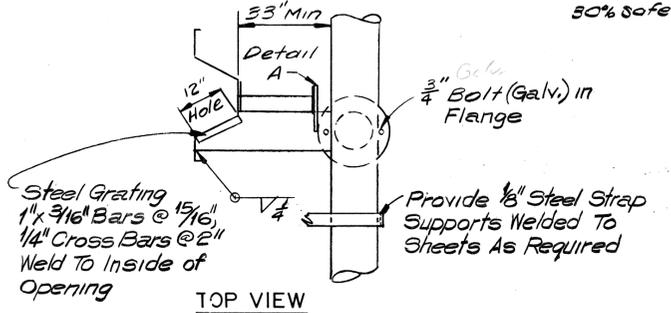
SECTION A
Scale: 1/2" = 1'-0" S-3 S-4



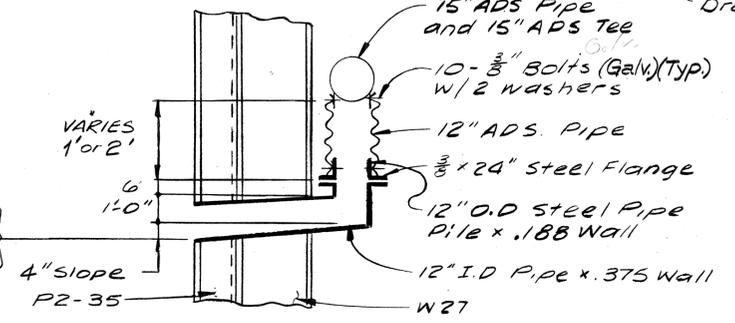
TYPICAL ANCHOR BEARING PLATE
Scale: 1" = 1'-0"



DETAIL A

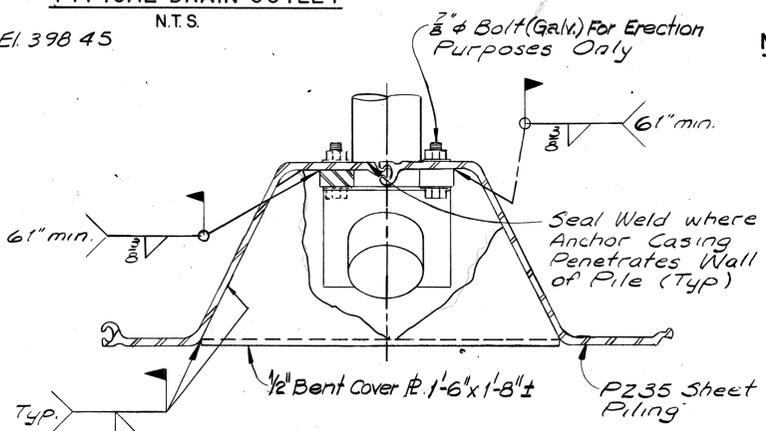


TOP VIEW

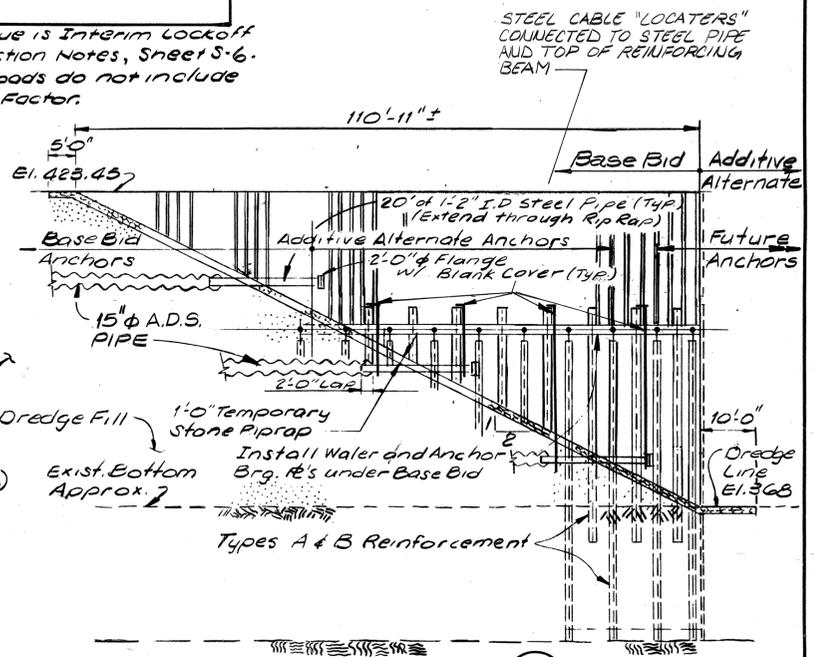


SIDE VIEW

TYPICAL DRAIN OUTLET
N.T.S.

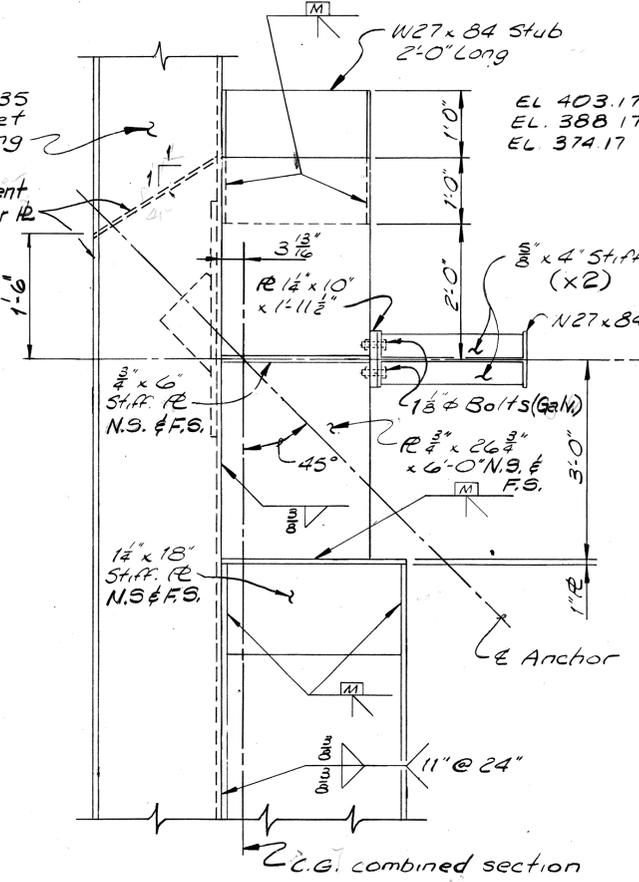


TYPICAL WELDING DETAIL
Scale: 1/2" = 1'-0"

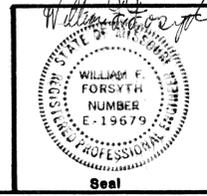


SECTION B
Scale: 1/2" = 1'-0" S-3 S-4
(Construction similar at South End of Additive Alternate.)

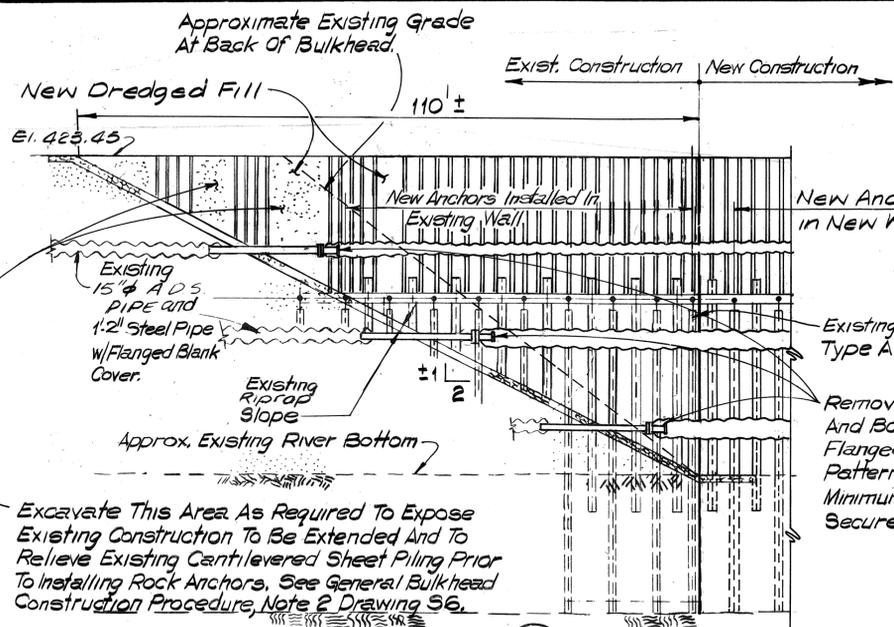
NOTES:
1. See Sheet S-6 for General Notes.



SECTION C
Scale: 3/4" = 1'-0" S-6 S-3

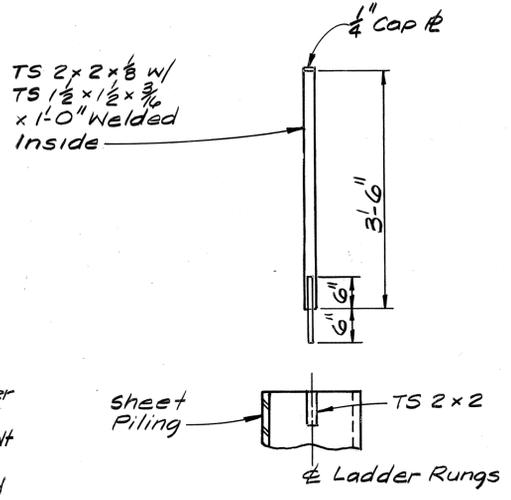


NOONE	AS-BUILT	1-22-91				
REV. NO.	DRAWN	CHKD.	APPD.	DESCRIPTION	DATE	
SECTIONS AND DETAILS					Sheet No. S 4	Total Sheets 5 of 7
EXTEND NORTH DOCK ST. LOUIS MUNICIPAL TERMINAL ONE NORTH MARKET STREET						
CITY OF ST. LOUIS Mayor Vincent C. Schoemehl, Jr.						
Department of the President Board of Public Service Norbert A. Gropp, P.E. President	Booker Associates, Inc. 1139 Olive Street St. Louis, Missouri 63101	City of St. Louis Port Authority Dennis G. Coleman Director	Date 8/28/89			

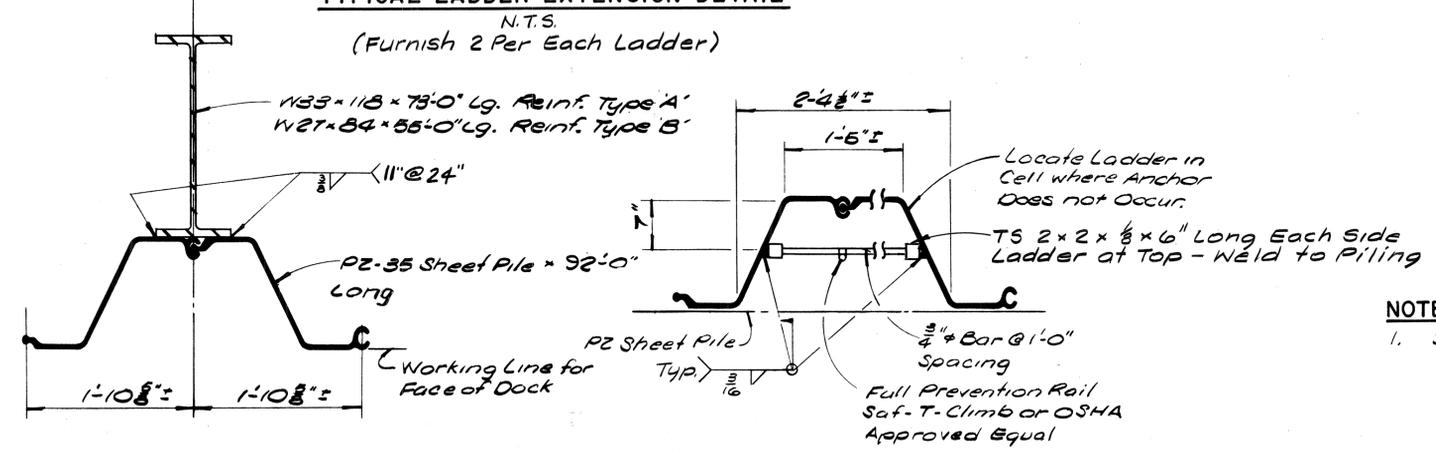


Excavate This Area As Required To Expose Existing Construction To Be Extended And To Relieve Existing Cantilevered Sheet Piling Prior To Installing Rock Anchors. See General Bulkhead Construction Procedure, Note 2 Drawing S6.

SECTION C
Scale: 1/4" = 1'-0"



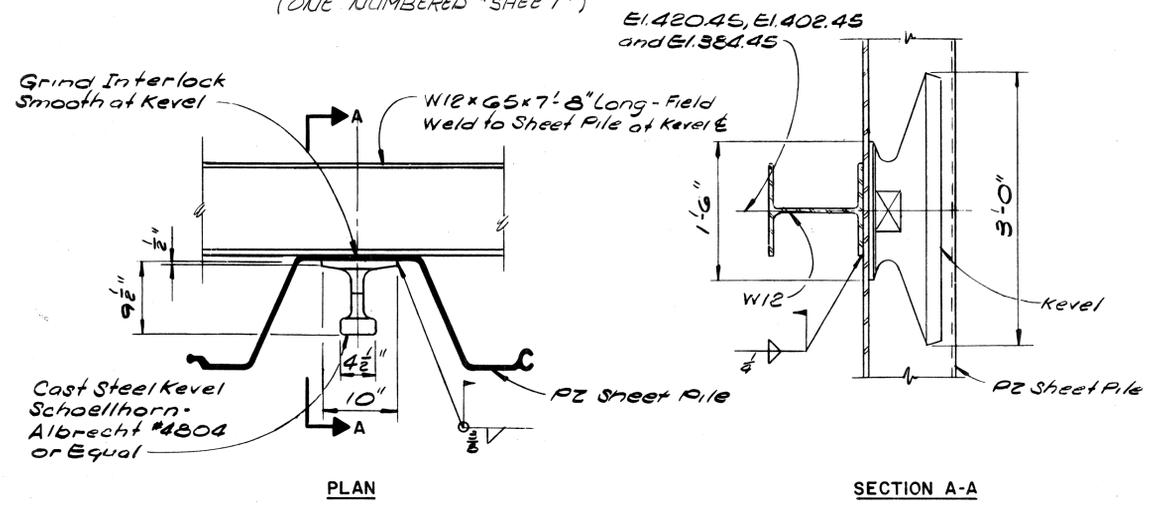
TYPICAL LADDER EXTENSION DETAIL
N.T.S.
(Furnish 2 Per Each Ladder)



TYPICAL SHEET PILE SECTION
Scale: 1" = 1'-0"
(ONE NUMBERED "SHEET")

TYPICAL LADDER DETAIL
Scale: 1" = 1'-0" (See Elevation Sheet S-3 for Locations)

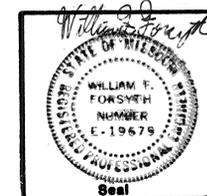
NOTES:
1. See Sheet S-6 for General Notes.



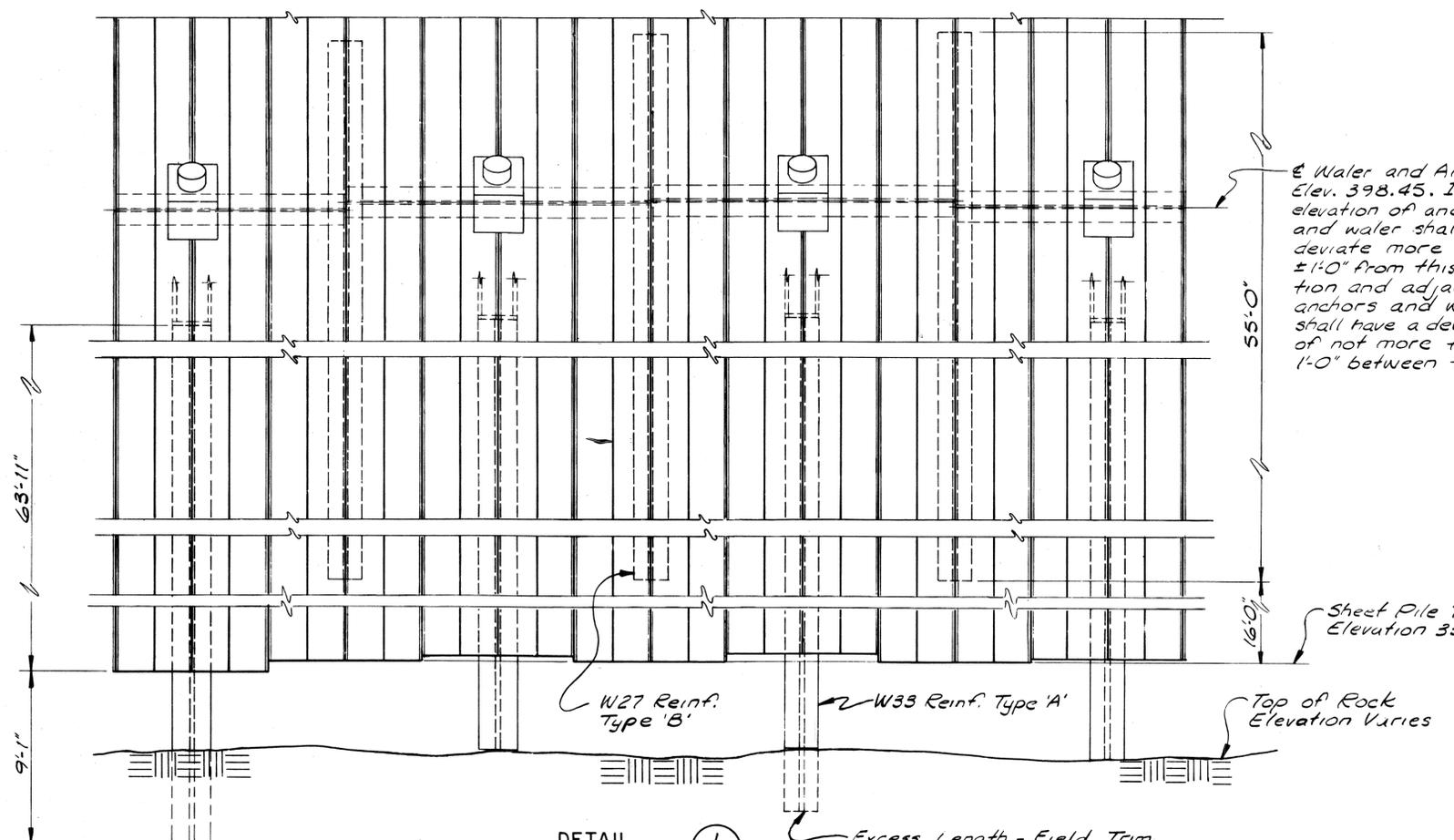
MOORING LEVEL DETAIL
Scale: 1" = 1'-0" (See Elevation Sheet S-3 for Locations)

REV. NO.	DRAWN	CHKD.	APPD.	DESCRIPTION	DATE
				AS-BUILT	1-22-91

SHEET PILE DETAILS Sheet No. S5 Total Sheets 6 of 7
EXTEND NORTH DOCK
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CITY OF ST. LOUIS Mayor Vincent C. Schoemehl, Jr.



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DETAIL 1
Scale 1/2" = 1'-0" S3/S6
(Some detail omitted for clarity)

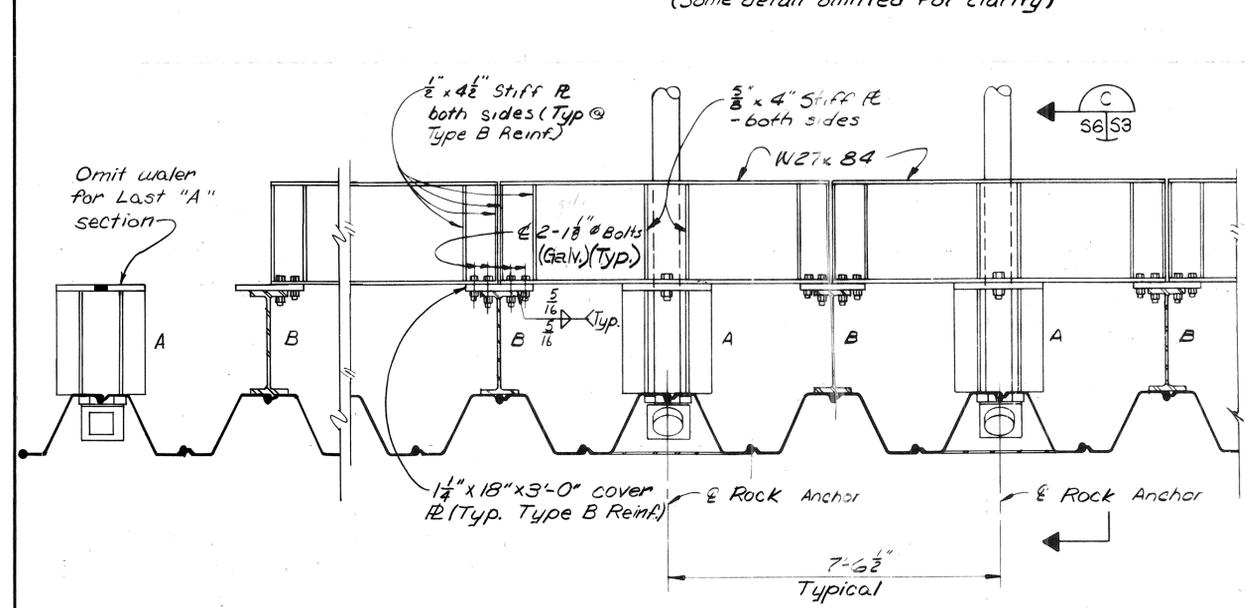
GENERAL BULKHEAD CONSTRUCTION PROCEDURE:

1. PROBE BULKHEAD ALIGNMENT FOR TOP OF ROCK. TRIM TYPE "A" REINFORCEMENT TO PROPER LENGTH AND DRIVE TO ROCK. DRIVE TYPE "B" REINFORCED PILE TO PRESET TIP ELEVATION.
2. FILL BULKHEAD TO APPROXIMATE LEVEL OF WALER (395.0). BULKHEAD SHALL NOT BE ALLOWED TO CANTILEVER WITH A GREATER HEIGHT OF FILL THAN ELEVATION 395.0.
3. INSTALL ANCHORS AND TENSION TO SMALLER OF TWO LOCKOFF LOADS SCHEDULED ON SHEET S4. DO NOT PROOF LOAD ANCHORS AT THIS TIME.
4. FILL BULKHEAD TO FINAL GRADE OR AS REQUIRED TO PROVIDE REACTION FOR ANCHOR TESTING.
5. ANCHORS MAY BE PROOF LOADED AT THIS TIME. LOCKOFF AT LARGER OF TWO VALUES SCHEDULED ON SHEET S4.
6. SCHEDULED LOCKOFF LOADS ON SHEET S4 ANTICIPATE RIVER LEVEL AT MEAN WATER ELEVATION 390 AND FOR LARGER LOCKOFF VALUE, BULKHEAD FILLED TO FINAL GRADE. IF OTHER CONDITIONS EXIST AT TIMES OF LOCKOFF, NOTIFY ENGINEER.
7. IF ANCHORS ARE INSTALLED AND PROOF LOADED FROM DRY SIDE OF BULKHEAD WITHOUT PUTTING REACTION FORCES INTO THE BULKHEAD, THE PRECEDING RESTRICTIONS (3-5) NEED NOT APPLY. REQUIREMENTS FOR LOCKOFF LOADS REMAIN.
8. DEPARTURES FROM THIS PROCEDURE REQUIRE REVIEW AND PRIOR APPROVAL OF ENGINEER.
9. IF NECESSARY, COFFERDAM CONSTRUCTION MAY BE BRACED TO THE BULKHEAD WALL. DETAILS OF THIS PROCEDURE, IF PROPOSED BY CONTRACTOR, REQUIRE REVIEW AND PRIOR APPROVAL OF ENGINEER.

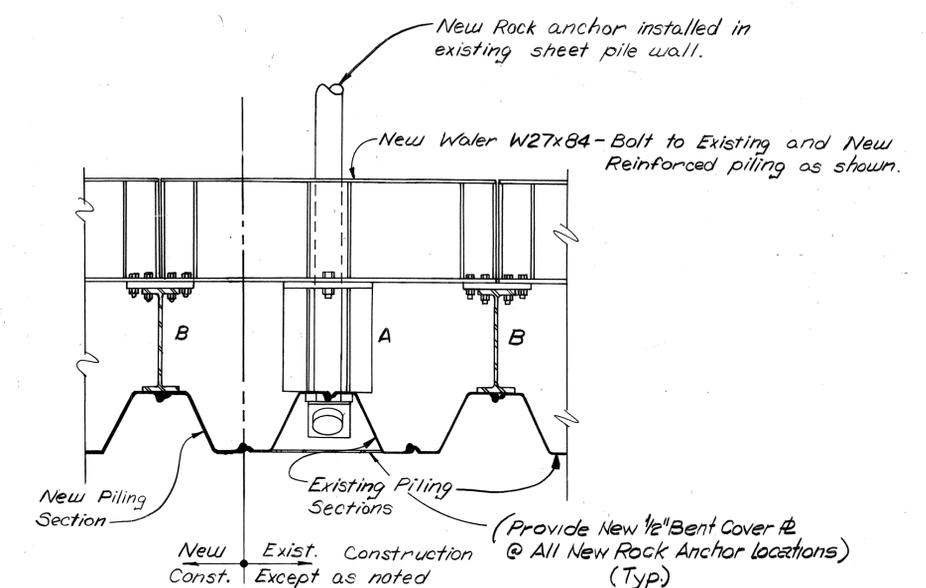
GENERAL NOTES:

1. ALL EXISTING CONSTRUCTION IS TO BE VERIFIED AT THE SITE. CLEARANCES TO EXISTING CONSTRUCTION ARE SHOWN APPROXIMATELY AND ARE TO BE FIELD VERIFIED.
2. ALL ITEMS SHOWN TO BE REMOVED SHALL BE REMOVED FROM THE SITE AND DISPOSED OF UNLESS SPECIFICALLY NOTED OTHERWISE. DEBRIS FROM DEMOLITION OF THE CONCRETE DOCK TOP SLAB MAY BE ALLOWED TO REMAIN ON THE SITE IF LEFT AT THE BOTTOM OF THE DREDGE FILL AND IF IT WILL NOT INTERFERE WITH ANCHOR INSTALLATION.
3. BACKFILL FOR BULKHEAD IS TO BE FREE DRAINING DREDGED FILL LOCALLY OBTAINED, IF ACCEPTABLE. FILL MATERIAL WITH MORE THAN 5% PASSING THE NUMBER 200 SIEVE IS NOT ACCEPTABLE. ABOVE PREVAILING RIVER LEVEL, THE DREDGE WATER SHALL BE PROPERLY DRAINED TO ALLOW THE FILL TO BE DEPOSITED ABOVE WATER. MINIMUM RELATIVE DENSITY FOR FILL PLACED ABOVE WATER SHALL BE 70% EXCEPT FOR THE TOP 5' OF FILL WHICH SHALL BE MINIMUM 80% OF MAXIMUM RELATIVE DENSITY. DREDGED SAND BACKFILL SHALL BE COMPACTED USING A 15 TON (MINIMUM) VIBRATORY COMPACTING ROLLER.
4. SEE SPECIFICATIONS FOR AGGREGATE SURFACE COURSE REQUIREMENTS.
5. ALL STEEL DOCK PILING, INCLUDING W27 AND W33 REINFORCEMENT, AND WALERS, ETC. SHALL CONFORM TO ASTM A572, GRADE 50, STEEL PILE SHALL BE DRIVEN TO ROCK OR TO PRACTICAL REFUSAL, AND ALL SPLICES OF PILING SHALL DEVELOP THE FULL MOMENT CAPACITY OF THE SECTION. CONTRACTOR SHALL PROVIDE AND INSTALL THE NUMBER OF SHEET PILE SECTIONS AS SHOWN ON SHEET S-3.
6. ROCK ANCHORS SHALL HAVE THE CAPACITIES SHOWN IN THE SCHEDULE ON SHEET S4 AND SHALL BE INSTALLED IN THE SEQUENCE DESCRIBED ON THIS DRAWING. DESIGN AND DETAILING OF ROCK ANCHORS, PRESTRESSING STEEL, ANCHORAGE COMPONENTS AND GROUTING SHALL BE THE RESPONSIBILITY OF THE ROCK ANCHOR MANUFACTURER. THE ANCHOR HEAD OF THE ROCK ANCHORS MAY NOT PROTRUDE BEYOND THE FACE OF THE BULKHEAD. SEE SPECIFICATIONS FOR TEST ANCHOR REQUIREMENTS.
7. STRUCTURAL STEEL DESIGN, FABRICATION, AND INSTALLATION PER A.I.S.C. SPECIFICATIONS. ALL STRUCTURAL STEEL (EXCEPT PILING AND WALERS) SHALL BE MINIMUM A.S.T.M. A-36 STEEL. ALL SHOP CONNECTIONS WELDED. ALL FIELD CONNECTIONS BOLTED WITH A-325-X, TYPE 1 BOLTS PER RECOMMENDED A.I.S.C. SPECIFICATION UNLESS NOTED. ALL BOLTS TO BE GALVANIZED PER A.S.T.M. A-153 UNLESS NOTED, PROVIDE OVERSIZE NUTS AS REQUIRED. ALL SHOP AND FIELD WELDS ARE TO BE MADE WITH E70XX ELECTRODE. ALL WELDING TO CONFORM TO A.W.S. CODE AND BE PERFORMED BY A.W.S. CODED WELDERS. FURNISH DATED CERTIFICATION OF WELDERS QUALIFICATIONS.
8. NO OPENING SHALL BE PLACED IN ANY STRUCTURAL MEMBER UNTIL THE LOCATION HAS BEEN APPROVED BY THE ENGINEER.
9. STRUCTURAL DRAWINGS TO BE USED IN CONJUNCTION WITH CIVIL DRAWINGS. ANY DISCREPANCIES BETWEEN DRAWINGS ARE TO BE REPORTED TO THE ENGINEER FOR PROPER INTERPRETATION.
10. DESIGN LOADS
 - A. 500 PSF UNIFORM OPERATING SURCHARGE
 - B. ADDITIONAL 1000 PLF LINE LOAD @ 45 FEET FROM DOCK FACE
 - C. RIVER @ ELEVATION 377
 - D. SOIL PROPERTIES:

φ = 30°	6 = 0°	C = 0 TO ELEV. 370
φ = 36°	6 = 0°	C = 0 TO ELEV. 340
φ = 38°	6 = 0°	C = 0 TO ROCK.



TYPICAL WALER DETAIL 2
S3/S7



REV. NO.	DRAWN	CHKD.	APPD.	DESCRIPTION	DATE
				AS-BUILT	1-22-91
WALER DETAILS AND NOTES					Sheet No. S6
EXTEND NORTH DOCK ST. LOUIS MUNICIPAL TERMINAL ONE NORTH MARKET STREET					Total Sheets 7 of 7
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