

LOCUS MAP
SCALE: 1"=1,200'

TOWN OF BEDFORD, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS

SELECTMEN

WALTER ST. ONGE III, CHAIR

MARK SIEGENTHALER

MICHAEL ROSENBERG

CATHERINE CORDES

WILLIAM MOONAN

TOWN MANAGER

RICHARD T. REED

DIRECTOR OF PUBLIC WORKS

RICHARD A. WARRINGTON, P.E.

OLD WATER SUPPLY DAM REHABILITATION

MASSACHUSETTS OFFICE OF DAM SAFETY ID NO.: 4-9-23-2

NATIONAL DAM ID NO. MA03243

MASSACHUSETTS OFFICE OF DAM SAFETY HAZARD RATING: SIGNIFICANT

MASSACHUSETTS OFFICE OF DAM SAFETY SIZE RATING: SMALL

MAY 2012

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Weston & Sampson

Five Centennial Drive, Peabody, Massachusetts 01960-7985

LEGEND

DESCRIPTION	EXISTING	PROPOSED
TEMPORARY WATER		---4"W---
STORM DRAIN	— D —	— 18"D RCP —
GAS	— G —	— 4"G —
ELECTRIC	— E —	— E —
TELEPHONE	— T —	— T —
STORM DRAIN MANHOLE	⊙	● SDMH
ELECTRICAL MANHOLE	⊙	● EMH
TELEPHONE MANHOLE	⊙	● TMH
CATCH BASIN	□	■ CB
HYDRANT	⊕	+
UTILITY POLE	⊙	+
GUY POLE	⊙	
LIGHT POST	☆	
EDGE OF PAVEMENT		
EDGE OF UNPAVED ROAD		
CURB		
STONE WALL		
RETAINING WALL	RET WALL	RET WALL
FENCE	— x — x —	— x — x —
INDIVIDUAL DECIDUOUS TREE	⊙	⊙
INDIVIDUAL EVERGREEN TREE	⊙	⊙
TREE LINE		
SURVEY MARKER	□	□
PROPERTY LINE	— P —	— P —
EASEMENT LINE	— E —	— E —
LIMIT OF WORK		
SPOT ELEVATIONS	x 141.5	x 141.5
CONTOUR LINES	— 56 —	— 56 —
DEPRESSION CONTOUR LINES	— 56 —	— 56 —
WETLAND		
WETLAND FLAGS		
RIPRAP		
BOLLARD	○ B	● B
SIGN		
TEMPORARY BENCH MARK (TBM)	⊕	⊕
BORING/MONITORING WELL	⊕ B-10	⊕ B-11
PROBE	⊕ P-10	⊕ P-11
STRAW BALES		
ROCK OUTCROP		
DRAINAGE DITCH / SWALE		
TREE TO BE REMOVED		⊗
SILT CURTAIN		— □ — □ — □ —
SURVEY BOUND		⊗
ACM SAMPLE LOCATION	Ⓐ	
LEAD SAMPLE LOCATION	Ⓛ	

NOTE: ITEMS SHOWN IN THE LEGEND MAY NOT BE PRESENT IN THESE PLANS

PROJECT COMPONENTS

- MOBILIZATION AND DEMOBILIZATION FROM THE SITE;
- EROSION AND SEDIMENTATION CONTROL INSTALLATION;
- ACCESS ROAD IMPROVEMENT;
- CLEARING AND GRUBBING;
- DECOMMISSION/BACKFILL WELL NO. 6. RESTORE BUILDING AND AREA TO HISTORIC APPEARANCE (INCLUDING HANDLING AND DISPOSING MATERIALS CONTAINING LEAD PAINT);
- TEMPORARY COFFERDAM SYSTEM INSTALLATION AND MAINTENANCE;
- WATER LEVEL/MANAGEMENT/FLOW MAINTENANCE IN WORK AREA AND OLD WATER SUPPLY POND;
- DECOMMISSION EXISTING DRAIN PIPES;
- MONITORING WELL INSTALLATION;
- EARTHWORK INCLUDING EXCAVATION, BACKFILLING, RE-GRADING, AND SLOPE ARMORING;
- REINFORCED CONCRETE INSTALLATION;
- PEDESTRIAN BRIDGE INSTALLATION;
- WETLAND REPLICATION;
- SITE FENCING AND PROJECT PLAQUE INSTALLATION;
- SURFACE RESTORATION.

GENERAL NOTES

1. THE CONTRACTOR SHALL CALL DIGSAFE AT 1-888-344-7233 AT LEAST 72 HOURS, SATURDAYS, SUNDAYS, AND HOLIDAYS EXCLUDED, PRIOR TO EXCAVATING AT ANY LOCATION. A COPY OF THE DIGSAFE PROJECT REFERENCE NUMBER(S) SHALL BE GIVEN TO THE OWNER PRIOR TO EXCAVATION.
2. LOCATIONS OF EXISTING PIPES, CONDUITS, UTILITIES, FOUNDATIONS AND OTHER UNDERGROUND OBJECTS ARE NOT WARRANTED TO BE CORRECT AND THE CONTRACTOR SHALL HAVE NO CLAIM ON THAT ACCOUNT SHOULD THEY BE OTHER THAN SHOWN.
3. ALL PAVEMENT DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED IN ACCORDANCE WITH THE SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS.
4. ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND PAYMENT LIMITS SHALL BE RESTORED AT NO ADDITIONAL COST TO THE OWNER.
5. THE CONTRACTOR SHALL NOT STORE ANY APPARATUS, MATERIALS, SUPPLIES, OR EQUIPMENT ON DRAINAGE STRUCTURES OR WITHIN 100 FEET OF WETLANDS UNLESS IDENTIFIED ON THE PLANS AS THE STAGING AND STOCKPILE AREA. THIS AREA WILL BE PROTECTED FROM EROSION AND CONTAMINATION INTO ANY RESOURCE AREA BY EROSION AND SEDIMENTATION CONTROL AS SHOWN ON SHEET D-3.
6. THE BASE PLAN IS BASED ON A GLOBAL POSITIONING SYSTEM (GPS) AND A TOTAL STATION SURVEY CONDUCTED BY WESTON & SAMPSON IN APRIL AND AUGUST 2009.
7. THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 1988).
8. THE HORIZONTAL DATUM IS THE NORTH AMERICAN DATUM OF 1983 (NAD 1983).
9. BENCHMARKS USED FOR THE SURVEY AND PROVIDED FOR CONSTRUCTION ARE TWO HUB AND TACK SURVEY STATIONS LABELED TBM-1 AND TBM-2 ON SHEETS C-1 AND C-3.
10. WETLAND AREAS WERE DELINEATED BY A WESTON & SAMPSON CERTIFIED WETLAND SCIENTIST IN APRIL 2009 AND MAY 2011. THE WETLAND FLAGS WERE LOCATED VIA TOTAL STATION AND GPS SURVEY.
11. EXISTING CONDITIONS ARE BASED PRIMARILY ON THE REFERENCED TOPOGRAPHIC SURVEY. CURRENT CONDITIONS MAY VARY FROM THOSE SHOWN ON THE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE SITE TO INSPECT THE CURRENT CONDITIONS PRIOR TO SUBMITTING BID DOCUMENTS. ANY VARIATIONS FROM THE CONDITIONS SHOWN, WHICH WILL IMPACT THE CONSTRUCTION COST OR METHOD SHOULD BE BROUGHT TO THE ENGINEER'S ATTENTION IN WRITING AND SHOULD BE INCLUDED IN THE BID PRICE. NO ADDITIONAL COMPENSATION WILL BE APPROVED DUE TO OBSERVABLE SURFICIAL SITE CONDITIONS NOT SHOWN ON THE DRAWINGS.
12. RIGHT AND LEFT ARE REFERENCED AS THOUGH STANDING IN OLD WATER SUPPLY POND FACING DOWNSTREAM (NORTH).

13. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING, THROUGHOUT CONSTRUCTION, ALL EROSION AND SEDIMENTATION CONTROLS AS SHOWN ON SHEET C-3.
14. INSTALL AND MAINTAIN SITE PERIMETER FENCING WHERE NECESSARY AND PREVENT ACCESS BY THE PUBLIC TO THE SITE AT ALL TIMES DURING CONSTRUCTION. ALL SUCH WORK SHALL BE CONSIDERED INCIDENTAL TO THE WORK.
15. INSTALL COFFERDAM SYSTEM AT LOCATION ON SHEET C-3 AND DEWATER THE UPSTREAM SLOPE AREA OF THE DAM TO PERFORM CONSTRUCTION IN-THE-DRY. LOWERING THE WATER LEVEL IN OLD WATER SUPPLY POND WILL NOT BE PERMITTED. DIVERT FLOW THROUGH THE SITE TO THE DOWNSTREAM CHANNEL DURING CONSTRUCTION TO MAINTAIN NORMAL POOL IN OLD WATER SUPPLY POND TO THE EXTENT PRACTICABLE. REFER TO THE OLD WATER SUPPLY POND INFLOW-STAGE RELATIONSHIP BELOW FOR GUIDANCE IN PREPARING A POND LEVEL MANAGEMENT PLAN FOR CONSTRUCTION.
16. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION DEWATERING AND SURFACE WATER CONTROL TO ACHIEVE FIRM, DRY EXCAVATION SUBGRADE CONDITIONS AND ALLOW ALL CONSTRUCTION IN-THE-DRY. MAINTAIN GROUNDWATER LEVEL 24-INCHES BELOW THE EXCAVATION/BACKFILL LEVEL AT ALL TIMES. A DEWATERING SEDIMENT BASIN SHALL BE USED AS NEEDED TO PREVENT CONVEYING SEDIMENTS INTO THE DOWNTOWN CHANNEL.
17. BASED ON AVAILABLE RECORDS AND RECENTLY COMPLETED FIELD EXPLORATIONS, THERE IS A CONCRETE OR MORTARED STONE MASONRY COREWALL THROUGH THE DAM EMBANKMENT. DURING CONSTRUCTION, THE COREWALL SHALL BE PRESERVED TO THE EXTENT PRACTICABLE.
18. THE CONTRACTOR SHALL MAINTAIN SIDE SLOPES AND DRAINAGE SWALES DURING CONSTRUCTION TO PREVENT PONDING AND EROSION.
19. THE CONTRACTOR SHALL MAINTAIN EXCAVATION SLOPES DURING CONSTRUCTION IN ACCORDANCE WITH THE MINIMUM AND MAXIMUM SLOPES SPECIFIED IN THE CONTRACT AND AS REQUIRED BY STATE OR FEDERAL EXCAVATION SAFETY REGULATIONS. ANY LATERAL SUPPORT SYSTEM USED IN THE FIELD SHALL BE INCIDENTAL TO THE APPROPRIATE WORK ITEM AND CONFORM TO SPECIFICATION 02300.
20. UNSUITABLE MATERIALS MAY BE ENCOUNTERED IN THE EXCAVATIONS. THE CONTRACTOR WILL BE REQUIRED TO OVER-EXCAVATE, AS REQUIRED BY THE ENGINEER, TO SUITABLE SUBGRADE. THE CONTRACTOR SHALL REPLACE THE EXCAVATED MATERIAL WITH SUITABLE FILL MATERIAL AS REQUIRED BY THE ENGINEER. FILTER FABRIC MAY BE REQUIRED AT THE ENGINEER'S DISCRETION, AND IS CONSIDERED INCIDENTAL TO THE WORK.
21. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND PROPERLY DISPOSING OF EXCESS FILL, TREES, PAVEMENT, AND DEMOLITION DEBRIS RESULTING FROM CONSTRUCTION ACTIVITIES AT A PROPER OFF-SITE AREA IN ACCORDANCE WITH SPECIFICATION 02300 AND 02230.
22. SAMPLING/TESTING FOR ASBESTOS CONTAINING MATERIALS (ACM) AND LEAD PAINT WERE PERFORMED ON WELL NO. 6. PAINT CHIPS TAKEN FROM THE TIMBER ROOF SUPPORTS CONTAIN LEVELS OF LEAD GREATER THAN EPA RESIDENTIAL STANDARDS. REFER TO SHEET D-2 AND THE SPECIFICATION SECTION 13282 FOR MORE INFORMATION.
23. REFER TO SPECIFICATION SECTION 01014 FOR ADDITIONAL INFORMATION AND REQUIREMENTS REGARDING THE SCOPE AND SEQUENCE OF WORK.

ABBREVIATIONS

BM	BENCHMARK
CONC	CONCRETE
DIA	DIAMETER
ELEV. EL.	ELEVATION
EXIST	EXISTING
FT	FEET, FOOT
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
EL	PROPERTY LINE
SECT	SECTION
SPEC	SPECIFICATION
TYP	TYPICAL
W/	WITH
W/O	WITHOUT
WF	WETLAND FLAG
B	BORING
MW	MONITORING WELL
ACM	ASBESTOS CONTAINING MATERIAL
CDF	CONTROLLED DENSITY FILL

PROJECT PLAQUE

1. FURNISH AND INSTALL PERMANENT BRONZE PLAQUE (16 IN. WIDE BY 12 IN. HIGH BY 1/4 IN. THICK WITH RAISED LETTERING AS FURNISHED BY MCGANN BRONZE CO. OF CAMBRIDGE, MASSACHUSETTS OR APPROVED EQUAL. SEE SPECIFICATION SECTION 10420) ON UPSTREAM SIDE OF TW1 WINGWALL AS APPROVED BY THE ENGINEER ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
2. THE PLAQUE SHALL STATE THE FOLLOWING INFORMATION:
 - OLD WATER SUPPLY DAM
 - TOWN OF BEDFORD, MASSACHUSETTS
 - NID NO.=MA03243
 - STATE ID NO.=4-9-23-2
 - HAZARD CLASS=SIGNIFICANT
 - SIZE RATING=SMALL
 - DATE OF REHABILITATION
 - DAM CREST EL. 137 (NAVD88)
 - PRIMARY SPILLWAY WEIR CREST EL. 134.5 (NAVD88)

OLD WATER SUPPLY POND INFLOW-STAGE RELATIONSHIP

STORM EVENT	INDEX PRECIPITATION IN 24-HOURS (IN.)	PEAK INFLOW (CFS)	PEAK STAGE (EL.)	INCREMENTAL WATER SURFACE ELEVATION INCREASE ABOVE EL. 134.5 (FT.)
2-YEAR	3.1	15	135.2	0.7
5-YEAR	4.0	33	135.7	1.2
10-YEAR	4.5	45	136.0	1.5
25-YEAR	5.3	66	136.5	2.0
50-YEAR	6.0	86	136.6	2.1
100-YEAR	6.5	102	136.7	2.2

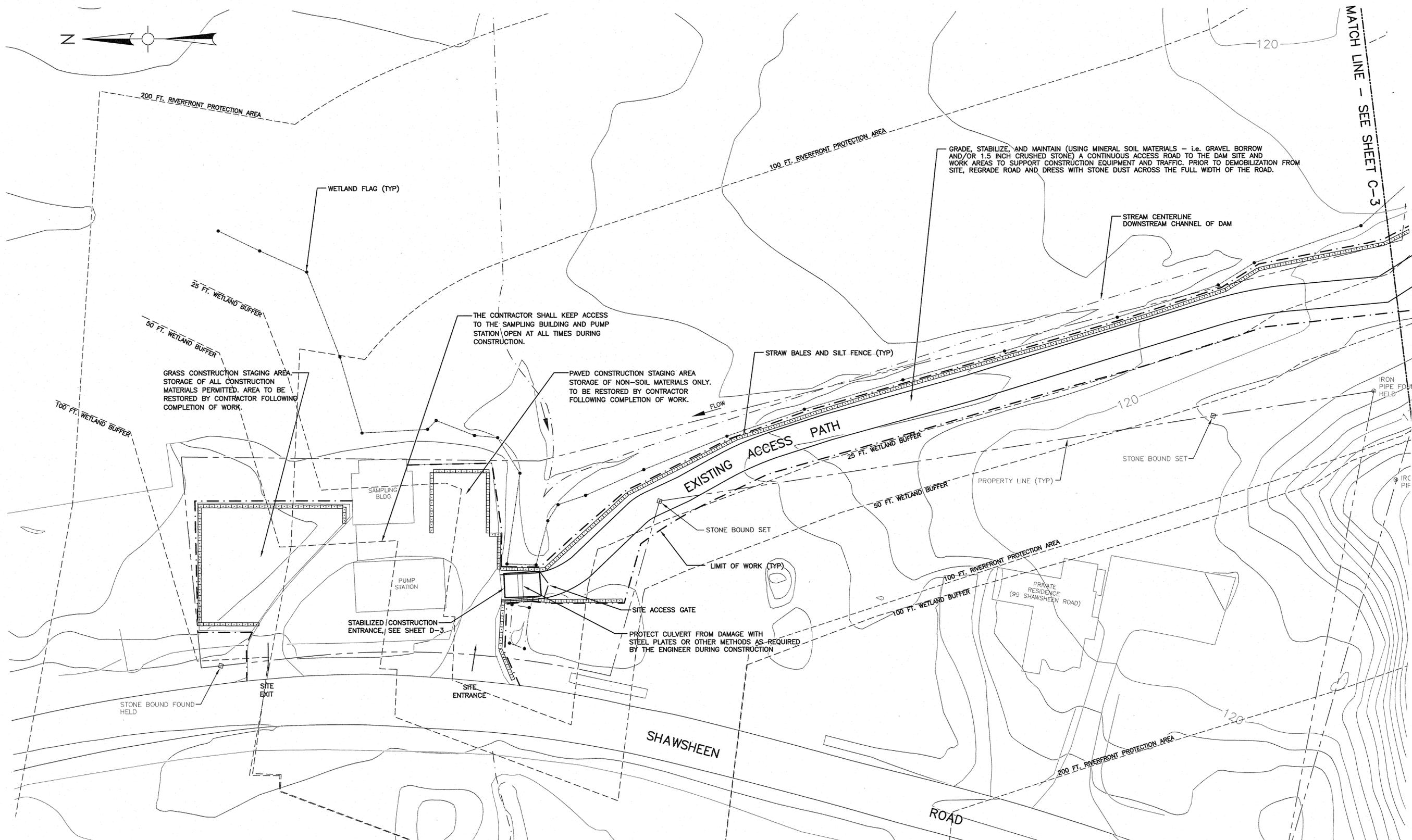
NOTES:

1. NORMAL BASE FLOW IS ASSUMED TO BE APPROXIMATELY 0.5 CFS.
2. THE WATER SURFACE ELEVATION IN THE POND AT THE START OF STORM EVENTS IN THE ABOVE TABLE IS ASSUMED TO BE EL. 134.5 (NORMAL POOL).
3. PEAK STAGE VALUES ARE ESTIMATED FOR THE EXISTING SPILLWAY CONFIGURATION BASED ON COMPUTER MODELING OF THE WATERSHED HYDROLOGY AND THE HYDRAULICS OF THE EXISTING SPILLWAY. THIS INFORMATION IS PROVIDED AS A GUIDELINE ONLY. THE CHARACTERISTICS OF LARGE STORMS AND AVAILABLE SPILLWAY WEIR LENGTH MAY DIFFER FROM THE ASSUMPTIONS USED TO DEVELOP THIS TABLE. THE INFORMATION IS PROVIDED TO AID THE CONTRACTOR IN PREPARING A POND LEVEL MANAGEMENT PLAN SHOULD A STORM EVENT OCCUR DURING CONSTRUCTION.
4. THE MAXIMUM OUTFLOW DURING CONSTRUCTION DRAINAGE ACTIVITIES SHOULD BE LESS THAN 1.1 CFS OR APPROXIMATELY 500 GPM. THE RATE OF DRAINAGE IN THE CONSTRUCTION AREA SHALL NOT EXCEED 1 FT. PER DAY.
5. DURING CONSTRUCTION, THE POND LEVEL OUTSIDE THE COFFERDAM SHALL BE MAINTAINED BETWEEN EL. 134.5 AND EL. 135.0 DURING NON-STORM CONDITIONS.
6. IN ALL CASES, WORK SHALL BE SUSPENDED UNTIL WATER LEVELS ARE CONTROLLED DURING AND FOLLOWING STORM EVENTS DURING CONSTRUCTION.
7. THE CAPACITY AND CONDITION OF THE DOWNSTREAM CHANNEL SHOULD BE EVALUATED PRIOR TO DISCHARGING FLOW FROM OLD WATER SUPPLY POND TO THE DOWNSTREAM AREA.

No.	Date	Dr. By	Chk. By	App. By	Description
					P R O V E D
					May 16, 2012
					DATE



TOWN OF BEDFORD, MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS	OLD WATER SUPPLY DAM	SCALE: G-1 AS SHOWN	CONTRACT: 2100667	JOB NO. 2100667	DR. BY: DRT	CHK. BY: BTG	APP. BY: MPM
ABBREVIATIONS, NOTES AND LEGEND				FILE NO. 192-66			

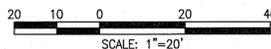


ENVIRONMENTAL NOTES:

1. SITE IS NOT WITHIN 100-YEAR FLOOD PLAIN.
2. LIMIT OF WORK IS WITHIN 100 FT. WETLANDS BUFFER ZONE.
3. LIMIT OF WORK IS WITHIN 200 FT. RIVER PROTECTION AREA ASSOCIATED WITH THE DISCHARGE CHANNEL OF THE DAM.

PLAN

SCALE: 1" = 20'



SCALE: 1"=20'

GENERAL NOTES:

1. BASE PLAN BASED ON GIS DATA PROVIDED TO WESTON & SAMPSON BY THE TOWN OF BEDFORD.
2. WETLAND AREAS ALONG THE STAGING AND ACCESS AREAS WERE DELINEATED BY WESTON & SAMPSON IN MAY 2011. WETLAND FLAGS WERE LOCATED VIA GPS SURVEY.
3. PROPERTY LINE INFORMATION WAS TAKEN FROM A PLAN TITLED "SET BOUNDS, LOCATE WETLANDS" DATED JUNE 7, 2011 BY THE BSC GROUP, BOSTON, MA.

MATCH LINE - SEE SHEET C-3

Weston & Sampson
 Five Centennial Drive, Peabody, MA 01960
 (978) 632-1900 (800) SAMPSON
 www.westonandsampson.com

No.	Date	Dr. By	Ch. By	App. By	Description
1	May 16, 2011				PROFESSIONAL ENGINEER



TOWN OF BEDFORD, MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS OLD WATER SUPPLY DAM	CONSTRUCTION ACCESS AND STAGING PLAN	FILE NO. 192-64	CADD NO. SITEPLAN AS SHOWN	CONTRACT: -	JOB NO. 2100667	DRY BY RWS	DSN BY BTG	CHK BY BTG	APP BY BTG
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C:\Bedford\Water Supply Dam - 140323A\Civil\04 Water Supply Dam\Drawings\STEP\04.dwg

MATCH LINE - SEE SHEET C-2

GRADE, STABILIZE, AND MAINTAIN (USING MINERAL SOIL MATERIALS - i.e. GRAVEL BORROW AND/OR 1.5 INCH CRUSHED STONE) A CONTINUOUS ACCESS ROAD TO THE DAM SITE AND WORK AREAS TO SUPPORT CONSTRUCTION EQUIPMENT AND TRAFFIC. PRIOR TO DEMOBILIZATION FROM SITE, REGRADE ROAD AND DRESS WITH STONE DUST ACROSS THE FULL WIDTH OF THE ROAD.

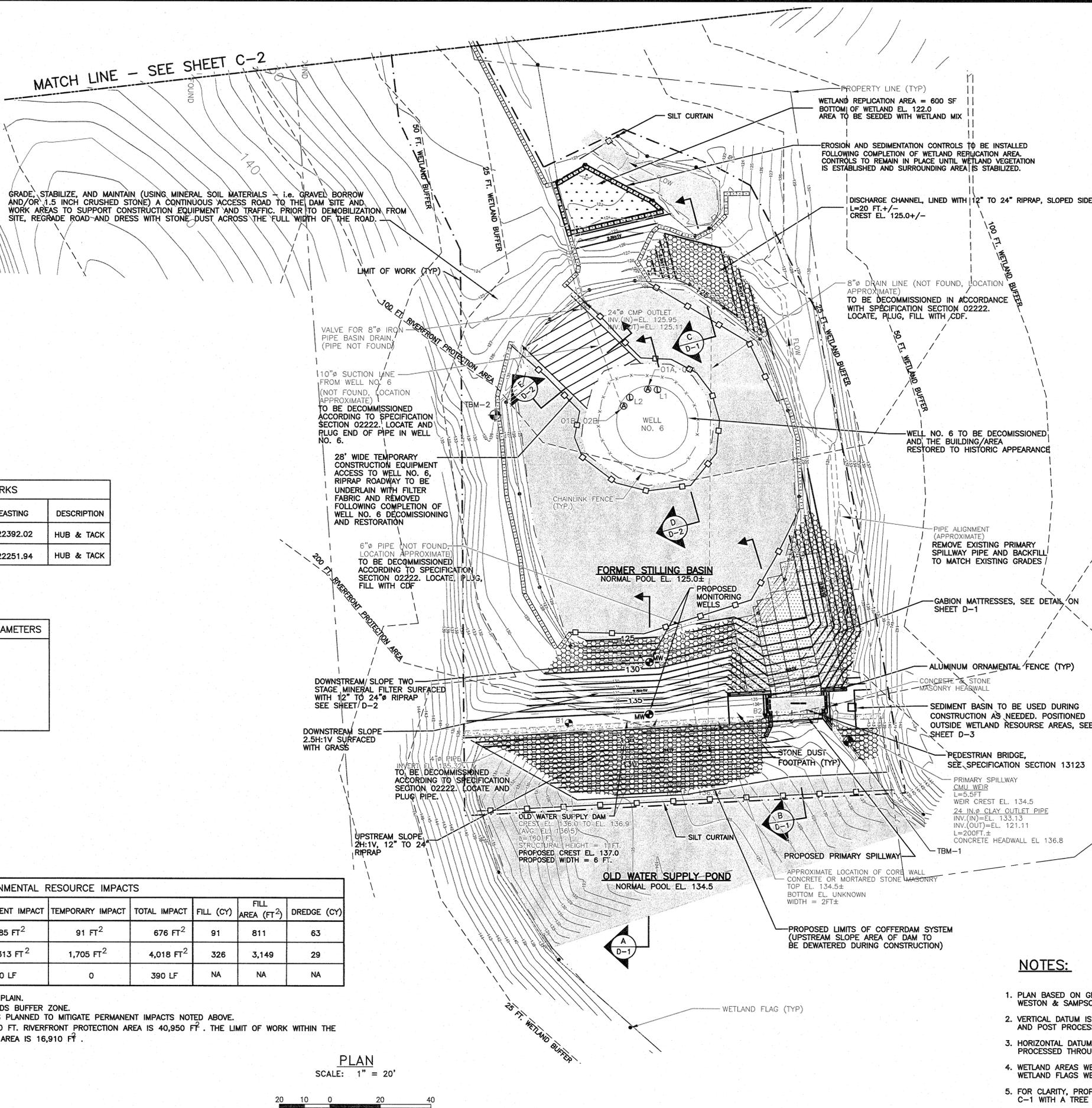
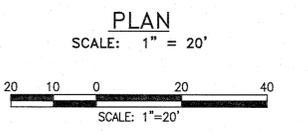


CONSTRUCTION BENCHMARKS				
DESIGNATION	ELEVATION	NORTHING	EASTING	DESCRIPTION
TBM-1	135.07	3003584.59	722392.02	HUB & TACK
TBM-2	129.10	3003715.84	722251.94	HUB & TACK

PROPOSED PRIMARY SPILLWAY DESIGN PARAMETERS	
WEIR CREST ELEVATION =	134.5
BROAD CRESTED WEIR LENGTH =	20 FT.
BROAD CRESTED WEIR BREADTH =	2 FT.
SPILLWAY DESIGN FLOOD =	100 YEAR STORM EVENT
DESIGN OUTFLOW =	110 CFS
DESIGN HEAD =	1.5 FT.

ENVIRONMENTAL RESOURCE IMPACTS						
ITEM	PERMANENT IMPACT	TEMPORARY IMPACT	TOTAL IMPACT	FILL (CY)	FILL AREA (FT ²)	DREDGE (CY)
BORDERED VEGETATED WETLAND (BVW)	585 FT ²	91 FT ²	676 FT ²	91	811	63
LAND UNDER WATER (LUW)	2,313 FT ²	1,705 FT ²	4,018 FT ²	326	3,149	29
BANK	390 LF	0	390 LF	NA	NA	NA

- NOTES:
1. SITE IS NOT WITHIN THE 100-YEAR FLOOD PLAIN.
 2. LIMIT OF WORK IS WITHIN 100 FT. WETLANDS BUFFER ZONE.
 3. 600 FT² OF BVW WETLAND REPLICATION IS PLANNED TO MITIGATE PERMANENT IMPACTS NOTED ABOVE.
 4. THE LIMIT-OF-WORK WITHIN THE 0 TO 100 FT. RIVERFRONT PROTECTION AREA IS 40,950 FT². THE LIMIT OF WORK WITHIN THE 100 TO 200 FT. RIVERFRONT PROTECTION AREA IS 16,910 FT².



NOTES:

1. PLAN BASED ON GPS AND TOTAL STATION SURVEY CONDUCTED BY WESTON & SAMPSON IN APRIL AND AUGUST 2009.
2. VERTICAL DATUM IS NAVD 1988 ESTABLISHED BY STATIC GPS SURVEY AND POST PROCESSED THROUGH OPUS (ONLINE POSITIONING USER SERVICE).
3. HORIZONTAL DATUM IS NAD 1983 ESTABLISHED BY GPS SURVEY AND POST PROCESSED THROUGH OPUS.
4. WETLAND AREAS WERE DELINEATED BY WESTON & SAMPSON IN APRIL 2009. WETLAND FLAGS WERE LOCATED VIA TOTAL STATION SURVEY.
5. FOR CLARITY, PROPOSED TREES TO BE CLEARED AND GRUBBED ARE SHOWN ON SHEET C-1 WITH A TREE REMOVAL SCHEDULE.

Weston & Sampson
Five Centennial Drive, Peabody, MA 01960
(978) 532-1900 (800) SAMPSON
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REGISTERED PROFESSIONAL ENGINEER
DATE: May 16, 2017

TOWN OF BEDFORD, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

PROPOSED SITE CONDITIONS
OLD WATER SUPPLY DAM

CONTRACT: 2100667
JOB NO.: 2100667
SCALE: AS SHOWN

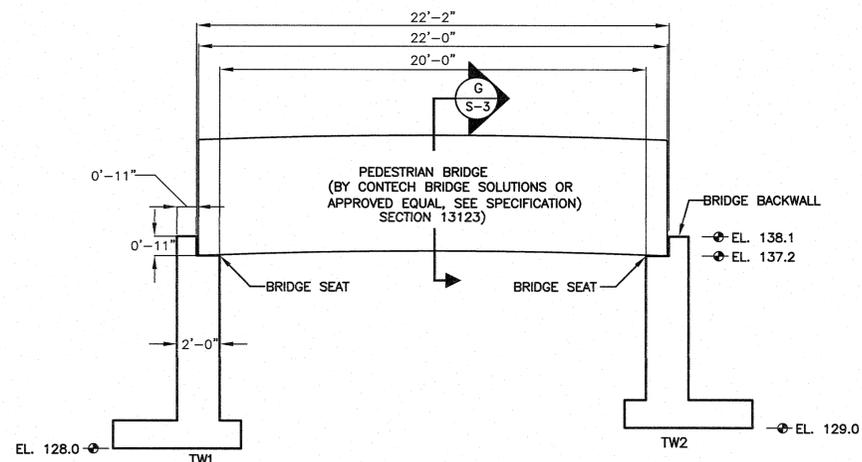
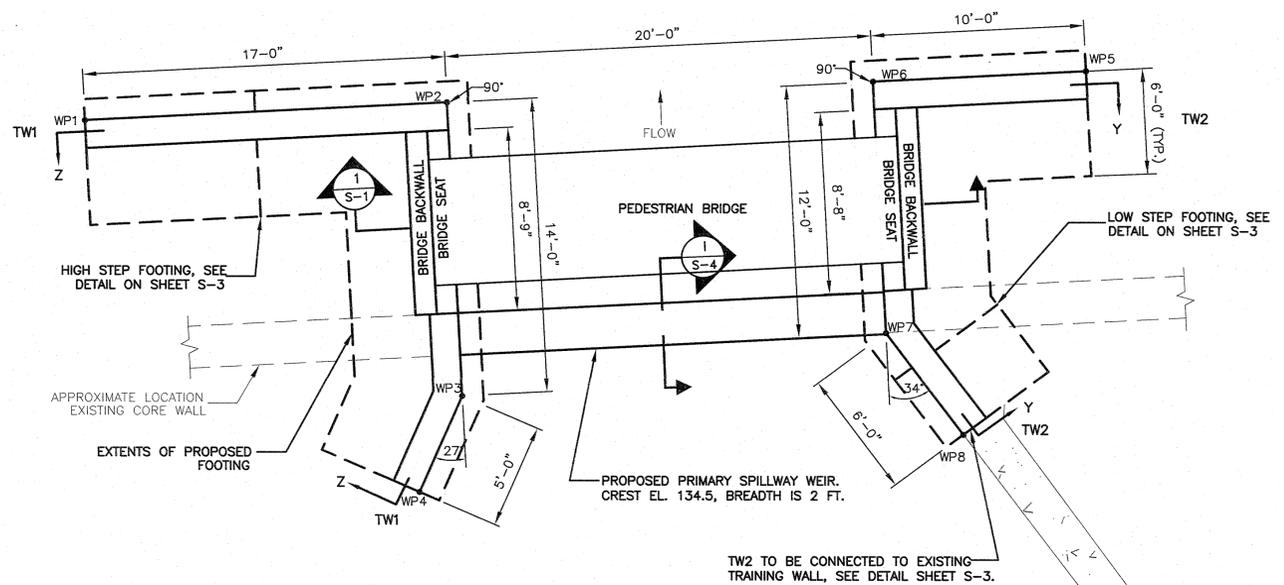
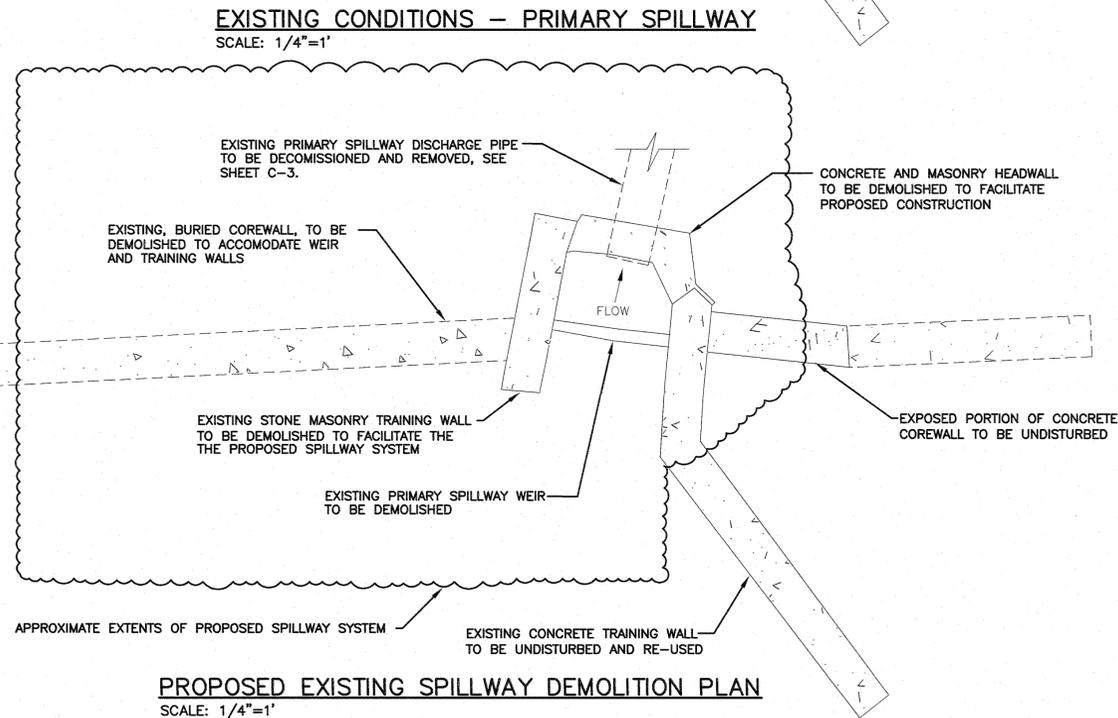
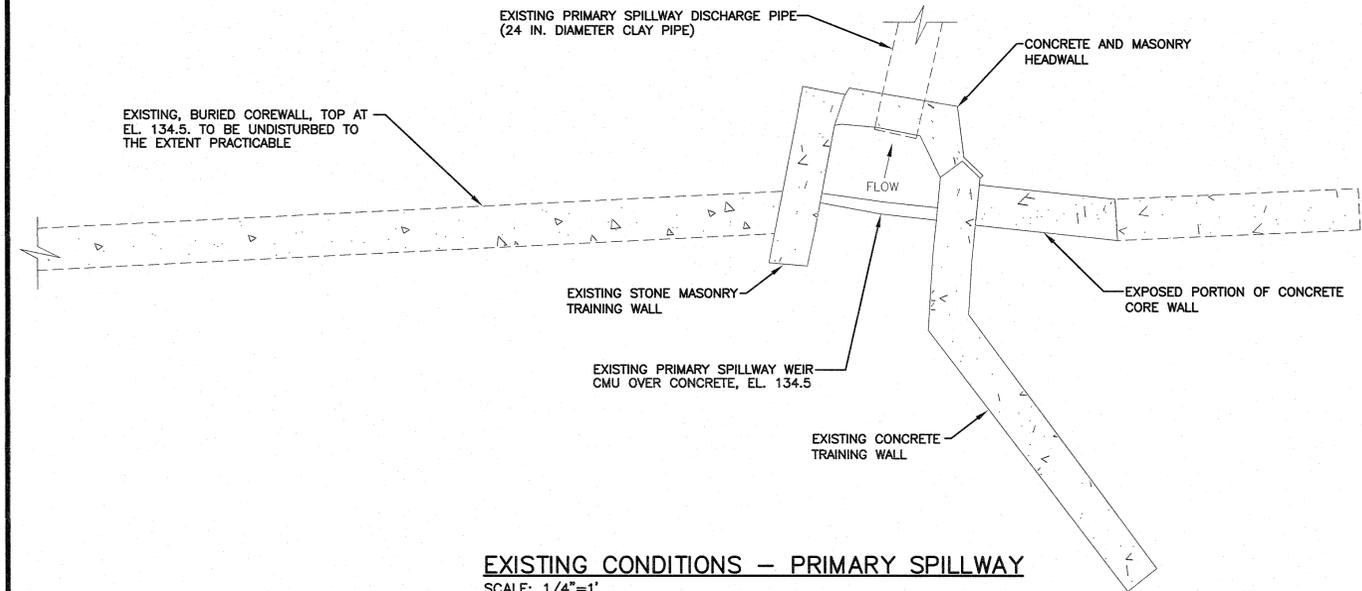
DR. BY: RWS
CHK. BY: BTG
APP. BY: MPM

FILE NO.: 192-63

SHEET PLAN

FILE NO.: 192-63

SHEET PLAN



WORKING POINTS (WP)

POINT NO.	NORTHING	EASTING
1	3003603.9344	722344.2307
2	3003604.8510	722361.2061
3	3003590.8691	722361.9158
4	3003586.2993	722359.9094
5	3003606.3720	722391.1675
6	3003605.8650	722381.1804
7	3003593.8804	722381.7887
8	3003589.0447	722385.4118

NOTES:

- NORTHING AND EASTING RELATIVE TO THE MASSACHUSETTS STATE PLANE HORIZONTAL COORDINATE SYSTEM (NAD 83)
- ALL WORKING POINTS ARE LOCATED ON EXPOSED FACE OF WALLS AS SHOWN ON PROPOSED PRIMARY SPILLWAY PLAN.

STRUCTURAL DESIGN NOTES:

ACTIVE SIDE WALLS

ALLOWABLE BEARING PRESSURE = 2.5 TSF
 ANGLE INTERNAL FRICTION = 32°
 DRY UNIT WEIGHT SOIL = 115 PCF
 SATURATED UNIT WEIGHT SOIL = 130 PCF
 GROUNDWATER DESIGN ELEVATION = EL.136
 EARTHQUAKE LOADING = MSBC
 COEFFICIENT ACTIVE EARTH PRESSURE = 0.277
 ANGLE OF WALL FRICTION = 20°
 OVERTURNING FACTOR OF SAFETY = 1.5 (MSBC)
 SLIDING FACTOR OF SAFETY = 1.5 (MSBC)

PASSIVE SIDE WALLS

(IF APPLICABLE)

ANGLE OF INTERNAL FRICTION = 32°
 UNIT WEIGHT = SAME AS ACTIVE
 COEFFICIENT PASSIVE PRESSURE = 5.32
 ANGLE OF WALL FRICTION = 20°

LEGEND / ABBREVIATIONS

SER = STRUCTURAL ENGINEER OF RECORD
 WWF = WELDED WIRE FABRIC
 T.O.C. = TOP OF CONCRETE
 T.O.W. = TOP OF WALL
 T.O.S. = TOP OF STEEL
 V.I.F. = VERIFY IN FIELD
 U.N.O. = UNLESS NOTED OTHERWISE
 C.J. = CONSTRUCTION JOINT, SEE DETAIL B ON SHEET S-3
 E.J. = EXPANSION JOINT, SEE DETAIL A ON SHEET S-3
 WP = WORKING POINT
 MSBC = MASSACHUSETTS STATE BUILDING CODE
 CMU = CONCRETE MASONRY UNIT

GENERAL NOTES

- ALL WORK SHALL CONFORM TO THE CURRENT EDITION OF THE COMMONWEALTH OF MASSACHUSETTS STATE BUILDING CODE (MSBC).
- LOCATION OF CORE WALL AS SHOWN ON PLANS IS APPROXIMATE. ACTUAL LOCATION MAY VARY FROM THAT SHOWN. LOCATION AND CONDITION OF CORE WALL SHALL BE FIELD VERIFIED PRIOR TO PROPOSED SPILLWAY CONSTRUCTION.
- THE CONTRACTOR WILL RETAIN THE SERVICES OF AN INDEPENDENT TESTING AGENCY TO PERFORM STRUCTURAL INSPECTIONS AS INDICATED ON THE DRAWINGS AND AS REQUIRED/INDICATED BY THE SCHEDULE OF STRUCTURAL TESTS AND INSPECTIONS. ALL TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS IN THE FIELD PRIOR TO THE BID. ANY VARIATIONS FROM THE CONDITIONS SHOWN, WHICH WILL IMPACT THE CONSTRUCTION COST OR METHOD, SHOULD BE BROUGHT TO THE ENGINEER'S ATTENTION IN WRITING PRIOR TO THE BID AND SHOULD BE FACTORED INTO THE BID PRICE. NO ADDITIONAL COMPENSATION WILL BE APPROVED DUE TO OBSERVABLE SURFICIAL SITE CONDITIONS NOT SHOWN ON THE DRAWINGS.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BRACING & SHORING UNTIL ALL STRUCTURAL WORK IS COMPLETE.
- SHOP DRAWINGS, IN ADDITION TO THE SUBMITTALS REQUIRED BY THE PROJECT SPECIFICATIONS, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF THE REINFORCING STEEL.
- PROVIDE SEALANT AT ALL CONTROL JOINTS AND EXPANSION JOINTS.
- ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- ALL STRUCTURES ARE TO BE BACKFILLED WITH GRAVEL BORROW AND FINISHED WITH TOPSOIL WHERE EVER AN ARMORING TREATMENT OR STONE DUST IS NOT SPECIFIED. SEE SPECIFICATION SECTION 2300 EARTHWORK.

CONCRETE & REINFORCING

- CONCRETE WORK SHALL CONFORM TO "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES" (ACI-350-1) AND "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318-99;318R-99) AND "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" (ACI 301-99).
- ALL CONCRETE IN WALLS AND FOOTINGS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. ALL CONCRETE SHALL HAVE BETWEEN 4 TO 6% AIR ENTRAINMENT AND 4" MAXIMUM SLUMP. NO CONCRETE SHALL BE CAST IN WATER OR ON FROZEN GROUND.
- FOUR (4) CONCRETE CYLINDERS SHALL BE OBTAINED AND TESTED BY THE INDEPENDENT TESTING AGENCY FOR EACH 50 CUBIC YARDS OF CONCRETE POURED OR FOR ANY ONE DAY'S OPERATIONS. MAKING AND CURING OF CYLINDERS SHALL BE IN CONFORMANCE TO ASTM C31 AND TESTING SHALL CONFORM TO ASTM C39.
- CONCRETE ELEMENTS SHALL HAVE EXPANSION OR CONSTRUCTION JOINTS AS SHOWN ON ON SHEET S-2.
- BACKFILL AGAINST WALLS SHALL BE PLACED ALTERNATELY ON EACH SIDE IN 9" MAXIMUM LIFTS UNTIL SOIL ELEVATION REACHES THE FRONT OF WALL GRADE.
- ALL EXPOSED CORNERS OF CONCRETE SHALL HAVE A 3/4" x 3/4" CHAMFER UNLESS NOTED OTHERWISE.
- CONSTRUCTION JOINTS IN WALLS SHALL BE KEYS. USE OF CONSTRUCTION JOINTS OTHER THAN THOSE SHOWN ON THE DRAWINGS WILL REQUIRE APPROVAL OF THE ENGINEER.
- WATERSTOPS ARE NOT NECESSARILY SHOWN AT EVERY JOINT, BUT WHERE THEY ARE SHOWN, IT IS INTENDED THAT THEY BE COMPLETE AND CONTINUOUS THROUGHOUT THE PARTICULAR STRUCTURE. WATERSTOPS IN VERTICAL JOINTS SHALL EXTEND TO 2" BELOW TOP OF CONCRETE, UNLESS OTHERWISE NOTED.

- REINFORCEMENT WORK OF DETAILING, FABRICATION, AND ERECTION SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318-99;318R-99), "ACI DETAILING MANUAL" (SP-66-1988), "CRSI MANUAL OF STANDARD PRACTICE" (DA4-90), AND "STRUCTURAL WELDING CODE REINFORCING STEEL" (AWS D1.4-79) AT MINIMUM OR AS SPECIFIED HEREIN.
- STEEL REINFORCEMENT, UNLESS OTHERWISE NOTED, SHALL CONFORM TO THE FOLLOWING:
 (A) BARS, TIES, AND STIRRUPS ASTM A615 GRADE 60 (FY=60,000 PSI).
- PROVIDE AND SCHEDULE ON SHOP DRAWINGS THE NECESSARY ACCESSORIES TO HOLD REINFORCEMENT SECURELY IN POSITION, MINIMUM REQUIREMENTS SHALL BE : HIGH CHAIRS, 4'-0" O.C. WITH CONTINUOUS #5 SUPPORT BAR; SLAB BOLSTERS, CONTINUOUS AND 3'-6" O.C.; BEAM BOLSTERS, 5'-0" O.C.
- WHERE CONTINUOUS REINFORCEMENT IS CALLED FOR, IT SHALL BE EXTENDED CONTINUOUSLY AROUND CORNERS AND LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS; LAPS SHALL BE CLASS B TENSION LAP SPLICES, UNLESS NOTED OTHERWISE. WHERE REINFORCEMENT IS NOT SHOWN ON DRAWINGS, PROVIDE REINFORCEMENT IN ACCORDANCE WITH APPLICABLE DETAILS AS DETERMINED BY THE ENGINEER; IN NO CASE SHALL REINFORCEMENT BE LESS THAN THE MINIMUM REINFORCEMENT PERMITTED BY THE APPLICABLE CODES.
- REINFORCEMENT SHALL NOT BE TACK WELDED.
- INSTALLATION OF REINFORCEMENT SHALL BE COMPLETED AT LEAST 24 HOURS PRIOR TO THE SCHEDULED CONCRETE PLACEMENT.
- PROVIDE ALL NECESSARY CHAIRS, CHAIR BARS, SPACERS ETC. WIRED SECURELY TO HOLD REINFORCING IN POSITION. THESE ACCESSORIES SHALL BE PLASTIC BOOTED WHERE CONCRETE IS TO BE EXPOSED TO WEATHER OR MOISTURE.
- LOWER FOOTINGS SHALL BE CONSTRUCTED PRIOR TO UPPER FOOTING AT ALL STEP LOCATIONS.

No.	Date	Dr. By	Ck. By	App. By	Description

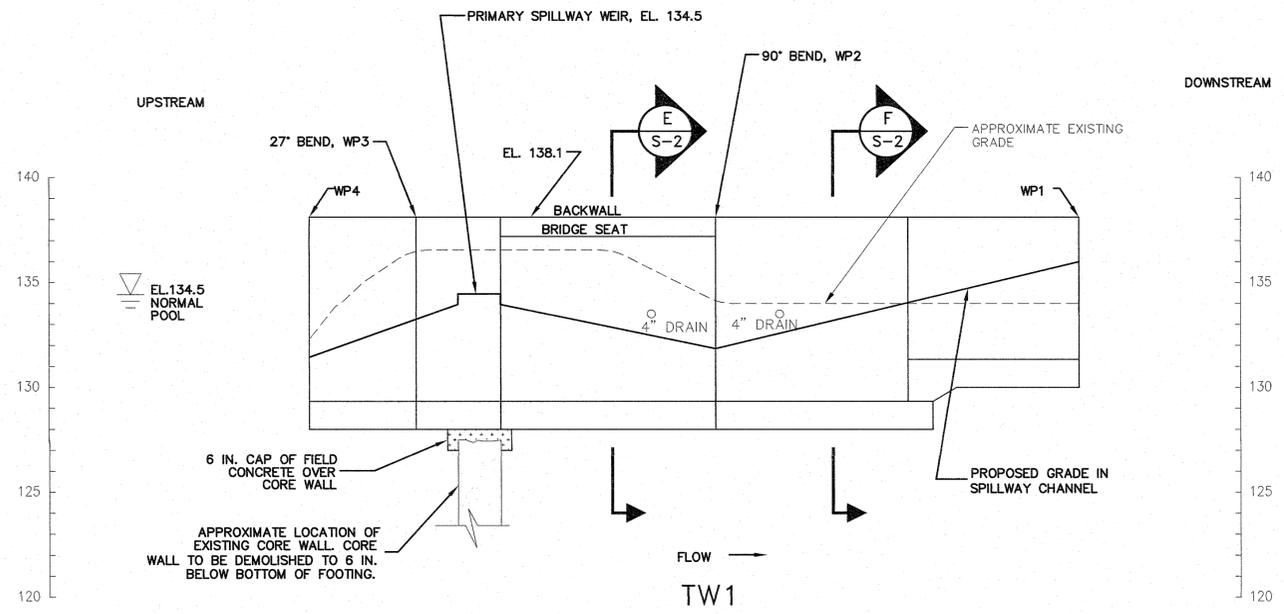
REGISTERED PROFESSIONAL ENGINEER
 DATE: May 16 2012



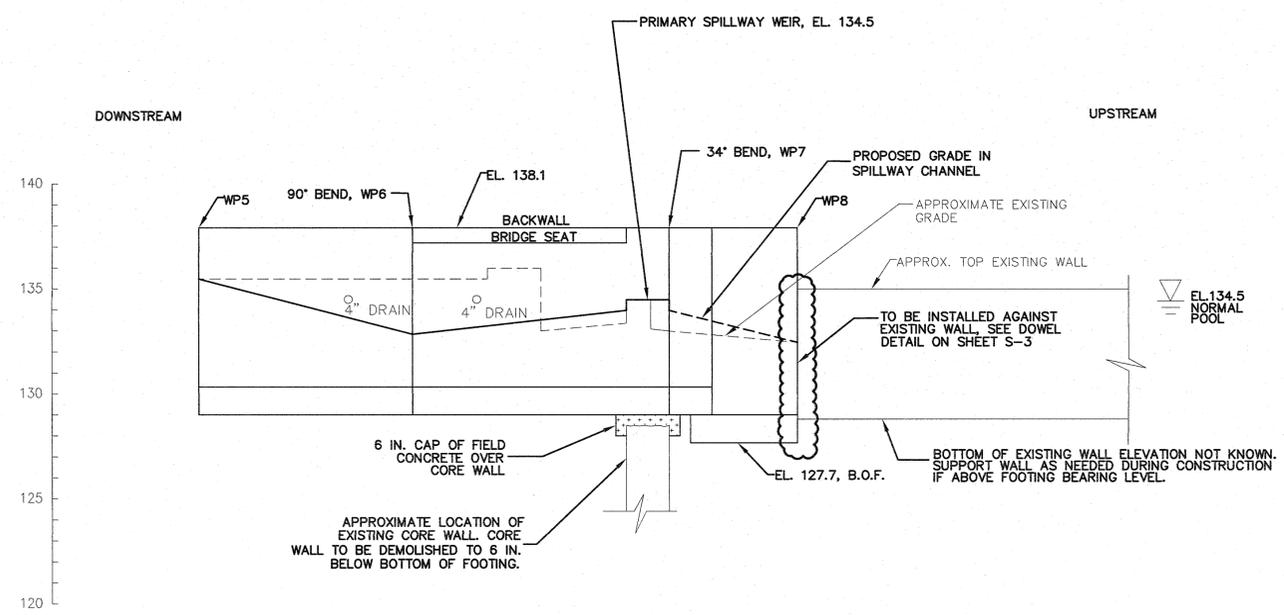
FILE NO.	SCALE	AS SHOWN	CONTRACT	JOB NO.	DR. BY	CHK. BY	APP. BY
192-62	S1-S4	AS SHOWN	2100667	2100667	DRT	BTC	MPM

TOWN OF BEDFORD, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS
 OLD WATER SUPPLY DAM

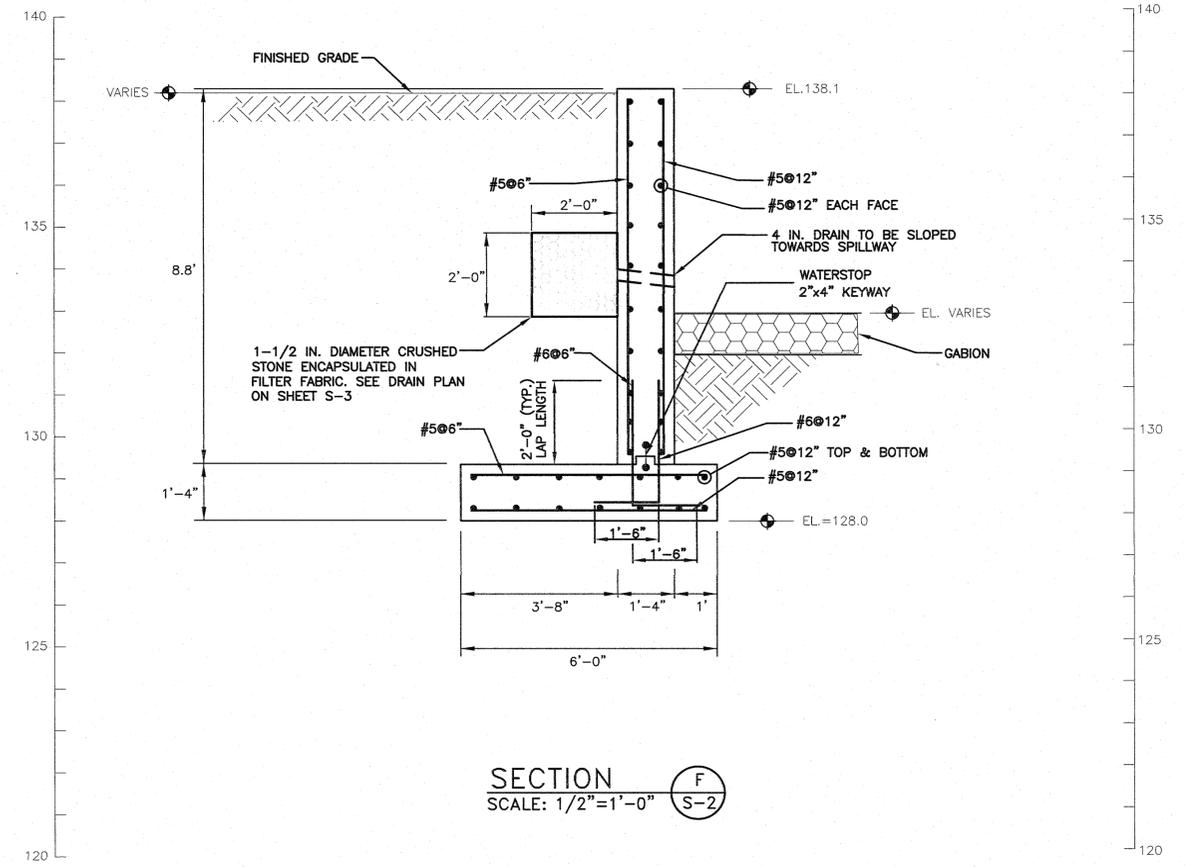
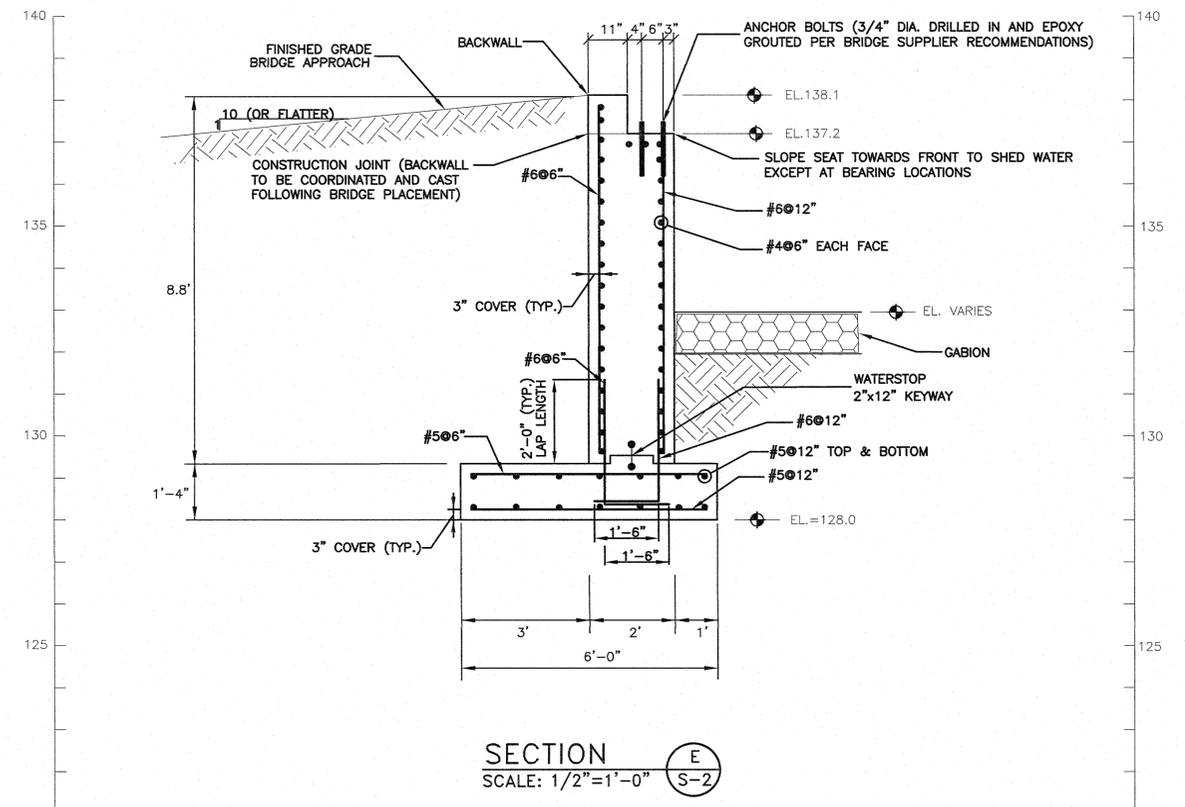
STRUCTURAL PLAN AND NOTES



ELEVATION Z
SCALE: 1/4"=1'-0" S-1



ELEVATION Y
SCALE: 1/4"=1'-0" S-1



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Weston & Sampson
 Five Centennial Drive, Peabody, MA 01860
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 www.westonandsampson.com

No.	Date	Dr. By	Ch. By	App. By	Description			
		A	P	R	O	V	E	D

REGISTERED PROFESSIONAL ENGINEER
 DATE: May 16, 2017



TOWN OF BEDFORD, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS
 OLD WATER SUPPLY DAM

STRUCTURAL ELEVATIONS AND SECTIONS

SCALE: AS SHOWN

CADD NO. S1-S4

CONTRACT NO. 2100667

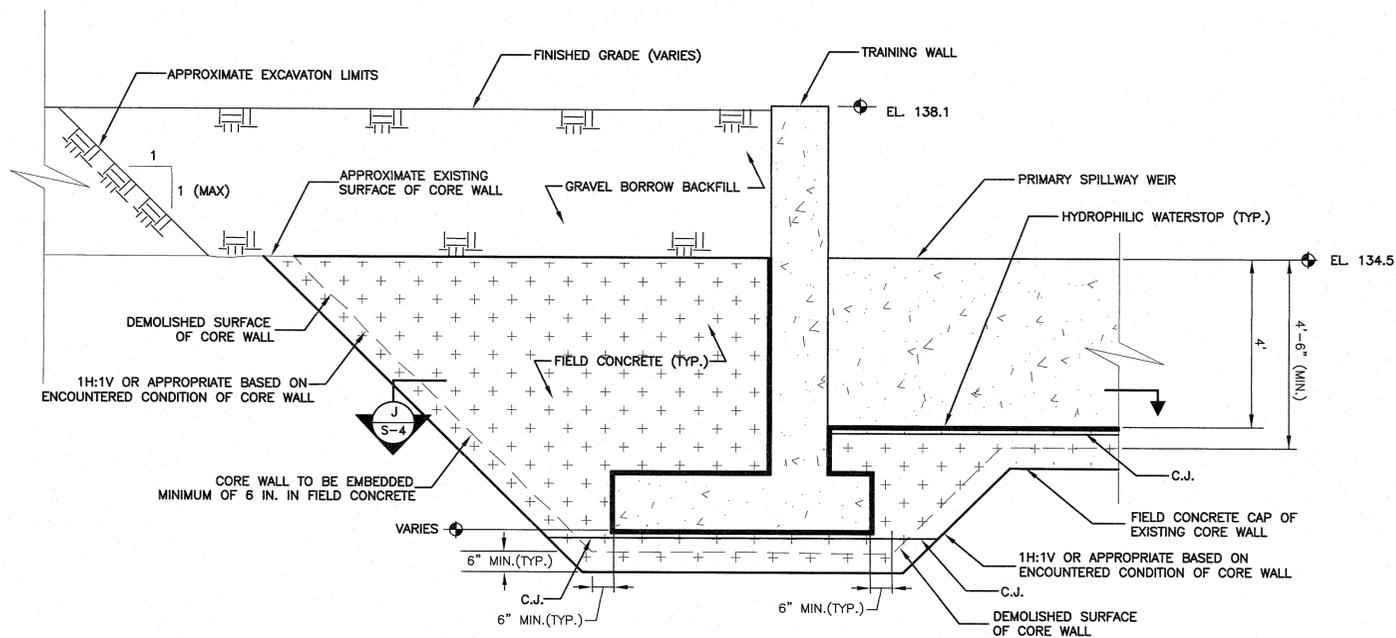
DR BY: DRT

DSN BY: BTG

CHK BY: BTG

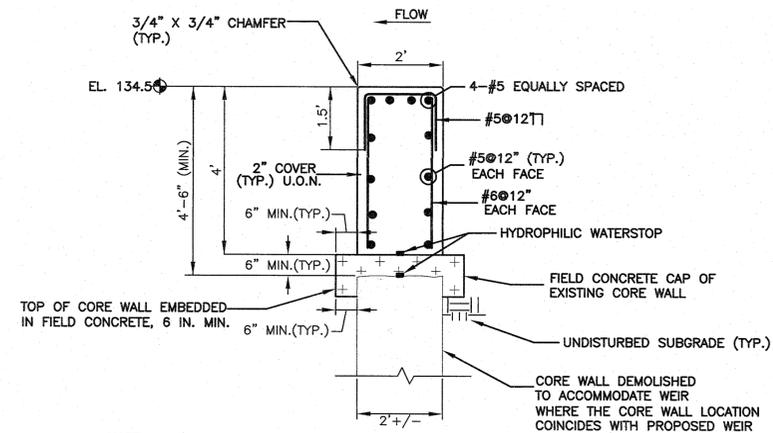
APP BY: MPM

FILE NO. 192-61
S-2
 SHEET 7 OF 13



NOTES: 1. EXCAVATION AND DEMOLITION OF CORE WALL TO BE PERFORMED IN PRESENCE OF ENGINEER.

TRAINING WALL AT COREWALL DETAIL
N.T.S.

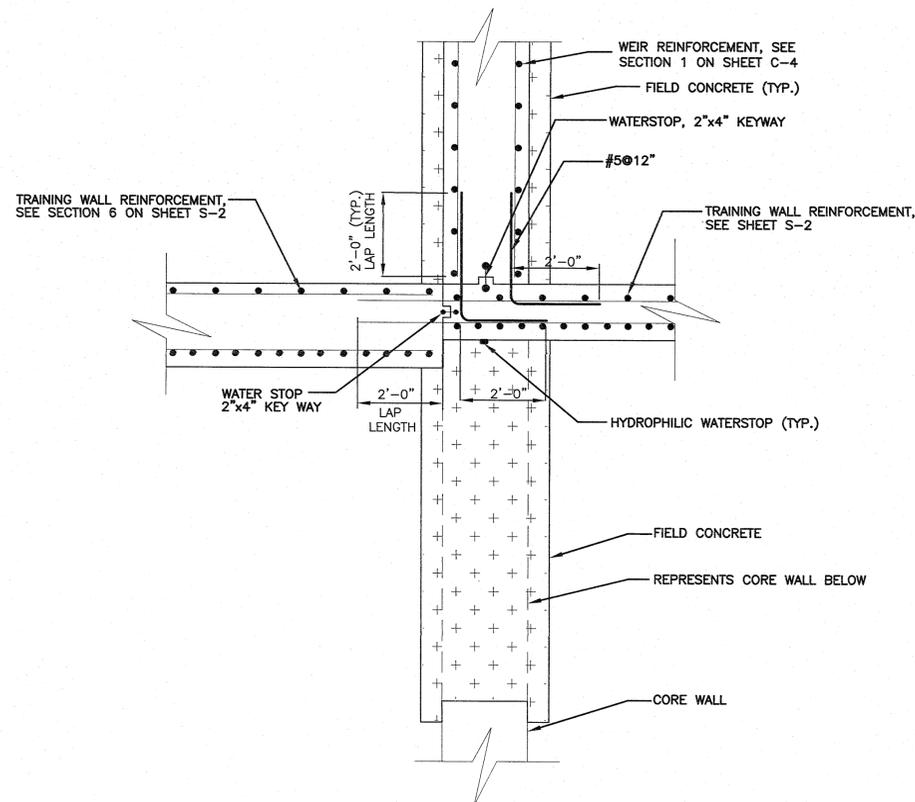


NOTE:
1. BACKFILL SHALL BE PLACED IN LIFT SIMULTANEOUSLY ON EACH SIDE EACH SIDE OF THE WEIR.

SECTION 1
SCALE: 1/2"=1'-0" S-1

CORE WALL NOTES

- EXCAVATION AND DEMOLITION OF CORE WALL SHALL BE PERFORMED IN PRESENCE OF ENGINEER.
- LOCATIONS OF CORE WALL SHOWN ON PLANS ARE APPROXIMATE BASED ON LIMITED EXISTING INFORMATION AND FIELD EXPLORATION. ACTUAL LOCATION AND CONDITION OF CORE WALL MAY VARY. THE LOCATION AND CONDITION SHALL BE FIELD VERIFIED PRIOR TO STARTING REINFORCED CONCRETE CONSTRUCTION FOR THE PRIMARY SPILLWAY.
- DURING EXCAVATION AND DEMOLITION, AREAS OF THE CORE WALL OUTSIDE THE WORK LIMITS SHOULD BE PROTECTED FROM DAMAGE.
- IF THE CORE WALL IS NOT ENCOUNTERED IN THE EXCAVATION THEN TRAINING WALL FOOTINGS SHALL BE PLACED ON UNDISTURBED SUBGRADE.
- LIMITS OF CORE WALL DEMOLITION MAY BE MODIFIED BY THE ENGINEER BASED ON CONDITION AND LOCATION OF THE CORE WALL ENCOUNTERED DURING CONSTRUCTION.



NOTE: 1. TRAINING WALL FOOTING NOT SHOWN FOR CLARITY.

SECTION J
NTS S-4

No.	Date	Dr. By	Ch. By	App. By	Description
					P R O V E D
					REGISTERED PROFESSIONAL ENGINEER

DATE: May 16, 2012



TOWN OF BEDFORD, MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS OLD WATER SUPPLY DAM	SCALE: S1-S4 AS SHOWN	CONTRACT: 2100667	JOB NO. 2100667	DR. BY: DRT	CHK. BY: BTG	APP. BY: MPM
STRUCTURAL DETAILS						

No.	Date	Dr. By	Ch. By	App. By	Description
		A	P	P	R O V E D
					REGISTERED PROFESSIONAL ENGINEER

May 16, 2017
DATE



TOWN OF BEDFORD, MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS	CONTRACT NO.	JOB NO.	DR. BY	DSM. BY	CHK. BY	APP. BY
OLD WATER SUPPLY DAM	2100667	2100667	MGM	MGM	RAC	RAC
WELL No. 6 REPAIRS	SCALE:	AS NOTED				
	CADD NO.	192-60				

GENERAL NOTES:

- ALL WORK SHALL BE IN CONFORMANCE WITH THE CURRENT EDITION OF THE MASSACHUSETTS STATE BUILDING CODE (8TH EDITION - IBC 2009).
- (X-Y) INDICATED RECORD DRAWING REFERENCE DIMENSION, CONDITIONS MAY VARY. THE CONTRACTOR SHALL VERIFY ALL REQUIRED DIMENSIONS IN FIELD.
- THE EXISTING ROOF, INCLUDING BUT NOT LIMITED TO ASPHALT SHINGLES, WOOD DECK PLANKING, AND INSECT GUARDS SHALL BE REMOVED IN THEIR ENTIRETY AND DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
- EXTERIOR FACES OF INSECT GUARDS/EAVE VENTS, RAFTER LOOKOUTS AND CUPOLA SHALL BE PRIMED AND PAINTED WITH A SYSTEM SUITABLE FOR EXTERIOR USE AND EXPOSURE TO THE ELEMENTS, COLOR SELECTED BY OWNER.
- IF THE COST TO REPAIR EXCEEDS THE COST TO REPLACE, THE CONTRACTOR MAY PROPOSE REPLACEMENT SO LONG AS THE ORIGINAL DESIGN AESTHETICS ARE REPRODUCED. ANY REPLACEMENT DESIGNS SHALL BE DESIGNED AND STAMPED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED TO PERFORM WORK IN THE COMMONWEALTH OF MASSACHUSETTS AND SUBMITTED TO THE ENGINEER FOR REVIEW.
- THE CONTRACTOR SHALL PROVIDED PRODUCT CUT-SHEET/SHOP DRAWINGS OF ROOFING MATERIALS, HATCH, AND CUPOLA FOR REVIEW BY THE ENGINEER.
- ROTTED, DAMAGED OR DECAYING WOOD SILLS SHALL BE REPLACED AS REQUIRED BY THE ENGINEER.

RAFTER REPLACEMENT NOTE(S):

- ANY RAFTERS EXPOSED OR UNCOVERED DURING DEMOLITION OF THE ROOFING SHOWING SIGNS OF ROT AND DECAY SHALL BE REPLACED AS REQUIRED BY THE ENGINEER. 50% OF THE FRAMING SHALL BE ASSUMED TO BE COMPROMISED.
- WHEN REPLACING MAIN SUPPORT RAFTERS (THOSE CONNECTED TO STEEL TENSION RODS) ALL LOAD SHALL BE REMOVED FROM THE POINT OF COMPRESSION AT THE TOP OF THE ROOF (RAFTER CONNECTION AT THE PEAK).
- ONLY (1) MAIN SUPPORT RAFTER SHALL BE REMOVED AT A TIME.
- REPLACEMENT SHEATHING SHALL BE C-D EXPOSURE 1 RATED PLYWOOD SPAN RATED AS REQUIRED BY MAXIMUM RAFTER SPACING, CONTRACTOR TO VERIFY SPACING IN FIELD.
- REPLACEMENT RAFTERS SHALL BE PRESERVATIVE TREATED HEM-FIR SELECT STRUCTURAL No. 1.
- BOLTS SHALL NOT BE REUSED. NEW BOLTS SHALL BE HOT-DIPPED GALVANIZED AND CONFORM TO ASTM A 307 MATCHING EXISTING DIAMETERS AND INSTALLED SNUG-TIGHT.

CUPOLA NOTE(S):

- THERE IS NO EXISTING CUPOLA ON THE ROOF.
- THE CUPOLA MAY BE PRE-MANUFACTURED OR SITE BUILT. THE CONTRACTOR SHALL PRESENT OPTIONS TO THE OWNER FOR SELECTION. CONNECTION OF THE CUPOLA TO THE EXISTING ROOF SHALL BE AS RECOMMENDED BY THE CUPOLA MANUFACTURER. CONNECTION SHALL BE DESIGNED FOR A BASIC WIND SPEED OF 100 MPH.
- THE INTENT IS TO MATCH THE AESTHETICS OF THE CUPOLA SHOWN HEREIN IN CONJUNCTION WITH RECORD PHOTO.
- CUPOLA SHALL HAVE INTERNAL SCREENS TO PREVENT ACCESS BY INSECTS AND SMALL ANIMALS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANY SUPPLEMENTAL FRAMING FOR THE CUPOLA OR HATCH OPENINGS.

ACCESS HATCH NOTE(S):

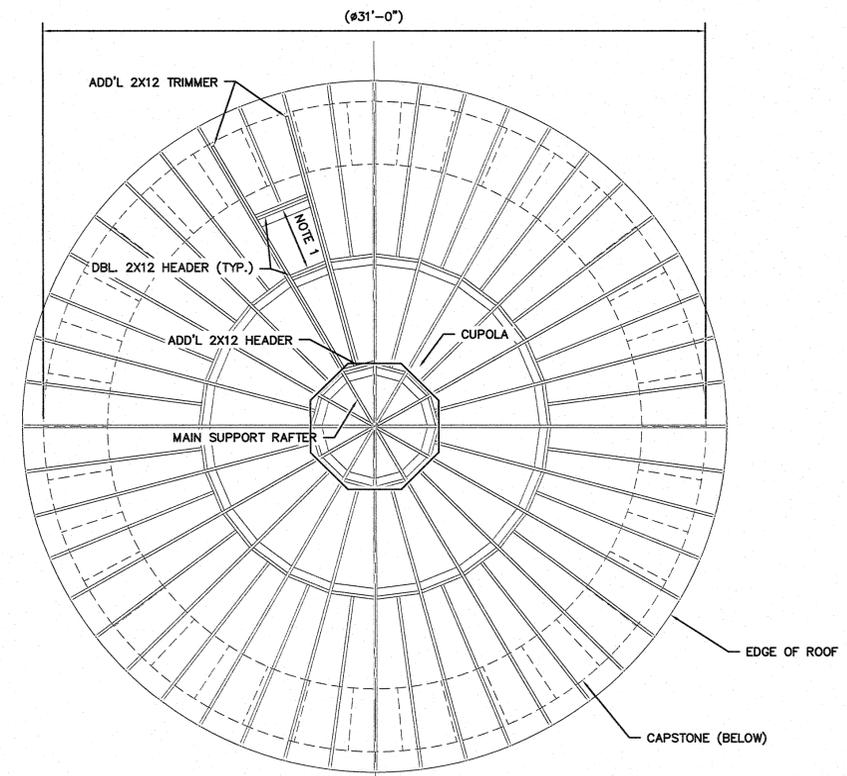
- THE INTENT OF THE HATCH IS TO ALLOW ACCESS FROM THE EXTERIOR FOR INSPECTION.
- HATCH LOCATION SHALL BE COORDINATED WITH THE OWNER.
- HATCH SHALL BE 3'-FT.X3'-FT. CONSTRUCTED OF WEATHER RESISTANT MATERIAL DESIGNED WITH A CURB AND SUITED FOR SLOPED, WEATHERPROOF ATTACHMENT TO TIMBER CONSTRUCTION.
- ROOF ACCESS HATCH SHALL BE WATERTIGHT AND POSITIVE DRAINAGE SHALL BE INSTALLED AROUND THE RISER IN A MANNER THAT WILL RESULT IN NO STANDING WATER.
- ROOF ACCESS HATCH SHALL BE HINGED INTERNALLY AND LOCKABLE FROM THE OUTSIDE. ALL CONSTRUCTION SHALL BE TAMPER RESISTANT.
- HATCH DOOR SHALL BE RESISTANT TO WEATHER.
- (2) SETS OF KEYS SHALL BE PROVIDED TO THE OWNER.
- EXTERIOR GRADING AT LOCATION OF ACCESS HATCH TO ACCOMMODATE A LADDER FOR ENTRANCE.
- THE CONTRACTOR MAY ELECT TO FIELD BUILD A HATCH. IF SO, SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. ALL REQUIREMENTS ABOVE SHALL BE MET.

ROOFING NOTE(S):

- SHINGLES SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS OR AS DESCRIBED HERE IN, WHICHEVER IS MORE STRINGENT.
- SHINGLES SHALL BE SELF SEALING ARCHITECTURAL FIBERGLASS ASPHALT STRIP TYPE SHINGLES WITH A MINIMUM 40 YEAR WARRANTY AND CONFORM TO ASTM D 3462. COLOR AND STYLE SHALL BE SELECTED BY THE OWNER.
- SHINGLES SHALL BE RATED FOR A WIND RESISTANCE FOR A BASIC WIND SPEED OF 100 MPH IN CONFORMANCE WITH ASTM D 7158 CLASSIFICATION G OR H.
- FLASHING SHALL BE INSTALLED AT ANY OPENINGS IN THE ROOF STRUCTURE (IE. HATCH, CUPOLA) AND CONSIST OF 16 OZ. LEAD COATED COPPER, NAILS AND SCREWS USED IN CONJUNCTION WITH FLASHING SHALL BE COPPER OR STEEL CONFORMING TO ASTM F 1687.
- UNDERLAYMENT SHALL BE STANDARD COMMERCIAL GRADE 30# ROOFING FELT CONFORMING TO ASTM D 226 OR D 4869, TYPE II.
- SHINGLES SHALL BE FASTENED AS REQUIRED BY THE MANUFACTURER BUT NO LESS THAN (4) NAILS PER STRIP.
- ALUMINUM DRIP EDGES SHALL BE PROVIDED AT ALL EAVES.

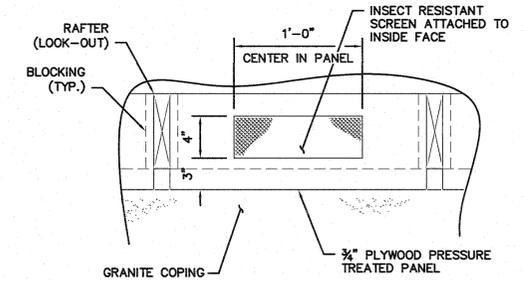
FOUNDATION MASONRY NOTE(S):

- RE-SECURE MASONRY FACADE STONES AND GRANITE CAPSTONES AS NEEDED.
- RE-POINT MASONRY FACADE AND GRANITE CAPSTONES AS NEEDED.

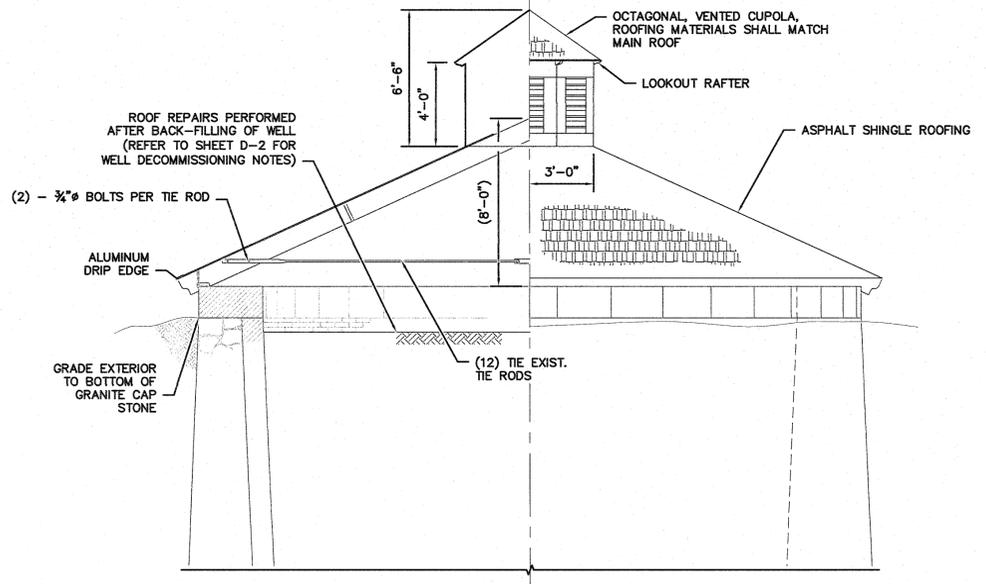


PLAN
SCALE: 1/4" = 1'-0"

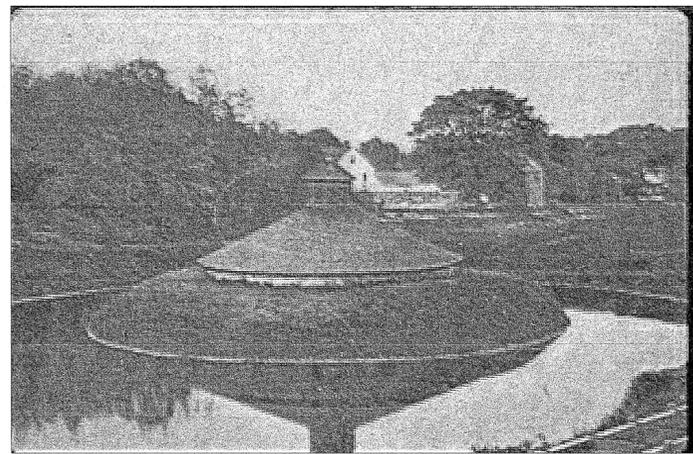
- NOTE(S):**
- COORDINATE OPENING REQUIREMENTS WITH ACCESS HATCH.
 - MAIN SUPPORT RAFTERS SHALL NOT BE CUT.



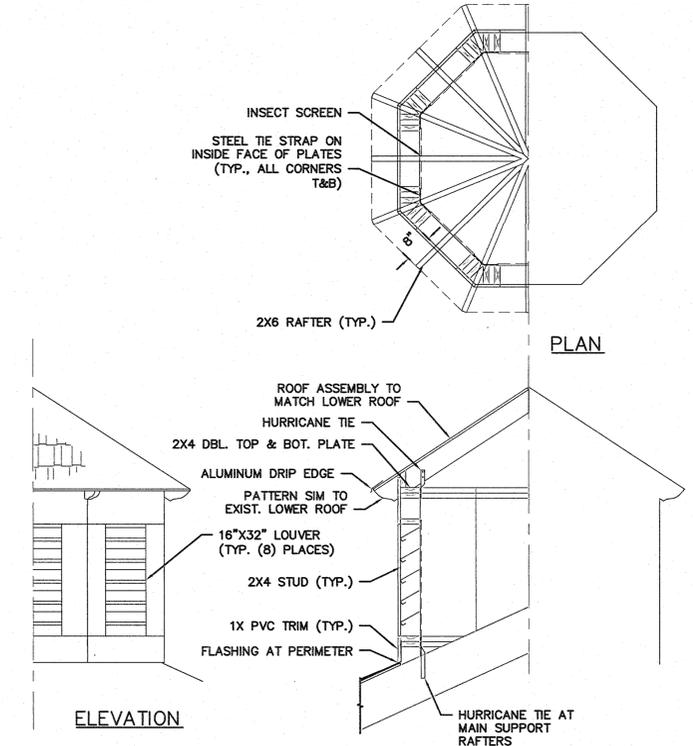
INSECT GUARD/EAVE VENT DETAIL
SCALE: 1/2" = 1'-0"



TYPICAL SECTION
SCALE: 1/4" = 1'-0"

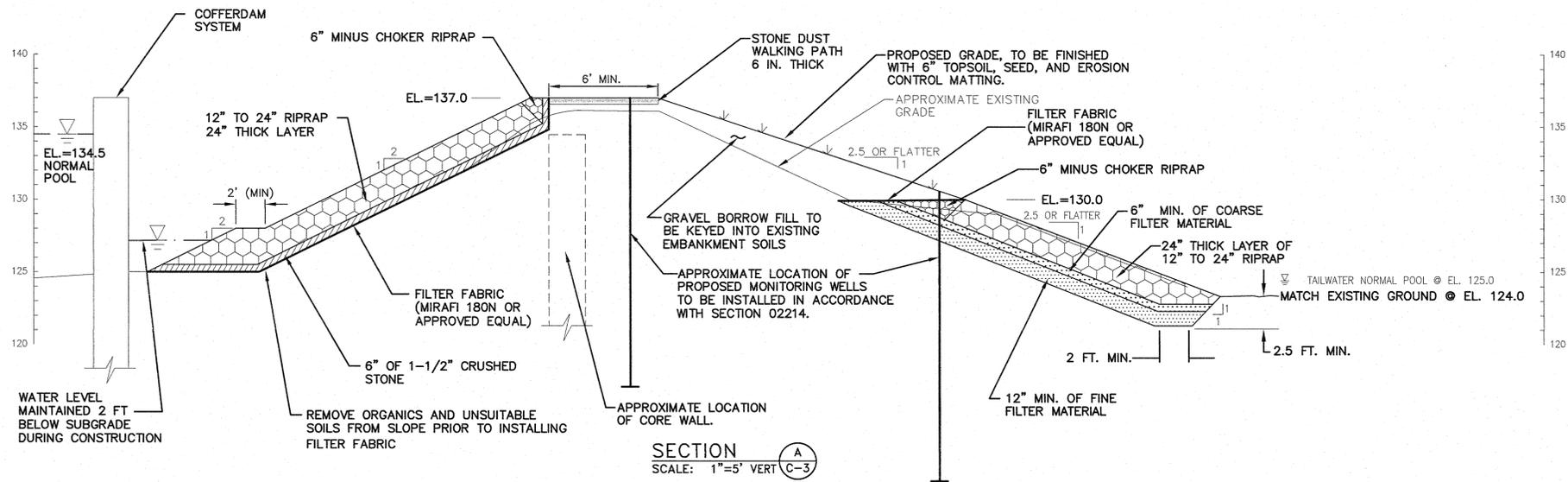


RECORD PHOTO

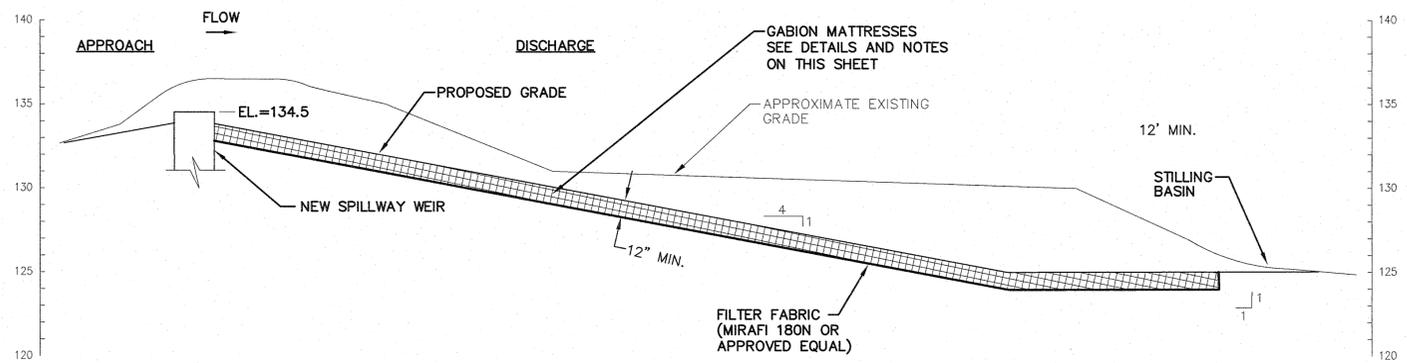


CUPOLA DETAILS
SCALE: 1/2" = 1'-0"

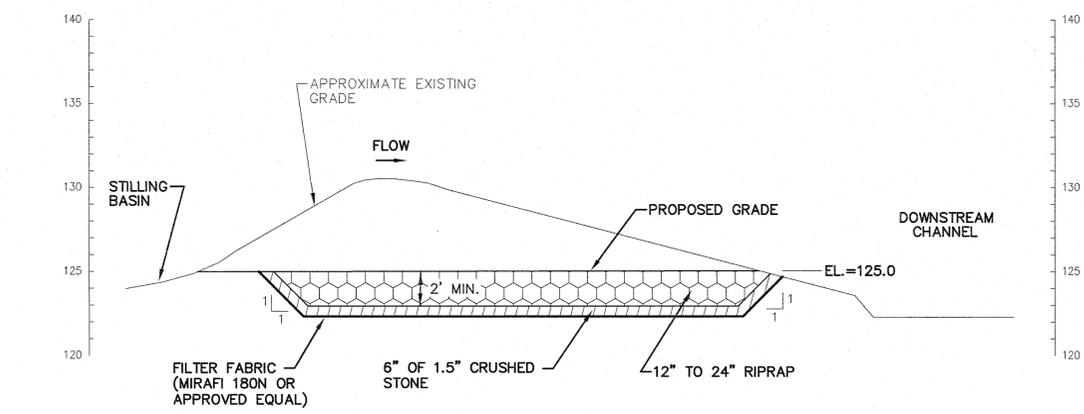
© Bedford MA, Old Water Supply Dam - MAR02243 CAD, Old Water Supply Dam, New Design, S-5, Well Roof Repair.dwg



SECTION A
SCALE: 1"=5' VERT C-3



SECTION B
SCALE: 1"=5' VERT C-3



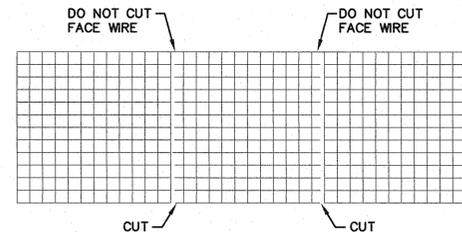
SECTION C
SCALE: 1"=5' VERT C-3

GABION STONE REQUIREMENTS:

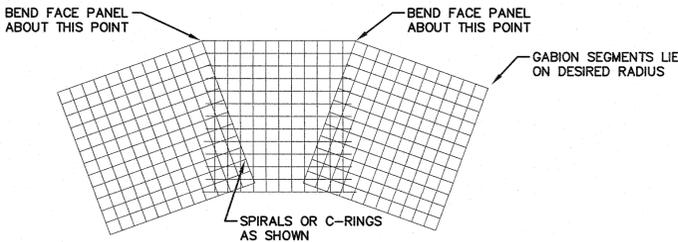
GABION STONE PARTICLE SIZE (SIEVE SIZE)	PERCENT FINER
8 IN.	100
6 IN.	30-70
4 IN.	0-10

MINIMUM AVERAGE ROCK SIZE SHALL BE 6 INCHES.

FACE PANEL SIDE



PLAN VIEW OF BASE PANEL



PLAN VIEW OF BASE PANEL ON RADIUS

MODULAR GABION SYSTEM DETAIL
N.T.S.

PROCEDURE FOR FITTING GABIONS TO A RADIUS

- CUT BASE PANEL FROM BACK TO FACE. CUT ALL WIRES EXCEPT FRONT EDGE WIRE OF BASE PANEL.
- BEND FACE PANEL TO DESIRED RADIUS BY OVERLAPPING THE SEGMENTS OF THE BASE PANEL.
- FASTEN THE SEGMENTS OF THE BASE PANEL IN PLACE WITH SPIRALS OR C-RINGS.
- CUTTING, BENDING AND OVERLAPPING OF THE FACE PANEL MAY ALSO BE NECESSARY IF THE FACE PANEL IS OTHER THAN VERTICAL.

RIPRAP AND BEDDING REQUIREMENTS

1.5 IN. CRUSHED STONE (6 IN. LAYER)	12 IN. TO 24 IN. RIPRAP (24 IN. LAYER)	
	PARTICLE SIZE (DIAMETER)	PERCENT FINER
REFER TO MHD SPECIFICATION M2.01.2	24 IN.	100
	18 IN.	75-100
	12 IN.	25-70
	9 IN.	15-25
	6 IN.	0-5

RIPRAP NOTES:

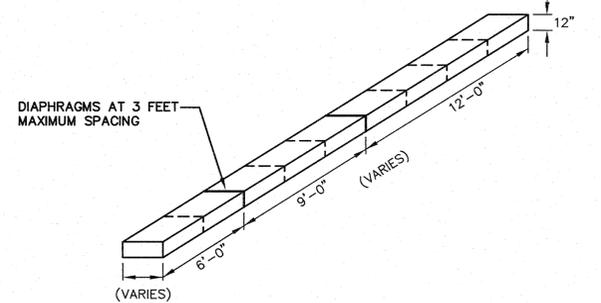
- THE FILTER FABRIC UNDERLYING THE CRUSHED STONE BEDDING LAYER SHALL BE MIRAFI 180N OR APPROVED EQUAL.
- THE BEDDING AND RIPRAP MATERIALS SHALL MEET THE GRADATION REQUIREMENTS IN THE ABOVE TABLE.
- RIPRAP STONE SHALL HAVE SHARP, ANGULAR EDGES AND RELATIVELY FLAT FACES. THE RIPRAP SHOULD BE BLOCKY IN SHAPE RATHER THAN ELONGATED.
- RIPRAP SHALL BE PLACED WITH CARE TO ENSURE A TIGHT, STABLE CONFIGURATION. INTERLOCKING OF THE RIPRAP DURING PLACEMENT SHALL BE ACHIEVED TO THE EXTENT PRACTICABLE.

MINERAL FILTER REQUIREMENTS

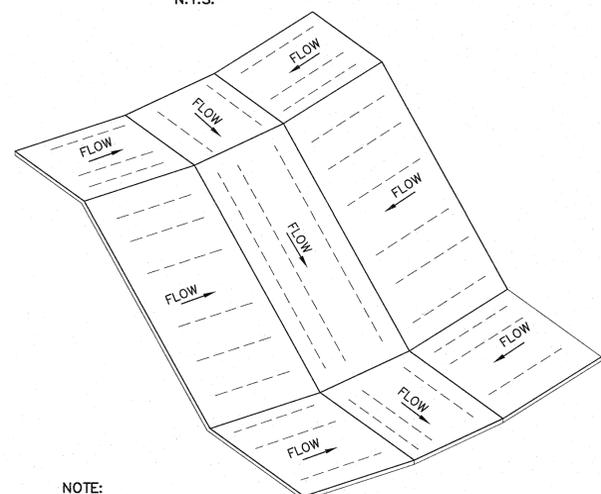
FINE FILTER MATERIAL (12 IN. LAYER) ASTM NO. 9		COARSE FILTER MATERIAL (6 IN. LAYER) ASTM NO. 357	
SIEVE SIZE	PERCENT FINER	SIEVE SIZE	PERCENT FINER
3/8 IN.	100	2-1/2 IN.	100
No. 4	85-100	2 IN.	95-100
No. 8	10-40	1 IN.	35-70
No. 16	0-10	1/2 IN.	10-30
No. 50	0-5	No. 4	0-5

GABION MATTRESS NOTES:

- GABION MATTRESS SHALL HAVE A MINIMUM THICKNESS OF 12 INCHES.
- MATTRESSES SHALL BE ZINC AND PVC COATED IN ACCORDANCE WITH SPECIFICATION SECTION 02372.
- GABION MATTRESS SHALL BE CONSTRUCTED AND INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS TO THE LINES AND GRADES SHOWN ON THE DRAWINGS. GABIONS PLACED ON A CURVE SHALL BE INSTALLED IN ACCORDANCE WITH THE RADIUS TURN DETAIL ON THIS SHEET.
- THE GABION MATTRESS SOIL SUBGRADE SHALL BE FIRM, STABLE AND FREE OF UNSUITABLE MATERIALS INCLUDING ORGANIC SOILS, TRASH ETC.
- MIRAFI 180N FILTER FABRIC SHALL BE PLACED OVER THE SOIL SUBGRADE PRIOR TO PLACING MATTRESSES.



GABION MATTRESS
N.T.S.



NOTE:

GABION MATTRESSES SHALL BE PLACED SUCH THAT THE LENGTH OF THE MATTRESS IS PARALLEL TO THE PREFERENTIAL FLOW DIRECTION.

ISOMETRIC VIEW OF GABION MATTRESS
N.T.S.

No.	Date	Dr. By	Chk. By	App. By	Description
					P R O V E D
					MAY 16 2012 DATE



TOWN OF BEDFORD, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
OLD WATER SUPPLY DAM
CIVIL SECTIONS

CONTRACT: - 2100667
JOB NO. -
SCALE: DET-1 AS SHOWN
CADD NO. -
FILE NO. 192-59

DR. BY: DRT
CHK. BY: BTG
APP. BY: MPM

WELL NO. 6 ASBESTOS AND LEAD SURVEY:

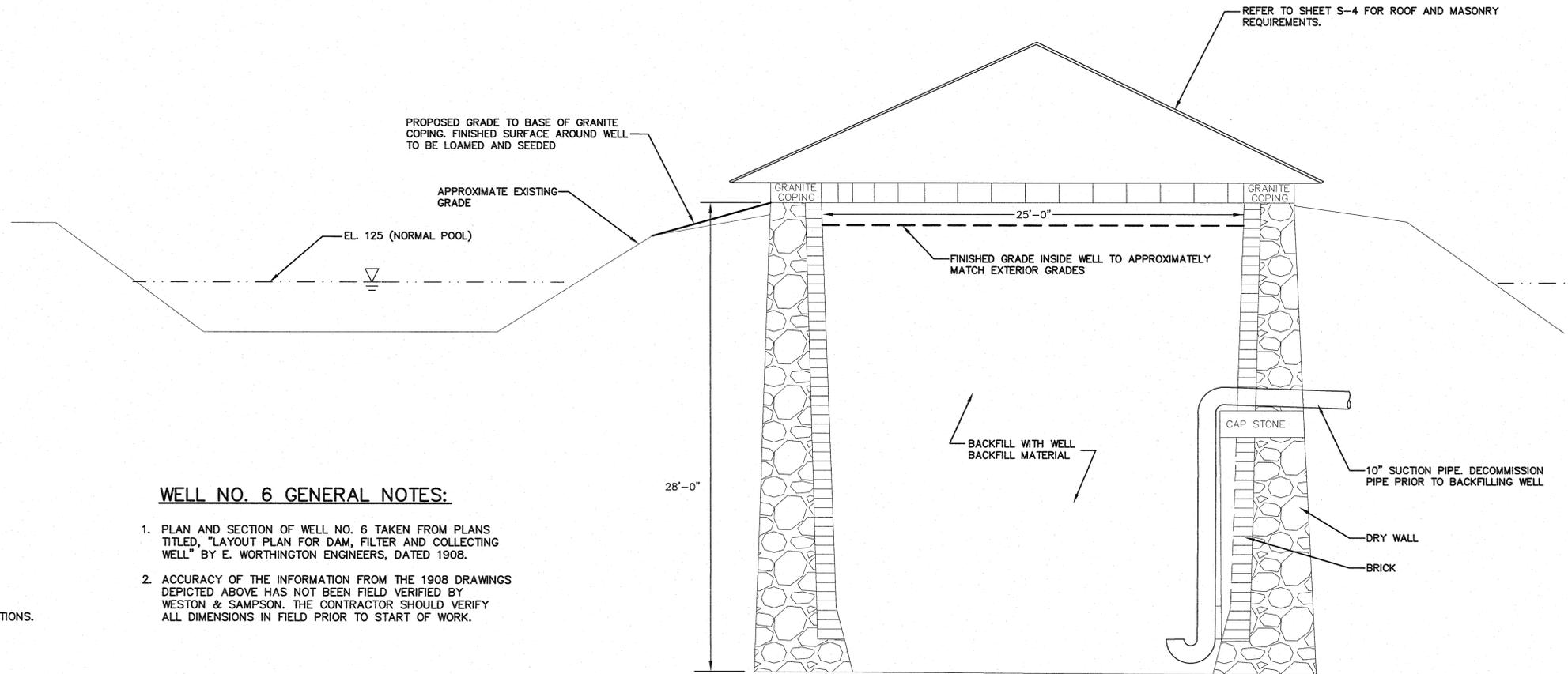
1. A PRE-DEMOLITION SURVEY AND SAMPLING FOR ASBESTOS CONTAINING MATERIALS (ACM) AND LEAD PAINT WAS PERFORMED BY EFI GLOBAL, INC IN DECEMBER 2011. REFER TO SHEET C-1 FOR APPROXIMATE SAMPLE LOCATIONS AND SPECIFICATION SECTION 02051 FOR PROJECT REQUIREMENTS REGARDING ACM AND LEAD REMOVAL.
2. THE SUSPECT ACM SAMPLES WERE COLLECTED IN ACCORDANCE WITH EPA GUIDANCE DOCUMENT NO. 560/585/024. A TOTAL OF FOUR SAMPLES WERE COLLECTED OF THE TOP AND BOTTOM LAYER OF ROOF SHINGLES.
3. THE ACM SAMPLES WERE ANALYZED BY PROSCIENCE ANALYTICAL SERVICES, INC. IN DECEMBER 2011 IN ACCORDANCE WITH EPA/600/R-93/116. NO ASBESTOS WAS DETECTED IN THE SAMPLES.
4. THE SUSPECT LEAD SAMPLES CONSISTING OF RED PAINT CHIPS REMOVED FROM THE TIMBER ROOF SUPPORTS WERE ANALYZED BY PROSCIENCE ANALYTICAL SERVICES, INC. IN DECEMBER 2011 IN ACCORDANCE WITH SW846-7420.
5. BOTH SAMPLES CONTAINED LEVELS OF LEAD PAINT GREATER THAN THE EPA RESIDENTIAL STANDARD OF 0.50%.

WELL NO. 6 DECOMMISSIONING NOTES:

1. INSTALL EROSION AND SEDIMENT CONTROL AROUND WELL NO. 6 AND THE TEMPORARY CONSTRUCTION ACCESS ACROSS THE STILLING BASIN.
2. INSTALL THE TEMPORARY CONSTRUCTION ACCESS TO WELL NO. 6. NOTE THAT WELL NO. 6 IS APPROXIMATELY 28 FT. DEEP AND THE CONTRACTOR WILL BE RESPONSIBLE FOR CONDUCTING THE DECOMMISSIONING WORK IN A SAFE MANNER IN ACCORDANCE WITH OSHA GUIDELINES AND APPLICABLE STANDARDS. HEAVY EQUIPMENT SHOULD BE SET BACK FROM THE WELL A MINIMUM OF 1/2 THE DEPTH OF THE WELL AT ANY GIVEN TIME DURING DECOMMISSIONING/BACKFILLING OPERATIONS.
3. REMOVE THE CHAIN LINK FENCE AND BRUSH FROM AROUND THE EXTERIOR OF THE WELL.
4. PROTECT STRUCTURE DURING BACKFILL OF WELL.
5. WELL NO. 6 DECOMMISSIONING/BACKFILLING WILL BE PERFORMED IN-THE-WET. THE WELL IS TO BE BACKFILLED WITH WELL BACKFILL MATERIAL MEETING THE SPECIFICATIONS. CARE SHALL BE EXERCISED DURING BACKFILLING TO NOT DAMAGE THE MASONRY WALLS OR FOUNDATION STRUCTURE OF THE WELL. BACKFILL SHALL BE PLACED IN AS CONTROLLED A MANNER AS PRACTICABLE TO REDUCE THE FORMATION OF VOIDS.
6. RE-GRADE EXTERIOR GRADES AROUND THE WELL AND SEED/MULCH.
7. PERFORM ROOF AND MASONRY WORK AS SHOWN ON SHEET S-4 AND APPLICABLE SPECIFICATIONS.
8. REMOVE TEMPORARY ACCESS AND RESTORE AREA.

WELL NO. 6 GENERAL NOTES:

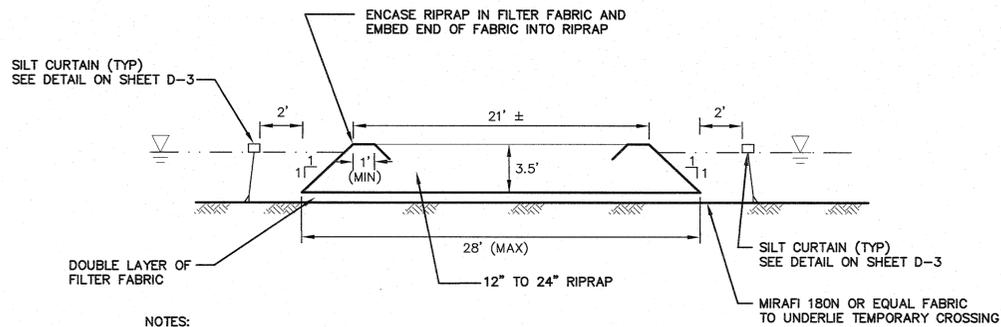
1. PLAN AND SECTION OF WELL NO. 6 TAKEN FROM PLANS TITLED, "LAYOUT PLAN FOR DAM, FILTER AND COLLECTING WELL" BY E. WORTHINGTON ENGINEERS, DATED 1908.
2. ACCURACY OF THE INFORMATION FROM THE 1908 DRAWINGS DEPICTED ABOVE HAS NOT BEEN FIELD VERIFIED BY WESTON & SAMPSON. THE CONTRACTOR SHOULD VERIFY ALL DIMENSIONS IN FIELD PRIOR TO START OF WORK.



WELL NO. 6 DECOMMISSIONED SECTION

SCALE: 1/4"=1'-0"

D
C-3

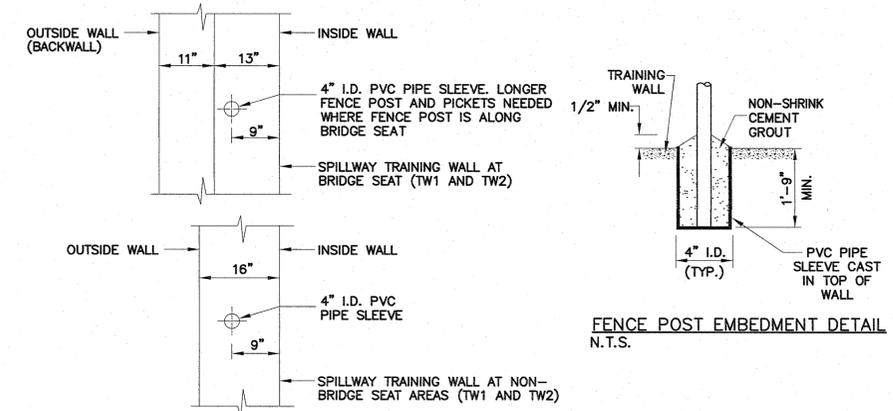


- NOTES:
1. EROSION & SEDIMENTATION CONTROLS ARE TO BE IN BASIN PRIOR TO TEMPORARY WETLAND CROSSING CONSTRUCTION.
 2. FILTER FABRIC SHALL BE INSTALLED ALONG THE TEMPORARY WETLAND CROSSING ALIGNMENT PRIOR TO THE PLACEMENT OF RIPRAP. A SECOND LAYER OF FILTER FABRIC SHALL BE LAID SO THAT IT CAN BE EXTENDED UP THE EXTERIOR SLOPE OF THE RIPRAP TO ENCASE THE RIPRAP AS SHOWN ABOVE. THIS WILL PROVIDE DUAL LAYERS TO PROTECT UNDERLYING WETLANDS. THE TOP OF THE TEMPORARY CROSSING SHOULD BE APPROXIMATELY 6 IN. ABOVE THE WATER LEVEL IN THE STILLING BASIN.
 3. REMOVAL OF THE TEMPORARY WETLAND CROSSING SHALL BE PERFORMED WITH CARE TO MINIMIZE THE IMPACTS TO THE BASIN FLOOR. A SMOOTH BLADED EXCAVATOR BUCKET SHALL BE USED TO REDUCE THE LIKLIHOOD OF OVER EXCAVATION. HAND WORK MAY BE REQUIRED TO REMOVE THE RIPRAP IN IMMEDIATE CONTACT WITH THE FILTER FABRIC AS WELL AS THE FILTER FABRIC ITSELF.

TEMPORARY WETLAND CROSSING TO WELL NO. 6

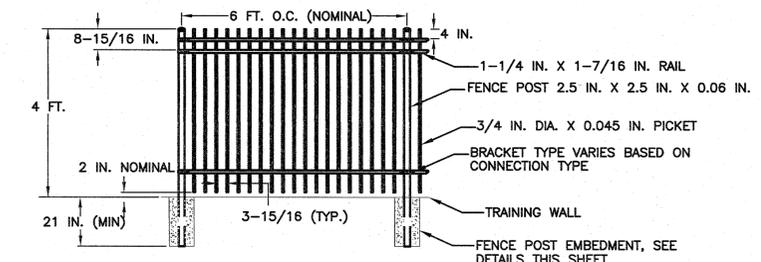
N.T.S.

E
C-3



FENCE POST LOCATION DETAILS

N.T.S.



TYPICAL ALUMINUM ORNAMENTAL FENCING FOR PRIMARY SPILLWAY WALL TW1 AND TW2

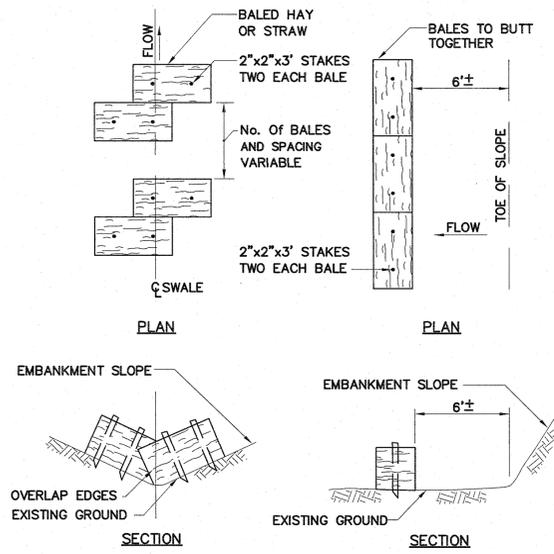
N.T.S.

No.	Date	Dr. By	Chk. By	App. By	Description
		A	P	R	O
		V	E	D	
REGISTERED PROFESSIONAL ENGINEER					
MAY 16 2012 DATE					



TOWN OF BEDFORD, MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS	CONTRACT NO.	DR. BY	CHK. BY	APP. BY
OLD WATER SUPPLY DAM	2100667	DRT	BTG	MPM
CIVIL DETAILS	SCALE:	DR. BY	CHK. BY	APP. BY
	DET-1	DRT	BTG	MPM
	AS SHOWN			

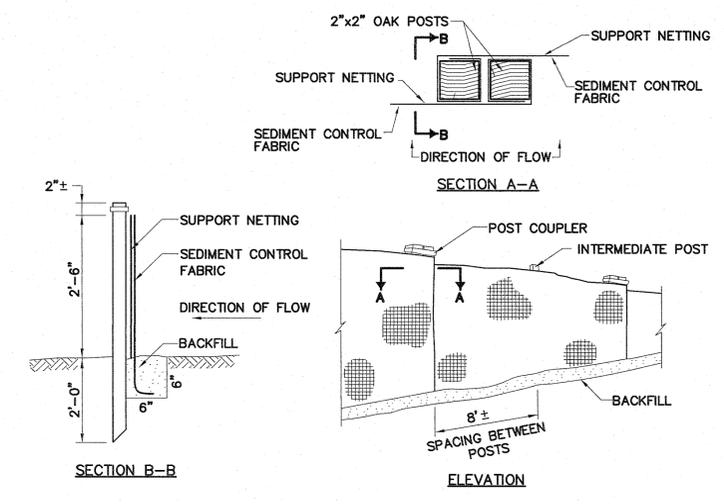
CADD NO.	FILE NO.
192-58	D-2



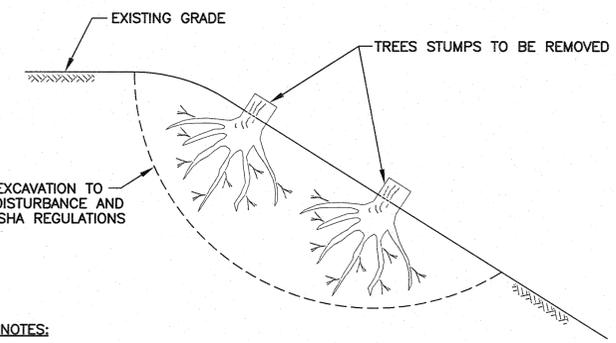
NOTE: TO BE USED IN LOCATIONS WHERE THE EXISTING GROUND SLOPES IN TOWARD THE TOE OF SLOPE

NOTE: TO BE USED IN LOCATIONS WHERE THE EXISTING GROUND SLOPES AWAY FROM THE TOE OF SLOPE

STRAW BALES DETAIL
N.T.S.

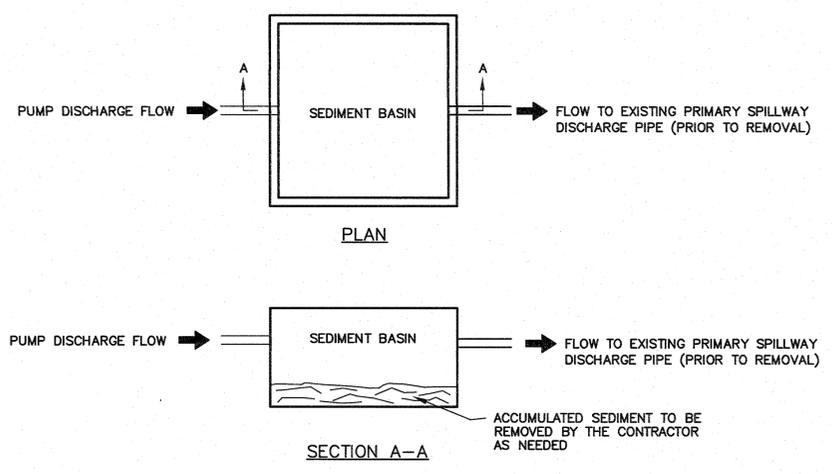


SILT FENCE DETAIL
N.T.S.



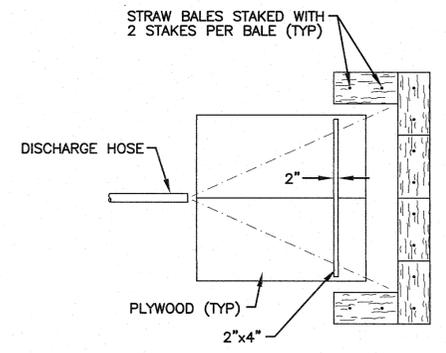
- NOTES:**
- CUT DESIGNATED TREES AND REMOVE FROM THE EMBANKMENT.
 - EXCAVATE TO REMOVE ALL REMAINING STUMPS AND ROOTS TO 2 IN. IN DIAMETER. EXCAVATIONS SHOULD BE MADE TO MINIMIZE DISTURBANCE TO THE EMBANKMENT AND IN ACCORDANCE WITH ALL OSHA REQUIREMENTS.
 - TREE STUMPS TO BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH APPLICABLE REGULATIONS.
 - ALL VOIDS ARE TO BE BACKFILLED WITH GRAVEL BORROW OR FILTER MATERIAL AS REQUIRED BY THE ENGINEER.

TREE REMOVAL DETAIL
N.T.S.

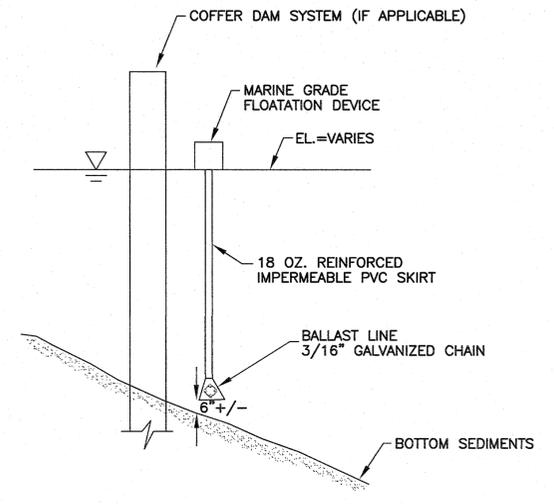


- NOTE:**
- ALL DEWATERING DISCHARGES SHALL BE THROUGH SEDIMENT BASINS, CONTRACTOR SHALL MAINTAIN AND CLEAN BASIN AS REQUIRED
 - THE SEDIMENT BASIN IS TO BE SIZED TO ACCOMMODATE THE DEWATERING FLOW OF 1 FT./DAY IN THE CONSTRUCTION AREA.

DEWATERING SEDIMENT BASIN DETAIL
N.T.S. (FOR LARGE DEWATERING FLOWS)

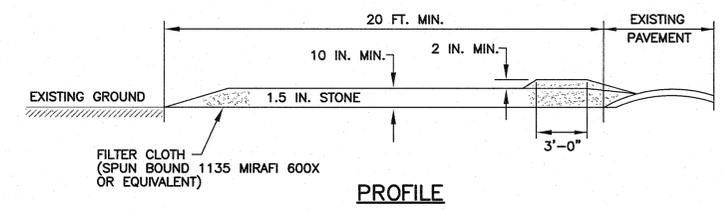


DEWATERING SEDIMENT CATCH DETAIL
N.T.S. (FOR SMALL DEWATERING FLOWS)



- NOTES:**
- INSTALL THE SILT CURTAIN ALONG THE APPROXIMATE ALIGNMENT SHOWN ON SHEET C-3 PRIOR TO STARTING WORK.
 - SECURELY FASTEN THE RIGHT AND LEFT ENDS OF THE SILT CURTAIN ALONG THE SHORE LINE. PROVIDE INTERMEDIATE ANCHORING DEVICES IF NECESSARY TO KEEP THE SILT CURTAIN IN POSITION.
 - IF NECESSARY, JOIN ADJACENT ENDS OF SILT CURTAIN BY CONNECTING REINFORCING GROMMETS AND SHACKLING BALLAST LINES.

TYPE I SILT CURTAIN
N.T.S.



- NOTES:**
- REFER TO SHEET C-2 FOR A PLAN VIEW OF THE STABILIZED TRUCK ENTRANCE.
 - FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
 - SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
 - MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
 - WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
 - PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
 - STONE SHALL BE REMOVED AT THE CONCLUSION OF PROJECT AND ACCUMULATED SEDIMENT DISPOSED OF IN ACCORDANCE WITH SPEC SECTION 02282. REMOVAL OF STONE SHALL BE AT NO ADDITIONAL COST TO THE OWNER.

STABILIZED CONSTRUCTION ENTRANCE (ANTI-TRACKING PAD)
N.T.S.

No.	Date	Dr. By	Chk. By	App. By	Description

REGISTERED PROFESSIONAL ENGINEER
MAY 16 2012 DATE



TOWN OF BEDFORD, MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS OLD WATER SUPPLY DAM	CIVIL DETAILS	FILE NO. 192-57
CONTRACT: 2100667	DR. BY: DRT	CHK. BY: BTG
SCALE: AS SHOWN	APP. BY: BTG	MPM
CADD NO. DET-1		

© Bedford, MA Old Water Supply Dam - MA02343(04)04 Water Supply Dam New Design DET-1.dwg