WEST ROAD RECONSTRUCTION

(LAFAYETTE ROAD TO PEVERLY HILL ROAD)

CITY OF PORTSMOUTH
PUBLIC WORKS DEPARTMENT
PROJECT #7200

ISSUED FOR CONSTRUCTION: AUGUST 27, 2015

Owner/Applicant:

DEPTARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

Civil Engineer:

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

Surveyor:

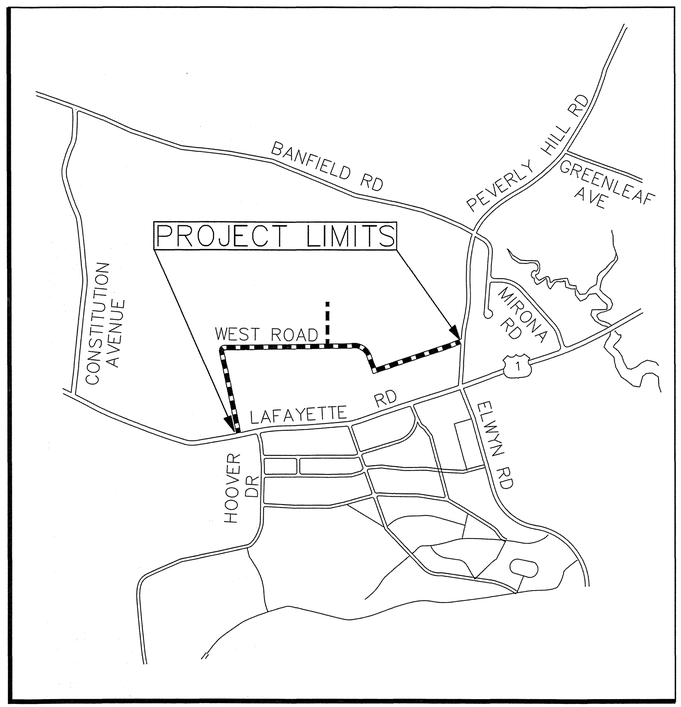
James Verra and Associates, Inc.
LAND SURVEYORS

101 SHATTUCK WAY - SUITE 8
NEWINGTON, N.H. 03801- 7876
603-436-3557

Wetland Scientist:

WEST ENVIRONMENTAL INC.

48 Stevens Hill Road, Nottingham, NH 03290
603-734-4298 ♦ mark@westenv.net



Locus Map
Scale: 1"=1000' (±)

Permit Summary

NHDES Wetlands Permit #2015-01339, Dated July 31, 2015.
City of Portsmouth Wetlands Conditional Use Permit – Received June 23, 2015

Sheet Index Title	*Sheet No.:*	*Rev.*	*Date*
Project Area Map	G.1	2	08/25/15
Existing Conditions Plans (West Road)(by JVA)	3 Sheets	0	05/15/15
Existing Conditions Plan (200-240 West Road)(by JVA)	1 of 1	0	05/07/15
Pavement Sections and General Notes	G2	2	08/27/15
West Road Plan (0+00 to 12+00)	C.1	2	08/25/15
West Road Plan and Profile (12+00 to 19+75)	C.2	2	08/27/15
West Road Plan and Profile (19+75 to 27+75)	C.3	2	08/25/15
West Road Plan and Profile (27+75 to 35+75)	C.4	2	08/27/15
West Road Plan (35+75 to 46+72)	C.5	2	08/25/15
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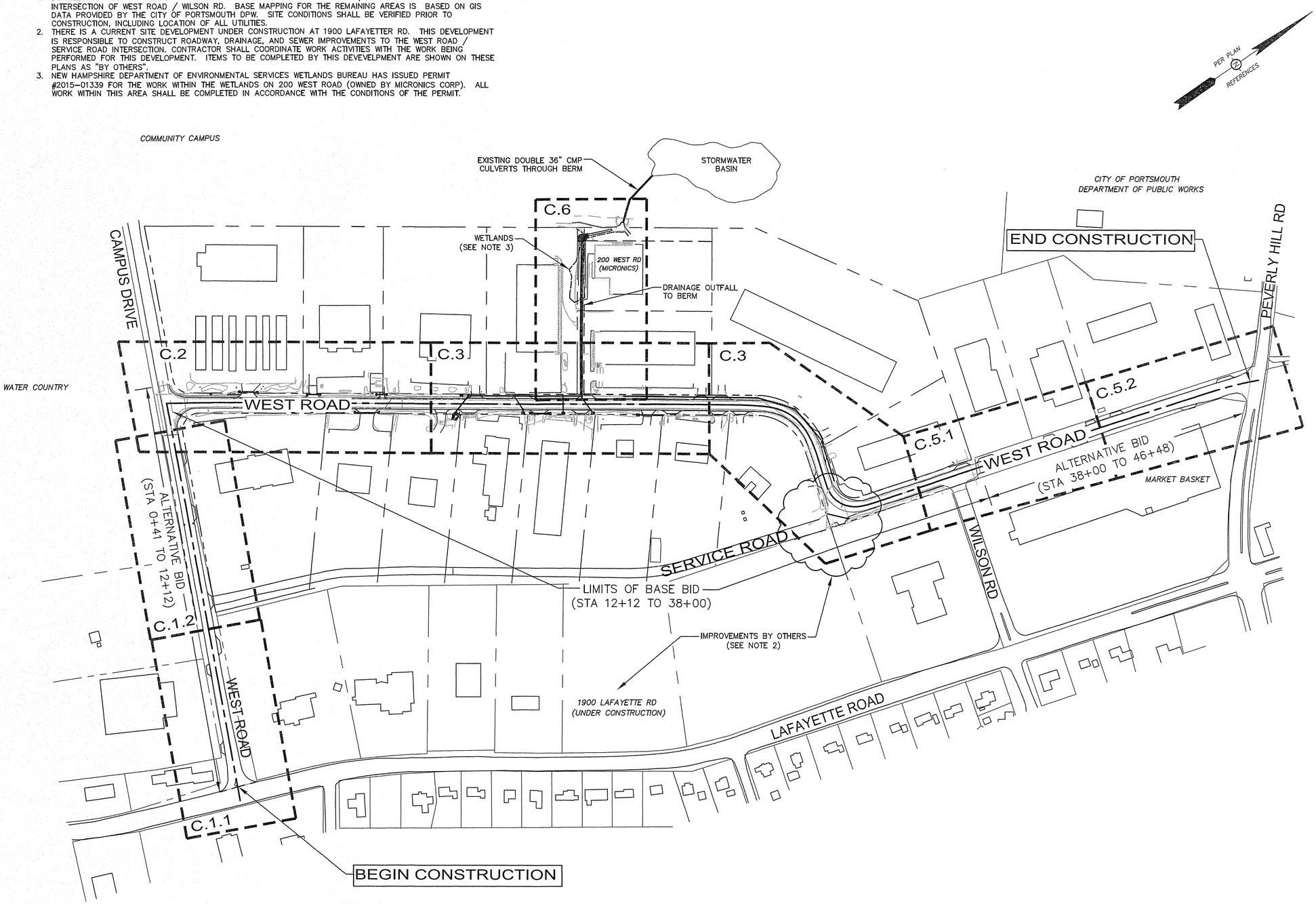
Details (Erosion Control)	D.1-D.2	2	08/25/15
Details	D.3	2	08/25/15
Details	D.4	3	08/25/15
Details	D.5	2	08/25/15

P4684

NOTES:

1. DETAILED SURVEY WAS PERFORMED FROM THE INTERSECTION OF WEST ROAD / CAMPUS DRIVE TO THE INTERSECTION OF WEST ROAD / WILSON RD. BASE MAPPING FOR THE REMAINING AREAS IS BASED ON GIS DATA PROVIDED BY THE CITY OF PORTSMOUTH DPW. SITE CONDITIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION, INCLUDING LOCATION OF ALL UTILITIES.
2. THERE IS A CURRENT SITE DEVELOPMENT UNDER CONSTRUCTION AT 1900 LAFAYETTER RD. THIS DEVELOPMENT IS RESPONSIBLE TO CONSTRUCT ROADWAY, DRAINAGE, AND SEWER IMPROVEMENTS TO THE WEST ROAD / SERVICE ROAD INTERSECTION. CONTRACTOR SHALL COORDINATE WORK ACTIVITIES WITH THE WORK BEING PERFORMED FOR THIS DEVELOPMENT. ITEMS TO BE COMPLETED BY THIS DEVEVELPMENT ARE SHOWN ON THESE PLANS AS "BY OTHERS".
3. NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES WETLANDS BUREAU HAS ISSUED PERMIT #2015-01339 FOR THE WORK WITHIN THE WETLANDS ON 200 WEST ROAD (OWNED BY MICRONICS CORP). ALL WORK WITHIN THIS AREA SHALL BE COMPLETED IN ACCORDANCE WITH THE CONDITIONS OF THE PERMIT.



GRAPHIC SCALE
0 75 150 300 600
(IN FEET)

P4684

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. BELDEN NO. 14239 LICENSED PROFESSIONAL ENGINEER
7/29/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 25, 2015

REVISIONS

	DESCRIPTION	BY	DATE
0	PRELIMINARY PLANS	CDB	07/10/15
1	CONSTRUCTION	CDB	08/14/15
2	CONSTRUCTION (REVISED)	CDB	08/25/15

DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684-DESIGN WEST.DWG

SCALE:
22" x 34" - 1" = 150'
11" x 17" - 1" = 300'

OWNER/APPLICANT:
CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:
WEST ROAD RECONSTRUCTION
(LAFAYETTE ROAD TO PEVERLY HILL ROAD)
PROJECT #7200
PORTSMOUTH, NH

TITLE:
PROJECT AREA MAP

SHEET NUMBER:
G.1

NOTES:

1. THIS PLAN IS BASED ON A FIELD SURVEY BY JAMES VERRA AND ASSOC., INC. CONDUCTED 4 & 5/2015.
2. ON SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS UNITS.
   HORIZONTAL DATUM: NAD 1983 (1986 CONTROL ADJUSTMENT)
   VERTICAL DATUM: NAVD 1988
   PRIMARY BM: CITY CONTROL POINT "INDU"
3. THE RELATIVE ERROR OF CLOSURE WAS LESS THAN 1 FOOT IN 15,000 FEET.
4. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE CATCH BASINS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE @ 1-888-DIG-SAFE.
5. UNDERGROUND UTILITIES NOT MARKED OUT PRIOR TO CONDUCTING FIELD SURVEY.
6. CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE SETTING OR ESTABLISHMENT OF ANY GRADES/ELEVATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA AND ASSOC., INC.
7. AREAS NOT OTHERWISE INDENTIFIED ARE GRASSED.

REFERENCE PLANS:

1. ALTA/ACSM LAND TITLE SURVEY, TAX MAP 267 LOT 22, PROPERTY OF MICRONICS REALTY TRUST, 200 WEST ROAD, PORTSMOUTH, N.H., REVISED TO 3/28/2013, RCRD PLAN D-37668.
2. SUBDIVISION PLAN OF LAND FOR TBC REALTY TRUST, WEST ROAD, PORTSMOUTH, N.H., REVISED TO 1/17/1992, RCRD PLAN D-21499.
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5. SITE PLAN FOR TRAPPER BROWN CORPORATION, LOTS 16 & 17 WEST ROAD, PORTSMOUTH, N.H. BY RICHARD P. MILLETTE AND ASSOC., INC., REVISED TO 3/2/1989, ON FILE AT THE PORTSMOUTH PLANNING OFFICE.

LEGEND:

- IRON ROD
- RAILROAD SPIKE
- CHAIN LINK FENCE
- STEEL FENCE POST
- BA ..... BELL ATLANTIC
- EH ..... EXETER HAMPTON ELECTRIC CO.
- FP ..... FAIRPOINT
- NETT ..... NEW ENGLAND TELEPHONE AND TELEGRAPH CO.
- PSNH ..... PUBLIC SERVICE CO. OF NH
- VZ ..... VERIZON
- 110-5 ..... TAX SHEET - LOT NUMBER
- RCRD ..... ROCKINGHAM COUNTY REGISTRY OF DEEDS
- EOP ..... EDGE OF PAVEMENT
- SAC ..... SLOPED FACED ASPHALT CURB
- SGC ..... SLOPED FACED GRANITE CURB
- VAC ..... VERTICAL FACED ASPHALT CURB
- VGC ..... VERTICAL FACED GRANITE CURB
- RWC ..... CONCRETE RETAINING WALL
- RWM ..... MORTARED RETAINING WALL
- RWS ..... STONE RETAINING WALL
- RWW ..... WOOD RETAINING WALL
- BOLLARD
- SIGN
- DOUBLE POST SIGN
- UTILITY POLE
- UTILITY POLE W/TRANSFORMER
- LIGHT POLE
- UTILITY POLE WITH ARM & LIGHT
- GUY
- ELECTRICAL MANHOLE
- ELECTRICAL CONDUIT
- PAD MOUNTED TRANSFORMER
- E ..... ELECTRIC METER
- CABLE TV RISER
- H ..... HVAC UNIT
- GAS METER
- GAS SHUT OFF
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- UGTV ..... UNDERGROUND CATV/DATA
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- OHTV ..... OVERHEAD CATV/DATA
- GRAVEL
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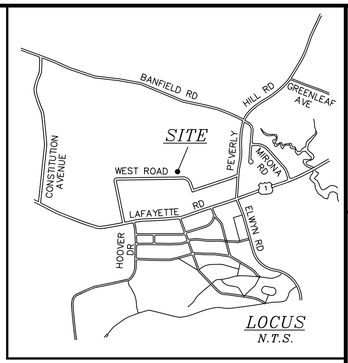
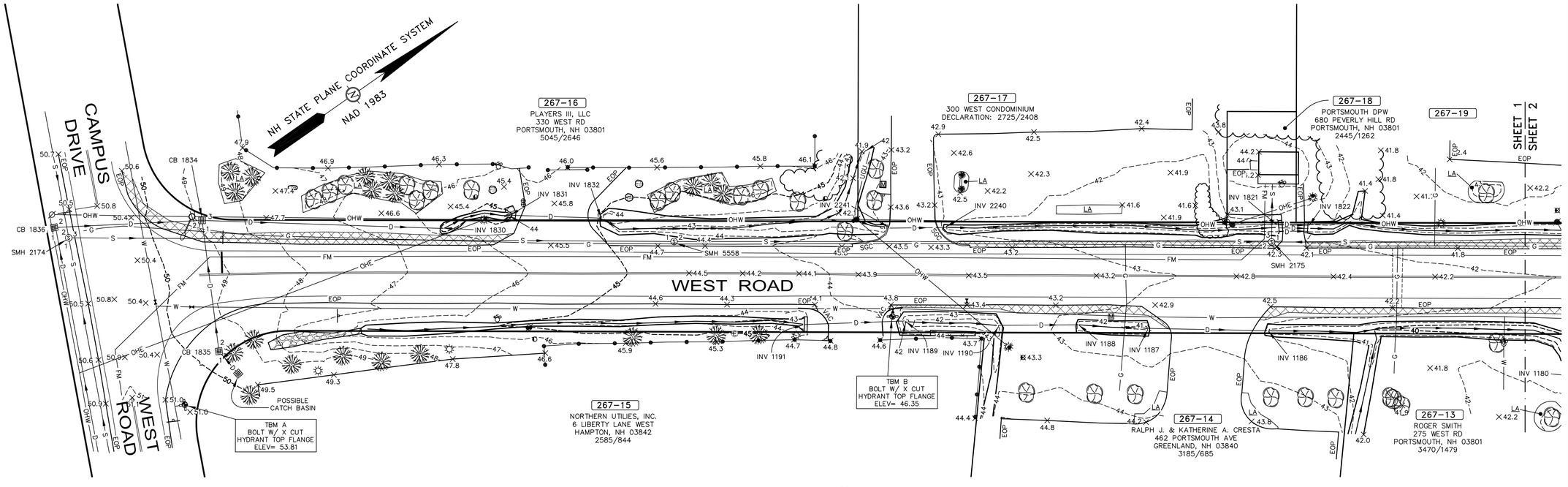
- RIP RAP
- x12.5 ..... SPOT GRADE





SEE SHEET 3 FOR DRAIN & SEWER TABLES

P4684

SURVEYOR:
James Verra and Associates, Inc.
LAND SURVEYORS
101 SHATTUCK WAY - SUITE 8
NEWINGTON, N.H. 03801- 7876
603-436-3557
JOB NO. 23604
PLAN NO. 23604-2

ENGINEER:
ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

ISSUED FOR:
ENGINEERING DESIGN

ISSUE DATE:
MAY 15, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
1	ENGINEERING DESIGN	JV	5/15/15

DRAWN BY: JCS
APPROVED BY: JV
DRAWING FILE: 23604.DWG

SCALE:
22" x 34" - 1" = 30'
11" x 17" - 1" = 60'

APPLICANT:
CITY OF PORTSMOUTH, N.H.
C/O DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
C/O RAY PEZZULLO

PROJECT:
PROPOSED DRAINAGE IMPROVEMENT PLANS

WEST ROAD
PORTSMOUTH
NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE No. 625 James Verra LICENSED LAND SURVEYOR SIGNATURE

TITLE:
LIMITED TOPOGRAPHIC PLAN

SHEET NUMBER:
1 OF 3

LEGEND:

- IRON ROD
- RAILROAD SPIKE
- CHAIN LINK FENCE
- STEEL FENCE POST
- BA ..... BELL ATLANTIC
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- FP ..... FAIRPOINT
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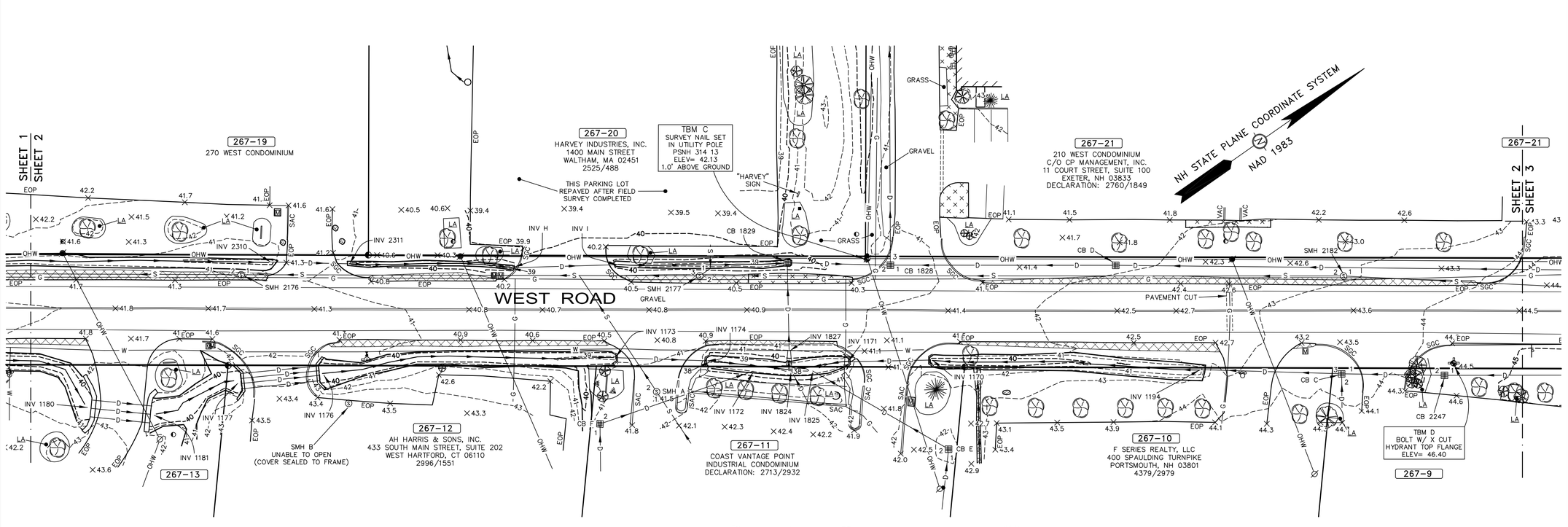

SEE SHEET 3 FOR DRAIN & SEWER TABLES

30 0 30 60 90 120 FEET

10 0 10 20 30 METERS

P4684

SURVEYOR:

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LAND SURVEYORS

101 SHATTUCK WAY - SUITE 8
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603-436-3557
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ENGINEER:

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ISSUED FOR:

ENGINEERING DESIGN

ISSUE DATE:

MAY 15, 2015

REVISIONS

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1	ENGINEERING DESIGN	JV	5/15/15

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APPROVED BY: JV
DRAWING FILE: 23604.DWG

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C/O DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
C/O RAY PEZZULLO

PROJECT:

PROPOSED DRAINAGE IMPROVEMENT PLANS

WEST ROAD
PORTSMOUTH
NEW HAMPSHIRE

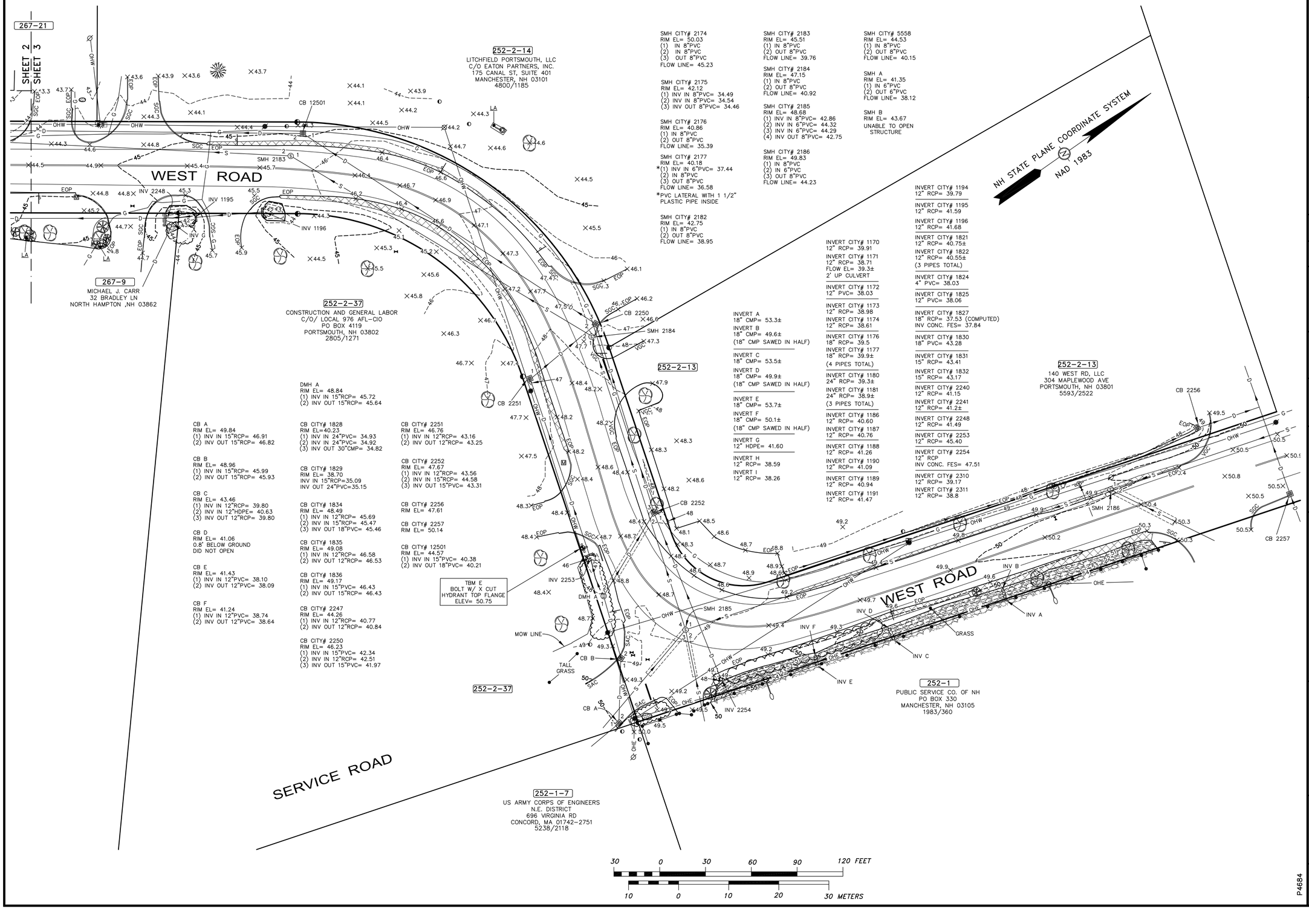
STATE OF NEW HAMPSHIRE No. 625 James Verra LICENSED LAND SURVEYOR SIGNATURE

TITLE:

LIMITED TOPOGRAPHIC PLAN

SHEET NUMBER:

2 OF 3



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PROJECT:

PROPOSED DRAINAGE IMPROVEMENT PLANS

WEST ROAD
PORTSMOUTH
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STATE OF NEW HAMPSHIRE — No. 625 — James Verra — SIGNATURE — LICENSED LAND SURVEYOR

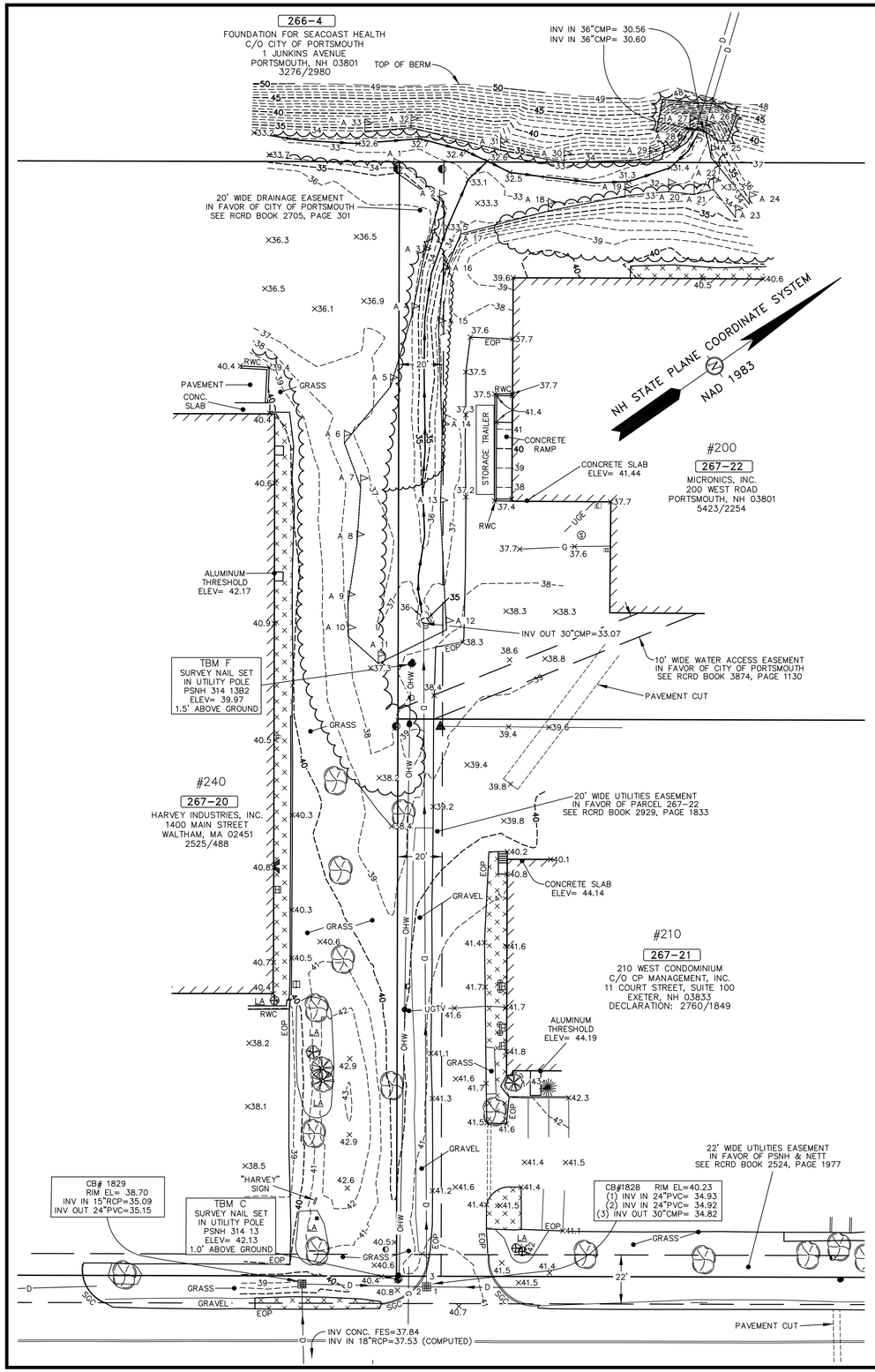
TITLE:

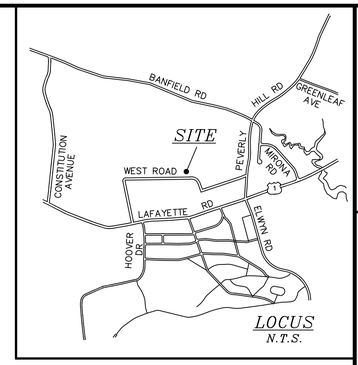
LIMITED TOPOGRAPHIC PLAN

SHEET NUMBER:

3 OF 3

P4684





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NOTES:

1. THIS PLAN IS BASED ON A FIELD SURVEY BY JAMES VERRA AND ASSOC., INC. CONDUCTED 4/2015.
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7. WETLANDS DELINEATION ON 4/17/2015 BY MARK WEST, NHCWS.

REFERENCE PLANS:

1. ALTA/ACSM LAND TITLE SURVEY, TAX MAP 267 LOT 22, PROPERTY OF MICRONICS REALTY TRUST, 200 WEST ROAD, PORTSMOUTH, N.H., REVISED TO 3/28/2013, RCRD PLAN D-37668.
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30 0 30 60 90 120 FEET
10 0 10 20 30 METERS

STATE OF NEW HAMPSHIRE No. 625 James Verra SIGNATURE LICENSED LAND SURVEYOR

P4684

SURVEYOR:
James Verra and Associates, Inc.
LAND SURVEYORS
101 SHATTUCK WAY – SUITE 8
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JOB NO. 23604
PLAN NO. 23604

ENGINEER:
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133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

ISSUED FOR:
ENGINEERING DESIGN

ISSUE DATE:
MAY 7, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
1	ENGINEERING DESIGN	JV	5/7/15

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DRAWING FILE: 23604.DWG

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APPLICANT:
CITY OF PORTSMOUTH, N.H.
C/O DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
C/O RAY PEZZULLO

OWNERS:
HARVEY INDUSTRIES, INC.
1400 MAIN STREET
WALTHAM, MA 02451
ASSESSOR'S PARCEL 267–20

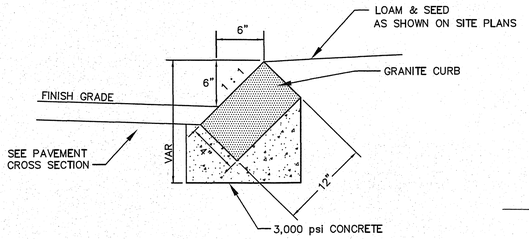
210 WEST CONDOMINIUM
C/O CP MANAGEMENT, INC.
11 COURT STREET, SUITE 100
EXETER, NH 03833
ASSESSOR'S PARCEL 267–21

MICRONICS, INC.
200 WEST ROAD
PORTSMOUTH, NH 03801
ASSESSOR'S PARCEL 267–22

PROJECT:
PROPOSED DRAINAGE IMPROVEMENT PLAN
200, 210 & 240 WEST ROAD
PORTSMOUTH, NH
ASSESSOR'S MAP 267
LOTS 22, 21 & 20

TITLE:
LIMITED TOPOGRAPHIC PLAN

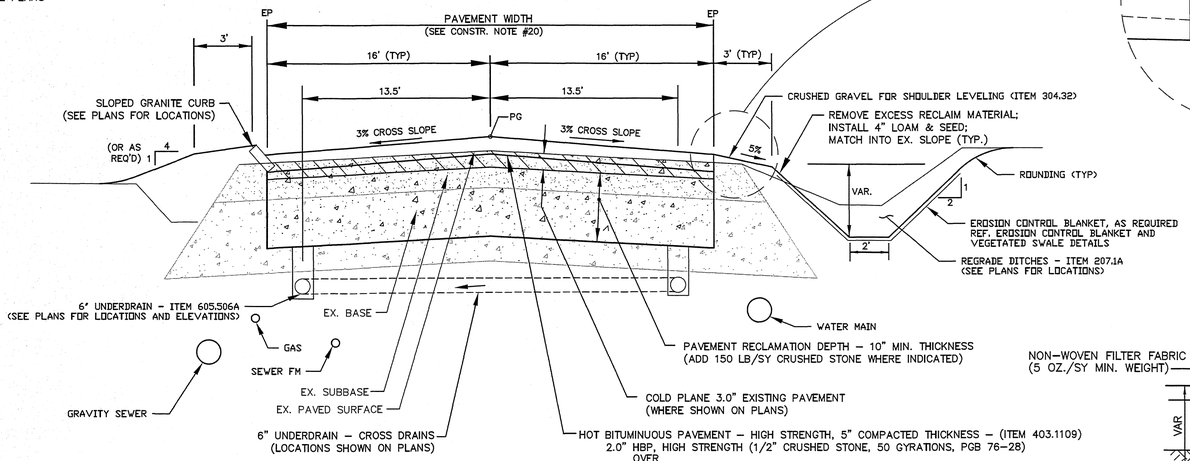
SHEET NUMBER:
1 OF 1

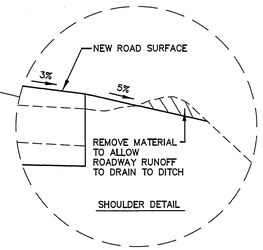


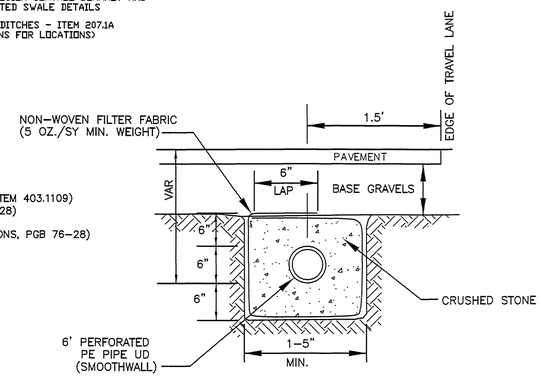
NOTES

1. SEE SITE PLAN FOR LIMITS OF CURBING
2. ADJOINING STONES OF STRAIGHT CURB LAID ON CURVES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES – SEE CHART

RADIUS FOR STONES WITH SQUARE JOINTS	MAXIMUM LENGTH
16'–28'	1'–6"
29'–41'	2'
42'–55'	3'
56'–68'	4'
69'–82'	5'
83'–96'	6'
97'–110'	7'
OVER 110'	8'







CRUSHED STONE BEDDING

SIEVE SIZE	% FINER BY WEIGHT
1"	100
3/4"	90 – 100
3/8"	20 – 55
# 4	0 – 10
# 8	0 – 5

PAVEMENT DESIGN NOTES:

SEE GRADING NOTE 1 BELOW FOR DESIGN INTENT

ALTERNATIVE BID – STATION 0+41 TO 12+12 AND STA 38+00 TO 45+48

1. COLD PLANE 3.0" BITUMINOUS PAVEMENT AND REMOVE SPOILS.
2. RECLAIM REMAINING EXISTING PAVEMENT AND BASE (10" DEPTH).
   2.A. REHANDLE, REMOVE AND REGRADE BASE MATERIALS TO GRADE.
   2.B REGRADE ROAD BASE. CROWN ROADWAY TO 3% CROSS SLOPE.
3. OVERLAY 5.0" HOT BITUMINOUS PAVEMENT (HIGH STRENGTH)
   3.0" HBP FINE BINDER "WINTER" COURSE (3/4")
   (TO BE INSTALLED IN FALL OF 2015)
   2.0" HBP FINAL WEARING COURSE (1/2")
   (TO BE INSTALLED IN SPRING OF 2016)

BASE BID – STATION 12+12 TO 38+00

4. COLD PLANE 3.0" BITUMINOUS PAVEMENT AND REMOVE SPOILS. (STA 19+00 TO 38+00)
5. RECLAIM EXISTING PAVEMENT AND BASE (10" DEPTH).
   4.A ADD CRUSHED STONE (ITEM 306.36) INTO RECLAIMED BASE AT A RATE OF 150 LB/SY.
   4.B REHANDLE, REMOVE AND REGRADE BASE MATERIALS TO GRADE.
   4.C REGRADE ROAD BASE TO ELEVATIONS SHOWN ON PLANS. CROWN ROADWAY TO 3% CROSS SLOPE.
6. OVERLAY 5.0" HOT BITUMINOUS PAVEMENT (HIGH STRENGTH)
   3.0" HBP FINE BINDER "WINTER" COURSE (3/4")
   (TO BE INSTALLED IN FALL OF 2015)
   2.0" HBP FINAL WEARING COURSE (1/2")
   (TO BE INSTALLED IN SPRING OF 2016)

SLOPED GRANITE CURB

NOT TO SCALE

PAVEMENT REPAIRS
TYPICAL ROADWAY CROSS SECTION

NOT TO SCALE

UNDERDRAIN TRENCH SECTION

NOT TO SCALE

CONSTRUCTION NOTES:

1. DO NOT BEGIN CONSTRUCTION UNTIL LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL LOCAL, STATE, AND FEDERAL WETLANDS REGULATIONS, INCLUDING ANY PERMITTING AND SETBACKS REQUIRED UNDER THESE REGULATIONS.
2. CONTRACTOR SHALL OBTAIN A "DIGSAFE" NUMBER AND NOTIFY CITY OF PORTSMOUTH PUBLIC WORKS AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
3. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH PUBLIC WORKS. N.H.D.O.T. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE, LATEST EDITION, SHALL APPLY WHERE CITY STANDARDS ARE SILENT.
4. CONTRACTOR TO ESTABLISH AND MAINTAIN TEMPORARY BENCHMARKS (TBMS) AND PERFORM CONSTRUCTION SURVEY LAYOUT.
5. THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE ENGINEER, SURVEYOR, OR OWNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATION AND ELEVATION OF ALL EXISTING UTILITIES. ANY DISCREPANCIES BETWEEN FIELD AND PLAN SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER. THE CONTRACTOR SHALL ANTICIPATE CONFLICTS, REPAIR DAMAGE TO EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES AT NO EXTRA COST TO THE OWNER. ALL UTILITY LINES TO BE RETAINED SHALL BE PRESERVED AND PROTECTED.
6. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINE WITH RS–1 IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
7. UPON COMPLETION OF CONSTRUCTION, THE DRAINAGE INFRASTRUCTURE SHALL BE CLEANED OF ALL DEBRIS AND SEDIMENT.
8. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR PAVEMENT AREAS AND UTILITY TRENCHES DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL.
9. IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATION. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
10. EXCAVATED MATERIALS SHALL BE PLACED AS FILL MATERIALS WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN THE 100 YEAR FLOOD ZONE IN ACCORDANCE WITH NHDES REQUIREMENTS.
11. PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION. VOIDS BETWEEN STONES AND CLUMPS OF MATERIAL SHALL BE FILLED WITH FINE MATERIALS.
12. CONTRACTOR SHALL CONTROL DUST BY SPRAYING WATER, USING CALCIUM AND SWEEPING PAVED SURFACES, AS DIRECTED BY OWNER'S AUTHORIZED REPRESENTATIVE.
13. WORK HOURS OF CONSTRUCTION SHALL BE 7AM TO 7PM, MONDAY THROUGH FRIDAY.
14. ROAD SURFACES SHALL BE REGRADED AT THE END OF WORK WEEK.
15. PATCHES TO SIDEWALKS SHALL BE PERFORMED AFTER INSTALLATION OF DRAIN LATERALS.
16. ALL DRAIN LATERALS SHALL BE RECORDED WITH TIE LOCATIONS.
17. THE CONTRACTOR SHALL INCUR THE COST OF ANY DAMAGE TO THE WATERMAINS, WATER SERVICES, SEWER LINES OR SEWER LATERALS.
18. CONTRACTOR SHALL MAINTAIN TRAVEL WAY THROUGHOUT CONSTRUCTION AS DIRECTED BY OWNER'S AUTHORIZED REPRESENTATIVE. REGRADE SURFACES AS NECESSARY TO ELIMINATE POT HOLES AND PONDING OF ROADWAYS AND DRIVEWAYS THROUGHOUT THE CONSTRUCTION PERIOD.
19. CONTRACTOR SHALL MAINTAIN AND PROVIDE FINAL RECORD DRAWINGS TO THE ENGINEER AND CITY OF PORTSMOUTH.
20. PAVEMENT WIDTH SHALL MATCH EXISTING WIDTHS, TYPICALLY PAVEMENT WIDTH IS 32 FEET WIDE (12 FOOT LANES WITH 4 FOOT SHOULDERS).

APPROVAL NOTES:

1. CITY OF PORTSMOUTH CONDITIONAL USE PERMIT, GRANTED JUNE 23, 2015.
2. NHDES WETLANDS PERMIT NUMBER 2015–01339, DATED JULY 31, 2015.

GRADING NOTES:

1. GENERAL INTENT BY PAVEMENT DESIGN SECTION AREAS:
   A) STA 0+41 TO 12+12 – MILL 3" OF AC AND REMOVE. RECLAIM REMAINING AC FOR NEW STABILIZED ROAD BASE. REGADE ROADWAY TO 3% CROSS SLOPE. OVERLAY 5" HBP.
      IT IS THE DESIGN INTENT FOR THE NEW ROAD CENTERLINE PROFILE TO BE APPROXIMATELY 3" HIGHER THAN EXISTING AND THE EDGE OF PAVEMENT TO BE 1" ABOVE EXISTING EP.
   B) STA 12+12 TO 19+00 – RECLAIM THE EXISTING AC AND BASE AND ADD 150 LB/SY OF NEW CRUSHED STONE TO THE MIX. REGRADE/RAISE THE ROADWAY TO THE ELVATIONS SHOWN ON THE PLANS. USE EXCESS MATERIAL FROM AREA (C) AS NEEDED TO ACHIEVE DESIRED GRADES. REGRADE ROADWAY TO 3% CROSS SLOPE. OVERLAY 5" HBP.
      IT IS THE DESIGN INTENT TO RAISE THE CENTERLINE PROFILE OF THE ROADWAY BETWEEN 6–12" THROUGH THIS SECTION.
   C) STA 19+00 TO 38+00 – MILL 3" OF AC AND REMOVE. RECLAIM THE REMAINING AC AND ADD 150 LB/CY OF NEW CRUSHED STONE FOR STABILIZED ROAD BASE. REGRADE ROADWAY TO 3% CROSS SLOPE. OVERLAY 5" HBP.
      IT IS THE DESIGN INTENT TO RAISE THE CENTERLINE PROFILE OF THE ROADWAY BY APPROXIMATELY 4.0" AND THE EDGE OF PAVEMENT BY APPROXIMATELY 2.0".
   D) STA 38+00 TO 46+48 – SAME AS AREA (A) ABOVE
2. ROADWAY LOW SPOTS SHALL BE RELOCATED BY ADJUSTING GRADES, AS NECESSARY, TO PROPOSED CATCH BASIN LOCATIONS TO ASSURE PROPER DRAINAGE AND NO PONDING.
3. THE GRADING ON THIS PLAN SHOWS THE GENERAL INTENT AND DIRECTION OF THE STORMWATER FLOW. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY FIELD CONDITIONS THAT WILL IMPACT THE GRADING DESIGN SHOWN ON THIS PLAN FOR RESOLUTION.
4. WHERE PROPOSED GRADES MEET EXISTING GRADES, CONTRACTOR SHALL BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW WORK. PONDING AT TRANSITION AREAS WILL NOT BE ACCEPTED. ABRUPT RIDGES AT TOPS AND BOTTOM WILL NOT BE ACCEPTED.
5. CONTRACTOR SHALL ADJUST UTILITY ELEMENTS MEANT TO BE FLUSH WITH GRADE (CLEANOUTS, UTILITY MANHOLES, CATCH BASINS, INLETS, ETC.) THAT IS AFFECTED BY SITE WORK OR GRADE CHANGES, WHETHER SPECIFICALLY NOTED ON PLANS OR NOT.
6. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS AT DRIVEWAYS.
7. ALL UNSUITABLE MATERIALS AND SURPLUS MATERIALS WHICH CAN NOT BE APPROPRIATELY USED ON SITE SHALL BE REMOVED AND DISPOSED AT NO ADDITIONAL COST TO THE OWNER.
8. SAWCUT AND REMOVE EXISTING PAVEMENT ONE FOOT OFF PROPOSED EDGE OF PAVEMENT OR CURB LINE IN ALL AREAS WHERE NEW PAVEMENT OR CURBING ABUTS EXISTING PAVEMENT.
9. A SEDIMENT INLET FILTER SHALL BE INSTALLED AND MAINTAINED AT EACH CATCH BASIN THROUGHOUT THE PROJECT.
10. CONTRACTOR SHALL SEGREGATE RECALAIMED MATERIAL AND MILLED ASPHALT CONCRETE FROM ALL OTHER SOIL MATERIAL.
11. THE DOT PAVEMENT SPECIFICATION IS MODIFIED TO THE CITY OF PORTSMOUTH REQUIREMENTS. REFERENCE PROJECT SPECIAL PROVISIONS.

UTILITY NOTES:

1. COORDINATE UTILITY WORK WITH UTILITY COMPANIES.
2. CONTRACTOR SHALL VERIFY THE EXACT LOCATION & ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. ANY DISCREPANCIES BETWEEN FIELD AND PLAN SHALL BE IMMEDIATELY REPORTED TO ENGINEER.
3. CONTRACTOR SHALL MAINTAIN WATER AND SEWER SERVICES AT ALL TIMES TO USERS.
4. ALL UTILITY STRUCTURES SHALL BE SET 1/4" LOWER THAN PROPOSED GRADE.
5. ALL DRAIN LATERALS SHOWN ARE REPRESENTATIVE ONLY; ACTUAL LOCATION WILL BE DETERMINED IN THE FIELD BY CITY OF PORTSMOUTH PUBLIC WORKS.
6. ALL BROKEN WATER GATE BOX RISERS AND COVERS SHALL BE REPLACED. IF DAMAGED BY CONTRACTOR, REPLACE AT NO COST TO OWNER.
7. PLUGGING OR CAPPING ABANDONED DRAIN PIPES IS SUBSIDIARY TO THE PROJECT.
8. EXISTING DRAIN PIPE SECTION THAT ARE ABANDONED IN PLACE SHALL BE PLUGGED BY: BRICK & MORTAR, URETHANE FOAM, CAP OR OTHER METHODS APPROVED BY ENGINEER.

P4684

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

STATE OF NEW HAMPSHIRE
CORY D. BELDEN
NO. 14239
LICENSED PROFESSIONAL ENGINEER
8/27/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 27, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	PRELIMINARY PLANS	CDB	07/10/15
1	CONSTRUCTION	CDB	08/14/15
2	CONSTRUCTION (REVISED)	CDB	08/27/15

DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684–DESIGN WEST.DWG

SCALE: AS SHOWN

OWNER/APPLICANT:
CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:
WEST ROAD RECONSTRUCTION
(LAFAYETTE ROAD TO PEVERLY HILL ROAD)
PROJECT #7200
PORTSMOUTH, NH

TITLE:
PAVEMENT SECTIONS AND GENERAL NOTES

SHEET NUMBER:
G.2

LEGEND:

- IRON ROD
- RAILROAD SPIKE
- CHAIN LINK FENCE
- STEEL FENCE POST
- BA — BELL ATLANTIC
- EH — EXETER HAMPTON ELECTRIC CO.
- FP — FAIRPOINT
- NETT — NEW ENGLAND TELEPHONE AND TELEGRAPH CO.
- PSNH — PUBLIC SERVICE CO. OF NH
- VZ — VERIZON
- 110–5 — TAX SHEET – LOT NUMBER
- RCRD — ROCKINGHAM COUNTY REGISTRY OF DEEDS
- EOP — EDGE OF PAVEMENT
- SAC — SLOPED FACED ASPHALT CURB
- SGC — SLOPED FACED GRANITE CURB
- VAC — VERTICAL FACED ASPHALT CURB
- VGC — VERTICAL FACED GRANITE CURB
- RWC — CONCRETE RETAINING WALL
- RWM — MORTARED RETAINING WALL
- RWS — STONE RETAINING WALL
- RWW — WOOD RETAINING WALL
- BOLLARD
- SIGN
- DOUBLE POST SIGN
- UTILITY POLE
- UTILITY POLE W/TRANSFORMER
- LIGHT POLE
- UTILITY POLE WITH ARM & LIGHT
- GUY
- ELECTRICAL MANHOLE
- ELECTRICAL CONDUIT
- PAD MOUNTED TRANSFORMER
- ELECTRIC METER
- CABLE TV RISER
- HVAC UNIT
- GAS METER
- GAS SHUT OFF
- GAS VALVE
- WATER GATE VALVE
- WATER SHUT OFF VALVE
- HYDRANT
- SIAMESE FIRE CONNECTION
- CATCH BASIN
- DRAIN MANHOLE
- SEWER MANHOLE
- SEWER CLEAN OUT
- TREE LINE
- BRUSH LINE
- CONIFEROUS TREE
- DECIDUOUS TREE
- CONIFEROUS SHRUB
- DECIDUOUS SHRUB
- W — WATER LINE
- S — SEWER LINE
- D — DRAIN LINE
- G — GAS LINE
- FM — FORCE MAIN
- UGE — UNDERGROUND ELECTRIC
- UGT — UNDERGROUND TELEPHONE
- UGTV — UNDERGROUND CATV/DATA
- UGU — UNDERGROUND UTILITIES
- OHW — OVERHEAD WIRES
- OHE — OVERHEAD ELECTRIC
- OHT — OVERHEAD TELEPHONE
- OHTV — OVERHEAD CATV/DATA
- GRAVEL
- CRUSHED STONE
- RIP RAP
- ×12.5 — SPOT GRADE

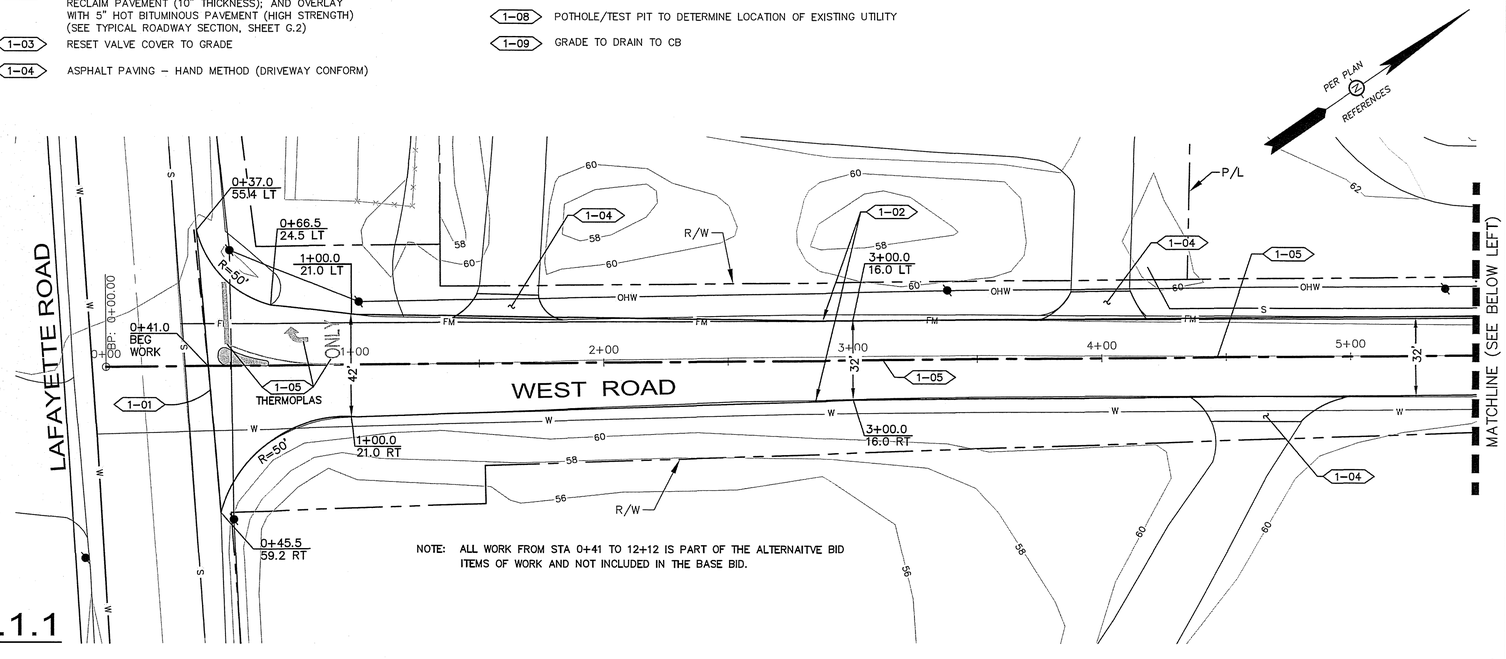
KEY NOTES:

##–## — NOTE # / SHEET # OF NOTE

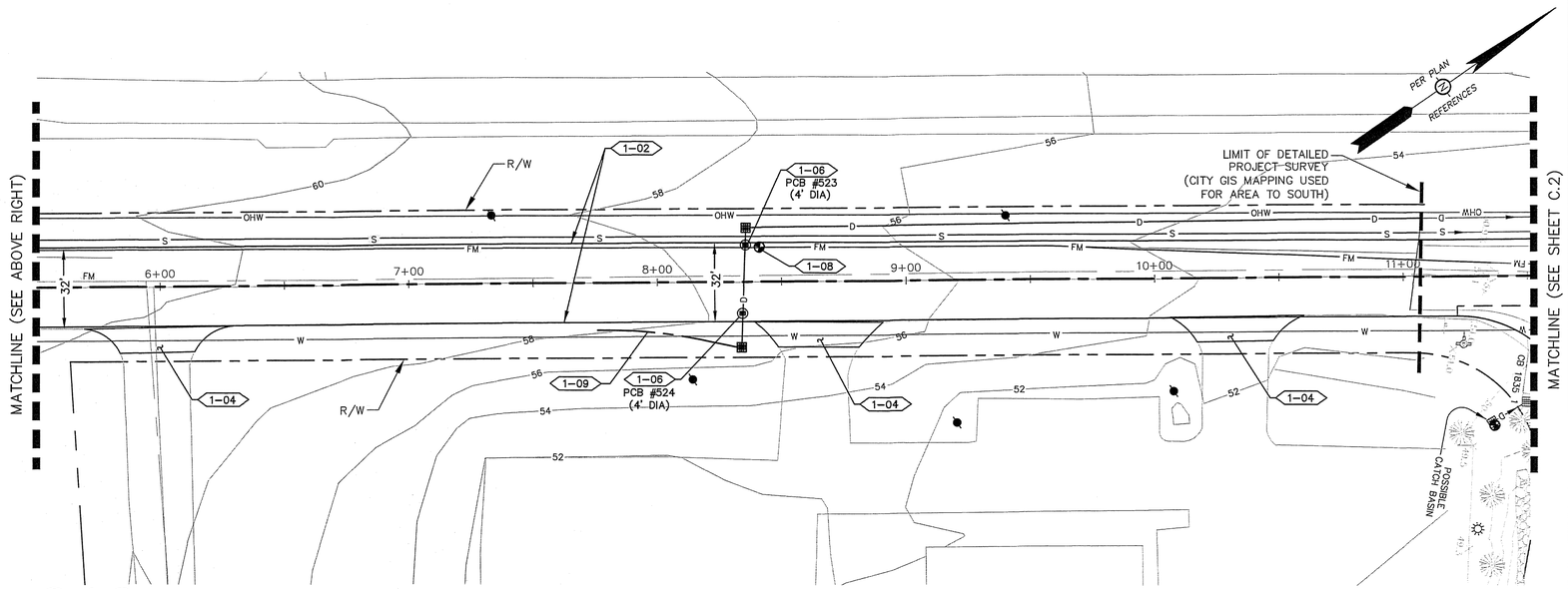
- 1–01 LIMITS OF PAVING WORK; SAWCUT EDGE
- 1–02 COLD PLANE 3" EXISTING PAVEMENT (TO BE REMOVED); RECLAIM PAVEMENT (10" THICKNESS); AND OVERLAY WITH 5" HOT BITUMINOUS PAVEMENT (HIGH STRENGTH) (SEE TYPICAL ROADWAY SECTION, SHEET G.2)
- 1–03 RESET VALVE COVER TO GRADE
- 1–04 ASPHALT PAVING – HAND METHOD (DRIVEWAY CONFORM)
- 1–05 PAVEMENT STRIPING (MATCH EXISTING); THERMOPLASTIC PAVEMENT SYMBOLS AND STOP BARS; PAINT TRAFFIC LINES
- 1–06 PROPOSED CATCH BASIN (PCB) OR DRAIN MANHOLE (PDMH)
- 1–07 REMOVE CATCH BASIN AND DRAIN LINE
- 1–08 POTHOLE/TEST PIT TO DETERMINE LOCATION OF EXISTING UTILITY
- 1–09 GRADE TO DRAIN TO CB

PLAN REFERENCES:

1. DETAILED SURVEY WAS NOT COMPLETED IN THIS AREA OF THE PROJECT. PLANS ARE BASED ON GIS DATA PROVIDED BY THE CITY OF PORTSMOUTH DPW. SITE CONDITIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION, INCLUDING LOCATION OF ALL UTILITIES.
2. ROADWAY CENTERLINE BASED ON TOPOGRAPHIC SURVEY OF THE EXISTING ROADWAY CENTERLINE STRIPING AND CITY GIS MAPPING. PROPOSE ROADWAY CENTERLINE IS INTENDED TO FOLLOW THE EXISTING ROAD CENTERLINE.



C.1.1



C.1.2

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

P4684

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

STATE OF NEW HAMPSHIRE – CORY D. BERDEN No. 14239 LICENSED PROFESSIONAL ENGINEER – 8/25/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 25, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	PRELIMINARY PLANS	CDB	07/10/15
1	CONSTRUCTION	CDB	08/14/15
2	CONSTRUCTION (REVISED)	CDB	08/25/15

DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684–DESIGN WEST.DWG

SCALE:
22" x 34" – 1" = 30'
11" x 17" – 1" = 60'

OWNER/APPLICANT:

CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:

WEST ROAD RECONSTRUCTION

(LAFAYETTE ROAD TO PEVERLY HILL ROAD)

PROJECT #7200

PORTSMOUTH, NH

TITLE:

WEST ROAD PLAN

SHEET NUMBER:

C.1

KEY NOTES:

##–## NOTE # / SHEET # OF NOTE

2-01 LIMITS OF PAVING WORK; SAWCUT EDGE

2-02 COLD PLANE 3" AC (WHERE SHOWN); RECLAIM PAVEMENT (10" THICKNESS); ADD CRUSHED STONE AT 150 LB/SY; AND OVERLAY WITH 5" HOT BITUMINOUS PAVEMENT (HIGH STRENGTH) (SEE TYPICAL ROADWAY SECTION, SHEET G.2)

2-03 RESET VALVE/MANHOLE COVER TO GRADE

2-04 ASPHALT PAVING – HAND METHOD; DRIVEWAY CONFORMS AND PAVED SWALE; RESET CURB (AS REQUIRED)

2-05 PROPOSED DRIVEWAY CULVERT (PDC); REMOVE EXISTING CULVERT; NEW CULVERT, FLARED END SECTIONS, AND RIPRAP; SIZE AND TYPE AS SHOWN

2-06 EXISTING CULVERT(S) TO REMAIN

2-07 INSTALL 6" PERFORATE PE ROADWAY UNDERDRAINS; INSTALL CROSS DRAINS AT 30 FT INTERVALS

2-08 EXCAVATE DITCH; STRAIGHT GRADE FROM CULVERT INVERTS; 2' BOTTOM WIDTH WITH 2:1 SIDE SLOPES (TYP); LOAM AND SEED; EROSION CONTROL BLANKET (AS REQUIRED)

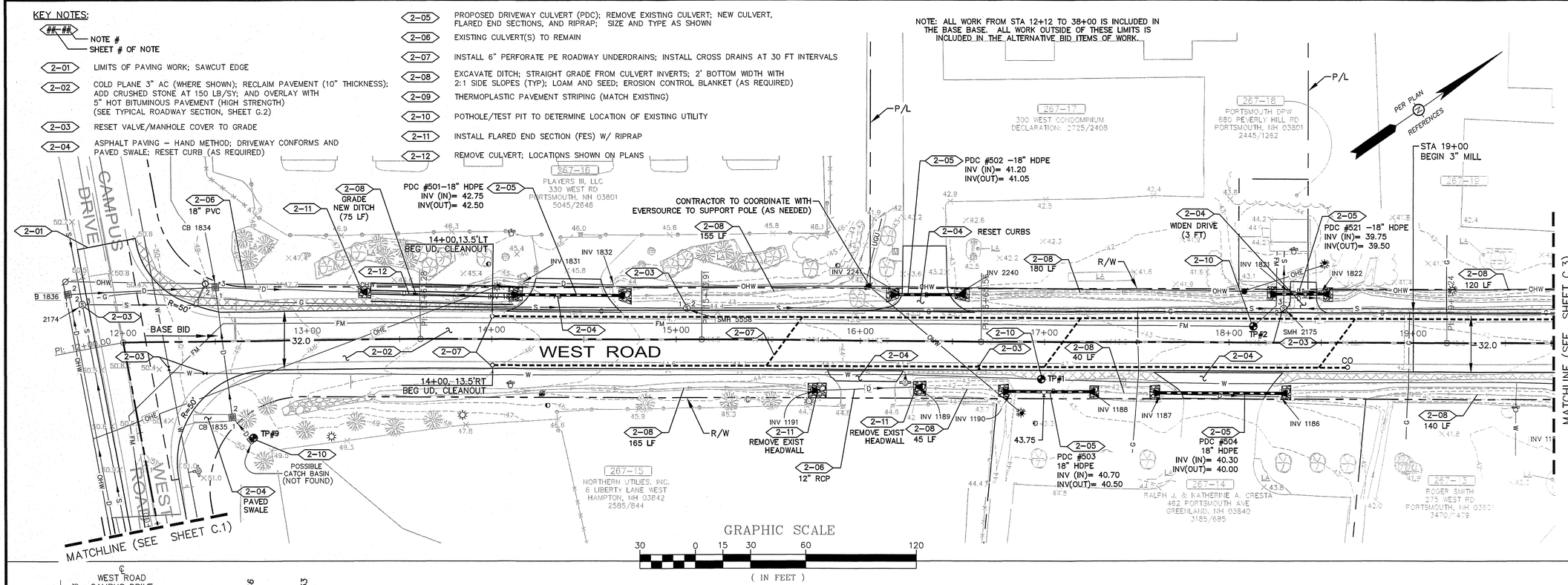
2-09 THERMOPLASTIC PAVEMENT STRIPING (MATCH EXISTING)

2-10 POTHOLE/TEST PIT TO DETERMINE LOCATION OF EXISTING UTILITY

2-11 INSTALL FLARED END SECTION (FES) W/ RIPRAP

2-12 REMOVE CULVERT; LOCATIONS SHOWN ON PLANS

NOTE: ALL WORK FROM STA 12+12 TO 38+00 IS INCLUDED IN THE BASE BASE. ALL WORK OUTSIDE OF THESE LIMITS IS INCLUDED IN THE ALTERNATIVE BID ITEMS OF WORK.



GRAPHIC SCALE

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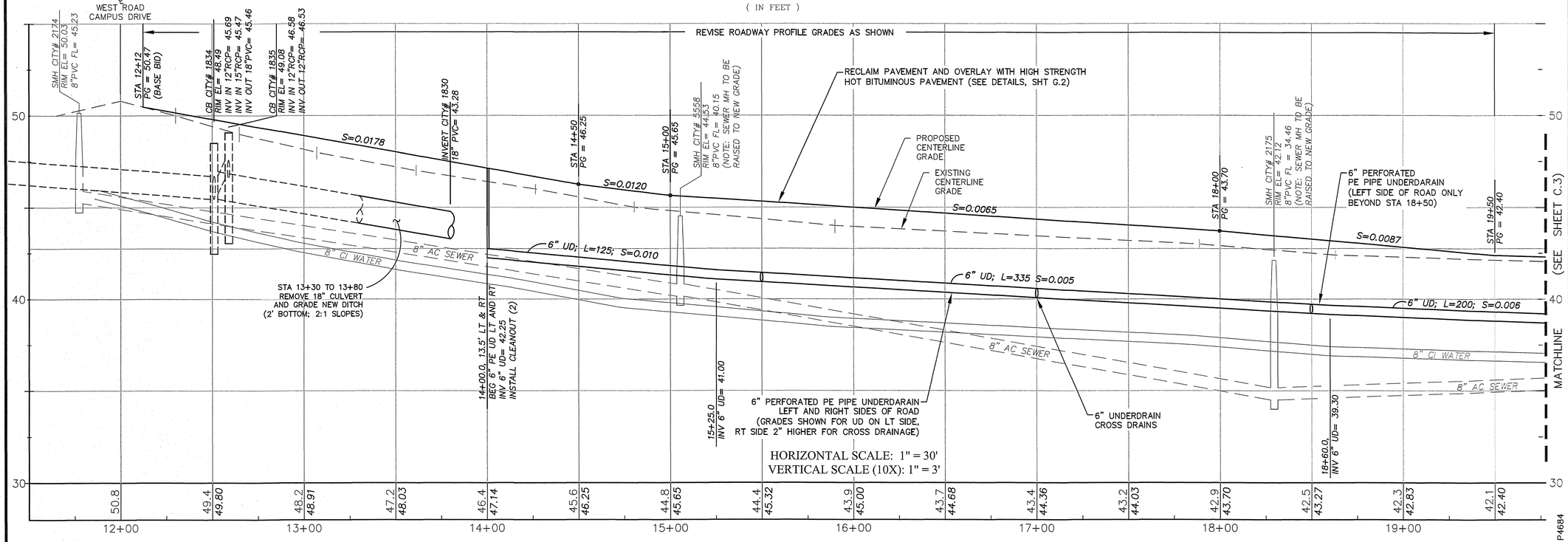
(IN FEET)



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STATE OF NEW HAMPSHIRE – CORY D. BELDEN NH 13239 LICENSED PROFESSIONAL ENGINEER
7/27/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 27, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	PRELIMINARY PLANS	CDB	07/10/15
1	CONSTRUCTION	CDB	08/14/15
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DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684–DESIGN WEST.DWG

SCALE:
22" x 34" – 1" = 30'
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OWNER/APPLICANT:

CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:

WEST ROAD RECONSTRUCTION

(LAFAYETTE ROAD TO PEVERLY HILL ROAD)

PROJECT #7200

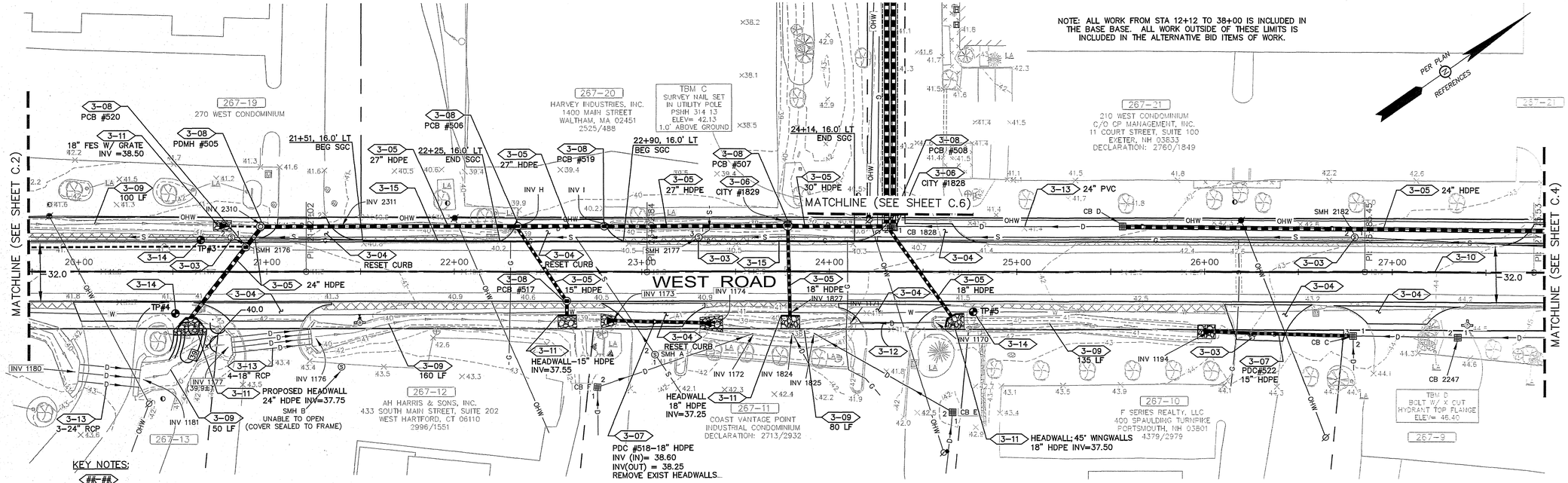
PORTSMOUTH, NH

TITLE:

WEST ROAD PLAN AND PROFILE

SHEET NUMBER: C.2

P4684



KEY NOTES:

##-## NOTE # / SHEET # OF NOTE

3-01 LIMITS OF PAVING WORK; SAWCUT EDGE

3-02 COLD PLANE 3" EXISTING PAVEMENT; RECLAIM PAVEMENT (10" THICKNESS); ADD CRUSHED STONE AT 150 LB/SY (WHERE REQUIRED); AND OVERLAY WITH 5" HOT BITUMINOUS PAVEMENT (HIGH STRENGTH) (SEE TYPICAL ROADWAY SECTION, SHEET G.2)

3-03 RESET VALVE/MANHOLE COVER TO GRADE

3-04 ASPHALT PAVING – HAND METHOD (DRIVEWAY CONFORM); RESET CURB (AS REQUIRED)

3-05 NEW STORM DRAIN CULVERT; REMOVE EXISTING CULVERT AS REQUIRED; SIZE AND TYPE AS SHOWN

3-06 REMOVE EXISTING CB OR DMH

3-07 PROPOSED DRIVEWAY CULVERT (PDC); REMOVE EXISTING CULVERT; NEW CULVERT, FLARED END SECTIONS, AND RIPRAP; SIZE AND TYPE AS SHOWN

3-08 PROPOSED CATCH BASIN (PCB) OR DRAIN MANHOLE (PDMH)

3-09 EXCAVATE EXISTING DITCH; STRAIGHT GRADE FROM CULVERT INVERTS; 2' BOTTOM WIDTH WITH 2:1 SIDE SLOPES (TYP); LOAM AND SEED; EROSION CONTROL BLANKET (AS REQUIRED)

3-10 PAVEMENT STRIPING (MATCH EXISTING)

3-11 CONSTRUCT HEADWALL(HW) OR FLARED END SECTION (FES) W/ RIP RAP

3-12 ABANDON EXISTING CULVERT

3-13 EXISTING CULVERT(S) TO REMAIN

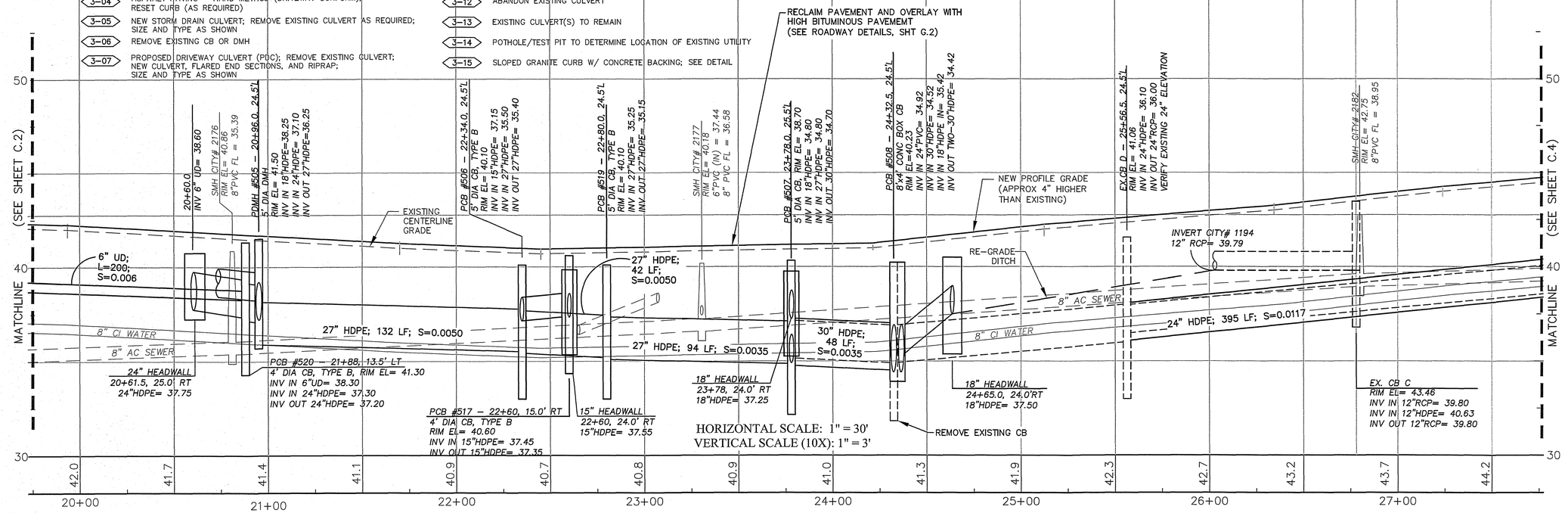
3-14 POTHOLE/TEST PIT TO DETERMINE LOCATION OF EXISTING UTILITY

3-15 SLOPED GRANITE CURB W/ CONCRETE BACKING; SEE DETAIL

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)



P4684

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. BELDEN No. 14235 LICENSED PROFESSIONAL ENGINEER 7/25/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 25 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	PRELIMINARY PLANS	CDB	07/10/15
1	CONSTRUCTION	CDB	08/14/15
2	CONSTRUCTION (REVISED)	CDB	08/25/15

DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684-DESIGN WEST.DWG

SCALE:
22" x 34" – 1" = 30'
11" x 17" – 1" = 60'

OWNER/APPLICANT:

CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:

WEST ROAD RECONSTRUCTION

(LAFAYETTE ROAD TO PEVERLY HILL ROAD)

PROJECT #7200

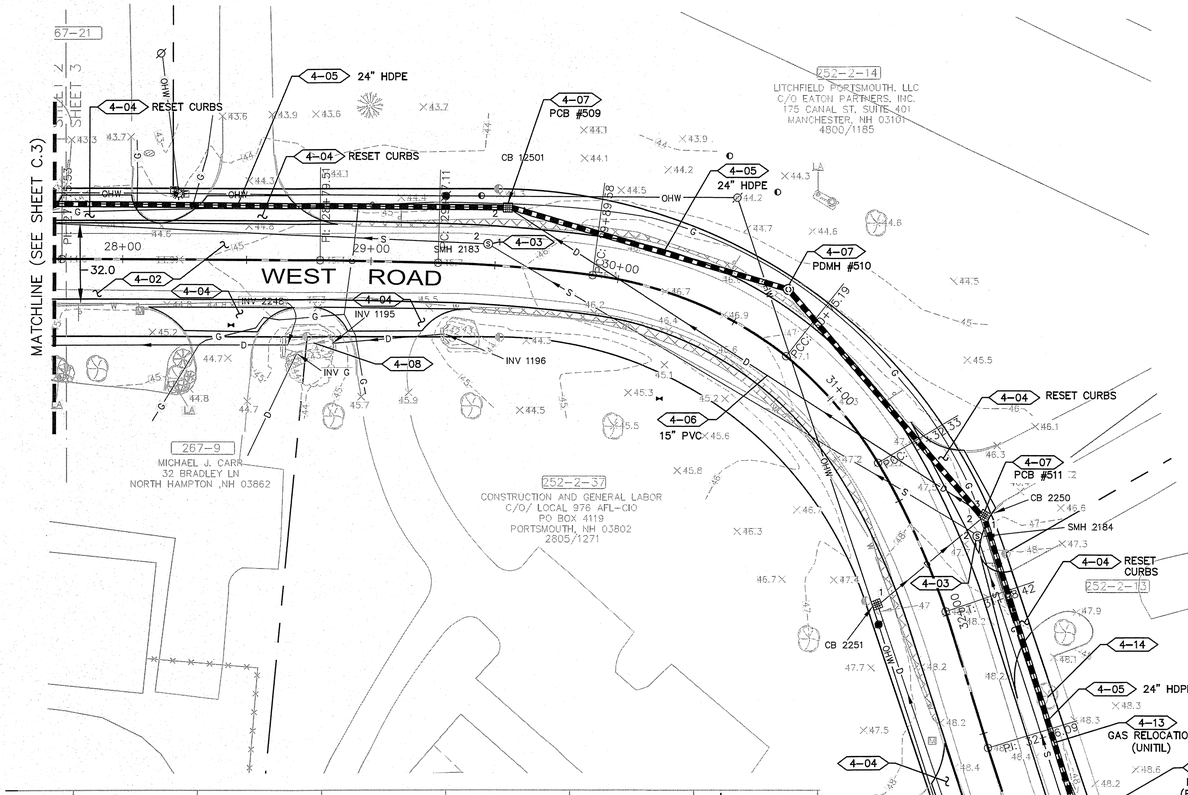
PORTSMOUTH, NH

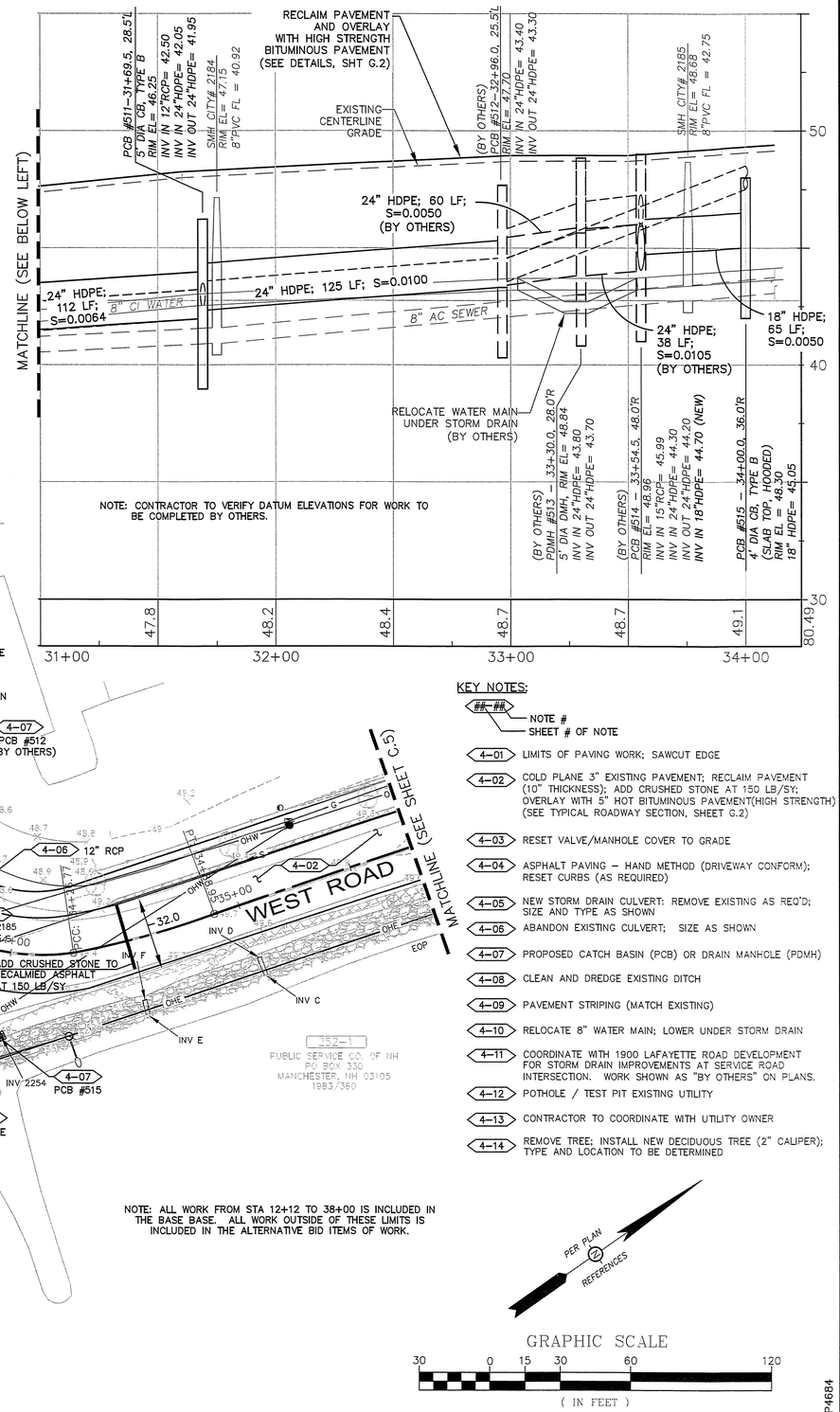
TITLE:

WEST ROAD PLAN AND PROFILE

SHEET NUMBER:

C.3





NOTE: ALL WORK FROM STA 12+12 TO 38+00 IS INCLUDED IN THE BASE BASE. ALL WORK OUTSIDE OF THESE LIMITS IS INCLUDED IN THE ALTERNATIVE BID ITEMS OF WORK.

KEY NOTES:

##-## NOTE # / SHEET # OF NOTE

- 4-01 LIMITS OF PAVING WORK; SAWCUT EDGE
- 4-02 COLD PLANE 3" EXISTING PAVEMENT; RECLAIM PAVEMENT (10" THICKNESS); ADD CRUSHED STONE AT 150 LB/SY; OVERLAY WITH 5" HOT BITUMINOUS PAVEMENT(HIGH STRENGTH) (SEE TYPICAL ROADWAY SECTION, SHEET G.2)
- 4-03 RESET VALVE/MANHOLE COVER TO GRADE
- 4-04 ASPHALT PAVING – HAND METHOD (DRIVEWAY CONFORM); RESET CURBS (AS REQUIRED)
- 4-05 NEW STORM DRAIN CULVERT: REMOVE EXISTING AS REQ'D; SIZE AND TYPE AS SHOWN
- 4-06 ABANDON EXISTING CULVERT; SIZE AS SHOWN
- 4-07 PROPOSED CATCH BASIN (PCB) OR DRAIN MANHOLE (PDMH)
- 4-08 CLEAN AND DREDGE EXISTING DITCH
- 4-09 PAVEMENT STRIPING (MATCH EXISTING)
- 4-10 RELOCATE 8" WATER MAIN; LOWER UNDER STORM DRAIN
- 4-11 COORDINATE WITH 1900 LAFAYETTE ROAD DEVELOPMENT FOR STORM DRAIN IMPROVEMENTS AT SERVICE ROAD INTERSECTION. WORK SHOWN AS "BY OTHERS" ON PLANS.
- 4-12 POTHOLE / TEST PIT EXISTING UTILITY
- 4-13 CONTRACTOR TO COORDINATE WITH UTILITY OWNER
- 4-14 REMOVE TREE; INSTALL NEW DECIDUOUS TREE (2" CALIPER); TYPE AND LOCATION TO BE DETERMINED

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)

P4684

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE
CORY D BELDEN
No. 14239
LICENSED PROFESSIONAL ENGINEER
8/27/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 27, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	PRELIMINARY PLANS	CDB	07/10/15
1	CONSTRUCTION	CDB	08/14/15
2	CONSTRUCTION (REVISED)	CDB	08/27/15

DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684-DESIGN WEST.DWG

SCALE:
22" x 34" – 1" = 30'
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OWNER/APPLICANT:
CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:
WEST ROAD RECONSTRUCTION
(LAFAYETTE ROAD TO PEVERLY HILL ROAD)
PROJECT #7200
PORTSMOUTH, NH

TITLE:
WEST ROAD PLAN AND PROFILE

SHEET NUMBER:
C.4

KEY NOTES:

##-## — NOTE # / SHEET # OF NOTE

5-01 LIMITS OF PAVING WORK; SAWCUT EDGE

5-02 COLD PLANE 3" EXISTING PAVEMENT; RECLAIM PAVEMENT (10" THICKNESS); ADD CRUSHED STONE AT 150 LB/SY (WHERE REQUIRED); AND OVERLAY WITH 5" HOT BITUMINOUS PAVEMENT (HIGH STRENGTH) (SEE TYPICAL ROADWAY SECTION, SHEET G.2)

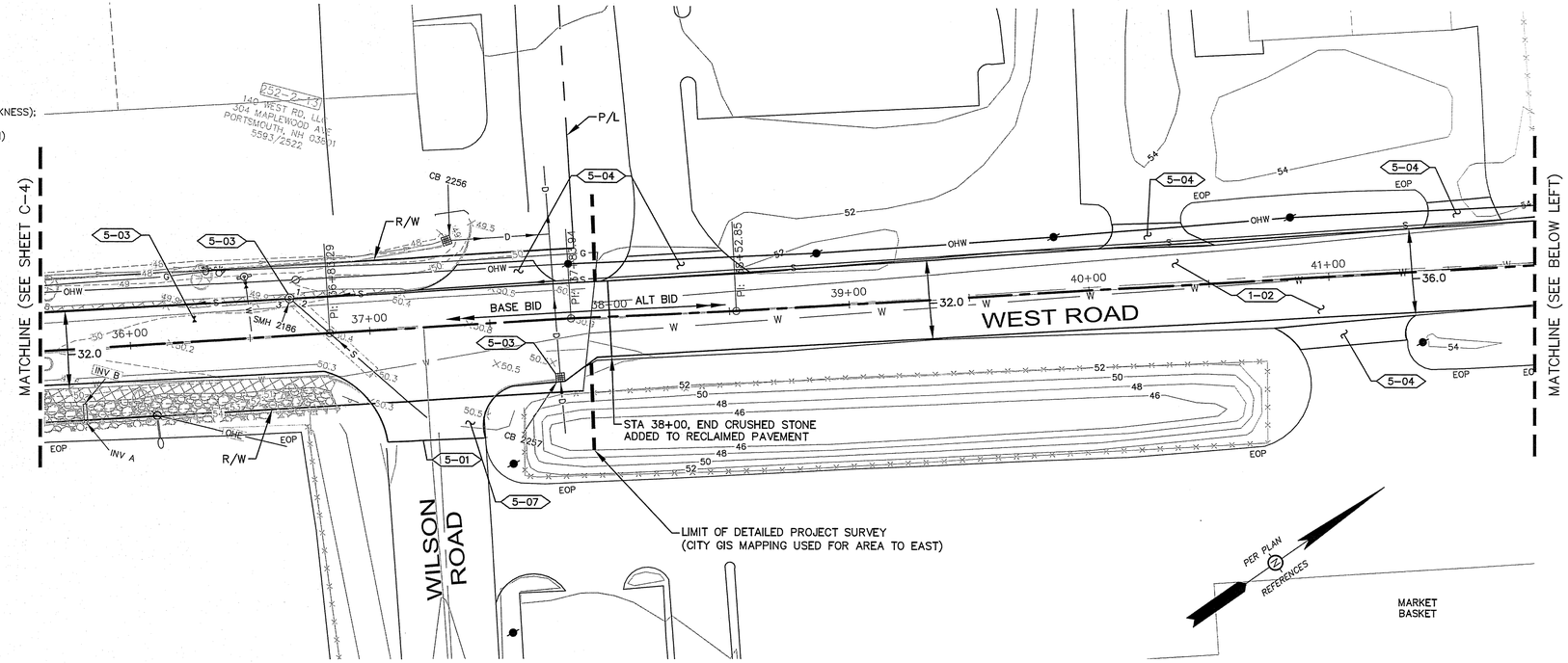
5-03 RESET VALVE/MANHOLE COVER/CATCH BASIN TO GRADE

5-04 ASPHALT PAVING – HAND METHOD (DRIVEWAY CONFORM)

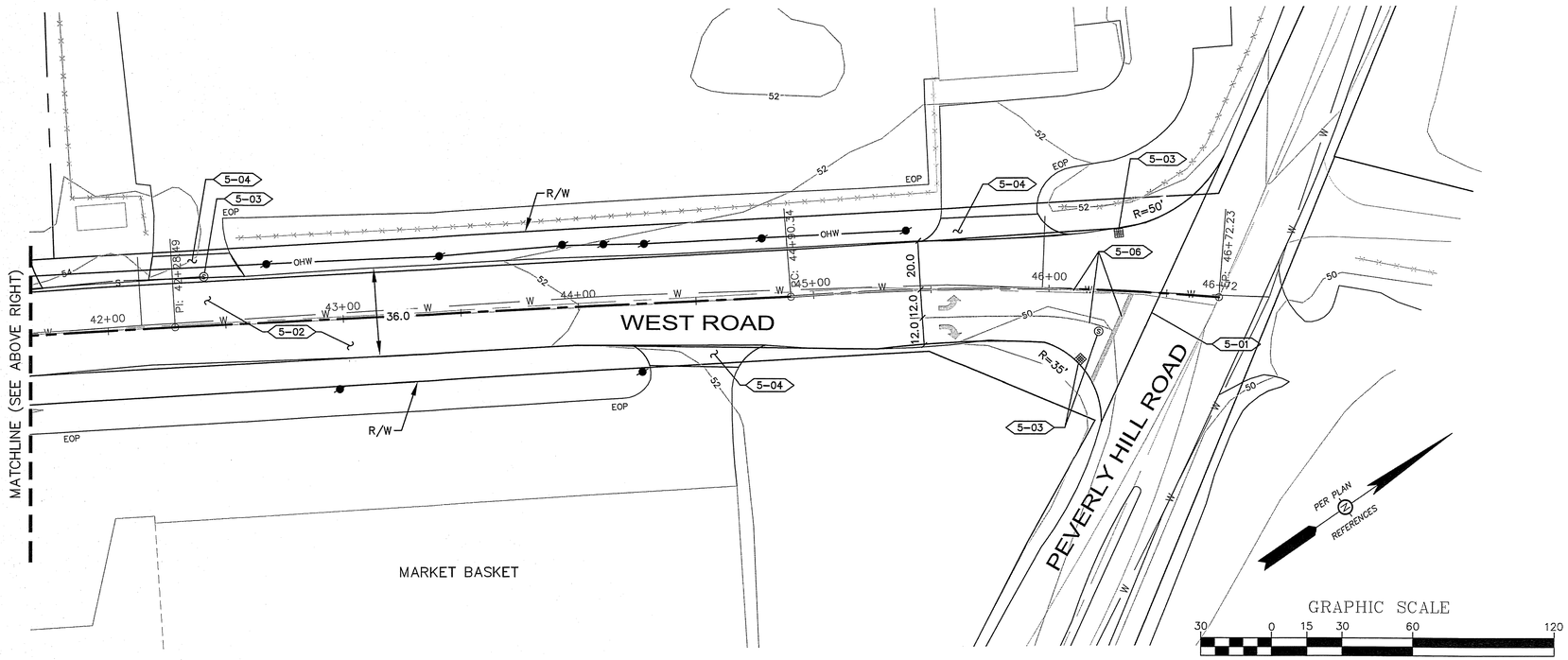
5-05 REMOVE AND REPLACE CULVERT; SIZE AND TYPE AS SHOWN

5-06 PAVEMENT STRIPING (REPLACE TO MATCH EXISTING CONDITIONS)

5-07 GRADE OVERLAY TO MAINTAIN PREVENT SURFACE FLOWS FROM MARKET BASKET PARKING LOT FROM CROSSING WILSON ROAD.



NOTE: ALL WORK FROM STA 12+12 TO 38+00 IS INCLUDED IN THE BASE BASE.
ALL WORK FROM STA 38+00 TO 46+48 IS PART OF THE ALTERNAITVE BID OF WORK.



P4684

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

COREY D. BELDEN No. 18292 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
8/25/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 25, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	PRELIMINARY PLANS	CDB	07/10/15
1	CONSTRUCTION	CDB	08/14/15
2	CONSTRUCTION (REVISED)	CDB	08/25/15

DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684-DESIGN WEST.DWG

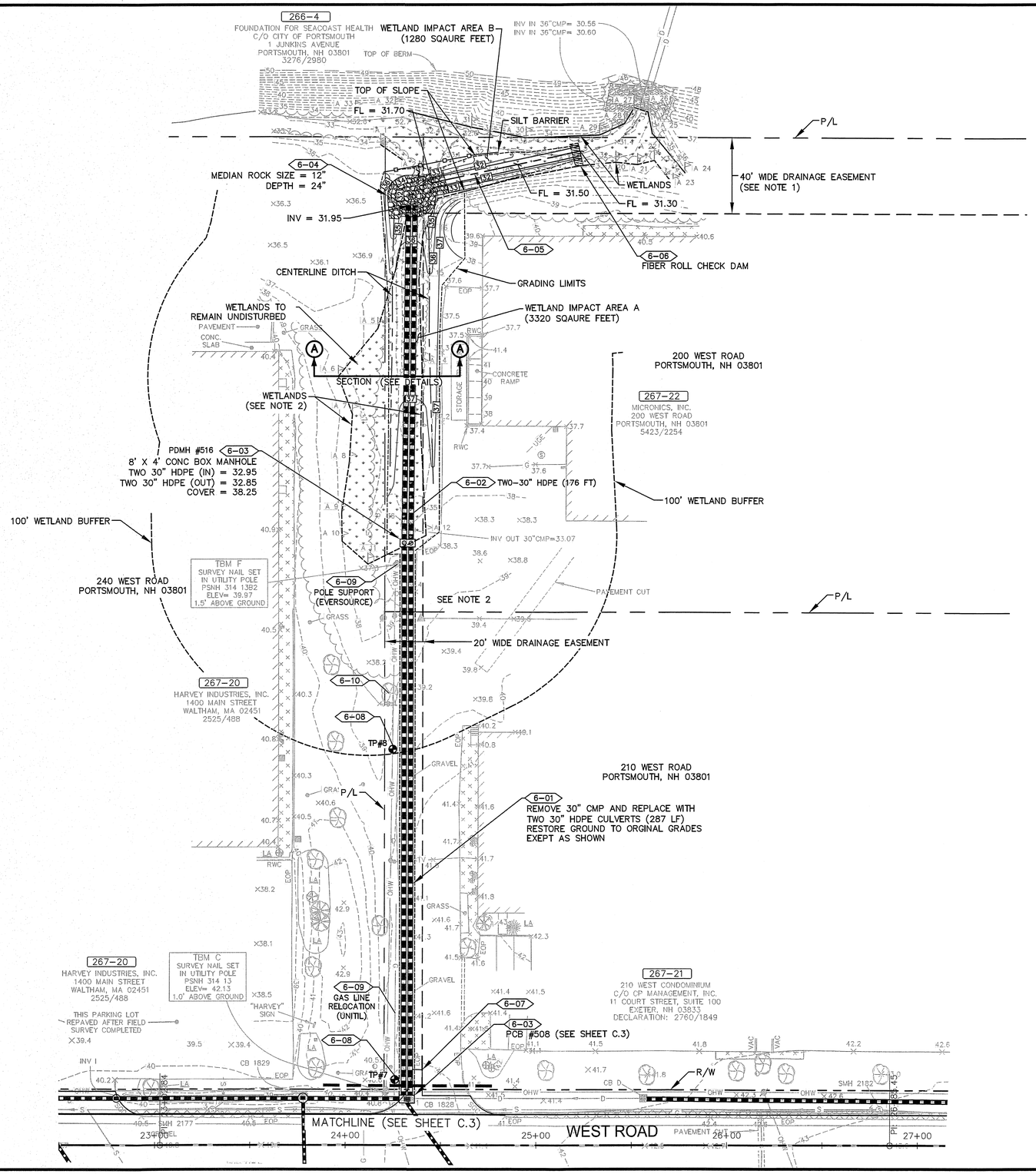
SCALE:
22" x 34" – 1" = 30'
11" x 17" – 1" = 60'

OWNER/APPLICANT:
CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:
WEST ROAD RECONSTRUCTION
(LAFAYETTE ROAD TO PEVERLY HILL ROAD)
PROJECT #7200
PORTSMOUTH, NH

TITLE:
WEST ROAD PLAN

SHEET NUMBER:
C.5



PLAN REFERENCES:

1. THE BASE PLAN HEREON WAS DEVELOPED FROM THE EXISTING SITE PLAN PREPARED BY JAMES VERRA AND ASSOCIATES, INC. IN APRIL 2015.
2. WETLAND DELINEATION WAS MAPPED BY WEST ENVIRONMENTAL, INC. ON APRIL 16, 2015 AND THE WETLANDS FLAGS WERE SURVEYED BY JAMES VERRA AND ASSOCIATES.

NOTES:

1. 40 FT DRAINAGE EASEMENT PROVIDED BY THE OWNER OF 200 WEST ROAD TO BENEFIT THE CITY OF PORTSMOUTH.
2. ALL WORK WITHIN THE WETLANDS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES WETLANDS PERMIT #2015-01339.
3. ALL WORK SHOWN ON THIS SHEET IS INCLUDED IN THE BASE BID.

LEGEND:

SEE EXISTING CONDITIONS FOR TOPOGRAPHIC LEGEND

WETLANDS IMPACT AREA

A 1 *WETLAND BOUNDARY FLAG AND NUMBER (PLAN REFERENCE, NOTE 2)*

KEY NOTES:

##-## NOTE # / SHEET # OF NOTE

- 6-01 REMOVE AND REPLACE CULVERT; SIZE AND TYPE AS SHOWN
- 6-02 INSTALL NEW CULVERT(S); SIZE AND TYPE AS SHOWN
- 6-03 PROPOSED CATCH BASIN (PCB) OR DRAIN MANHOLE (PDMH)
- 6-04 INSTALL PLUNGE POOL AND RIP RAP SWALE; SEE DETAILS
- 6-05 CONSTRUCT DRAINAGE SWALE; 5 FT BOTTOM WIDTH, 2:1 SIDE SLOPES; EROSION CONTROL BLANKET (SEE DETAILS SHEET D.2)
- 6-06 INSTALL SILT BARRIER / FIBER ROLL CHECK DAM
- 6-07 ASPHALT PAVING – HAND METHOD; SAWCUT AND PATCH PAVEMENT AROUND NEW CATCH BASIN; RECONSTRUCT CURB
- 6-08 POTHOLE / TEST PIT EXISTING UTILITY
- 6-09 CONTRACTOR TO COORDINATE WITH UTILITY OWNER
- 6-10 REMOVE TREE; INSTALL NEW DECIDUOUS TREE (2" CALIPER); TYPE AND LOCATION TO BE DETERMINED

WETLAND IMPACT SUMMARY:

PERMANENT IMPACTS:

SHRUB-SCRUB WETLANDS (AREA A)	3,320 SQ FT
INTERMITTENT STREAM (AREA B)	1,280 SQ FT
TOTAL	4,600 SQ FT
WETLAND BUFFER IMPACTS	3,900 SQ FT

PER PLAN REFERENCES

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE – CORY D. BELDEN NO. 14236 – LICENSED PROFESSIONAL ENGINEER

7/27/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 27, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	NHDES WETLANDS PERMIT	CDB	05/27/15
1	PRELIMINARY PLANS	CDB	07/10/15
2	CONCTRUCTION	CDB	08/14/15
3	CONCTRUCTION (REVISED)	CDB	08/27/15

DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684-DESIGN WEST.DWG

SCALE:
22" x 34" – 1" = 30'
11" x 17" – 1" = 60'

OWNER/APPLICANT:

CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:

WEST ROAD RECONSTRUCTION

(LAFAYETTE ROAD TO PEVERLY HILL ROAD)

PROJECT #7200

PORTSMOUTH, NH

TITLE:

WEST ROAD DRAINAGE OUTFALL PLAN

SHEET NUMBER:

C.6

P4684

PROJECT NAME AND LOCATION

WEST ROAD RECONSTRUCTION
WEST ROAD (FROM LFAYETTE ROAD TO PEVERLY HILL ROAD)
PORTSMOUTH, NEW HAMPSHIRE

TAX MAPS 252 AND 267
LONGITUDE: 070° 46' 45" W
LATITUDE: 043° 02' 30" N

OWNER:
CITY OF PORTSMOUTH
DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

DESCRIPTION
The project consists of open and closed drainage system improvements, storm drain outfall replacement, and pavement repair and re-surfacing.

DISTURBED AREA
THE TOTAL AREA TO BE DISTURBED FOR THE PROJECT (EXCLUDING ROADWAY REHABILITATION) IS APPROXIMATELY 35,500 SF.

NAME OF RECEIVING WATER
THE WEST ROAD WATERSHED DRAINS TO TWO 36" CULVERTS THAT CROSS THOUGH THE BERM NORTH OF WEST ROAD AND DRAIN TO THE PONDS ON THE ADJACENT PROPERTY TO THE NORTH, EVENTUALLY DRAINING TO SAGAMORE CREEK.

SEQUENCE OF MAJOR ACTIVITIES
CONTRACTOR SHALL SUBMIT A PROPOSED CONSTRUCTION SCHEDULE WITH SEQUENCE OF MAJOR CONSTRUCTION ACTIVITIES. THE FOLLOWING IS A CONCEPTUAL SEQUENCE OF ACTIVITIES:

1. INSTALL TEMPORARY EROSION CONTROL MEASURES INCLUDING SILT FENCES AND INLET SEDIMENT FILTERS. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD WORKING CONDITION FOR THE DURATION OF THE PROJECT.
2. LOWER MANHOLES AND VALVES AND MILL EXISTING ROADWAY.
3. CONSTRUCT ROADWAY DRAINAGE CROSS CULVERTS, UNDERDRAINS, AND CATCH BASINS WITHIN ROADWAY.
4. RECLAIM ROADWAY, SUPPLEMENT WITH CRUSHED STONE AT LOCATIONS INDICATED
5. RAISE STRUCTURE COVERS AND OVERLAY 3" HBP (HIGH STRENGTH). DO NOT INSTALL FINAL 2" HBP.
6. CONSTRUCT DRAINAGE OUTFALL IMPROVEMENTS.
7. CONSTRUCT DRAINAGE IMPROVEMENTS ON WEST ROAD, INCLUDING REMAINING DRAINAGE STRUCTURES, CULVERTS, AND DITCH GRADING.
8. WINTERIZE PROJECT SITE
9. RAISE STRUCTURE COVERS, INSTALL TOP 2" HBP (1/2" HIGH STRENGTH), AND COMPLETE PAVEMENT STRIPING.
11. LOAM AND SEED ALL DISTURBED AREAS NOT PAVED OR OTHERWISE STABILIZED AND REMOVE TEMPORARY EROSION CONTROL MEASURES.

TEMPORARY EROSION AND SEDIMENT CONTROLS AND STABILIZATION PRACTICES
All work shall be in accordance with state and local permits.

As indicated in the sequence of Major Activities, the hay bales and silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt barriers and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be maintained though the site. Sheet runoff from the site shall be filtered through tubular filtration devices, hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with inlet protection from sediments from the project. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion sedimentation measures shall be maintained until permanent vegetation is established.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL
These are the general inspection and maintenance practices that shall be used to implement the plan.
1. The smallest practical portion of the site shall be denuded at one time. The amount of open area shall be determined by an approved "Construction Sequence Plan" which will be prepared by the contractor and submitted to the engineer and City at least 7 days prior to construction.
2. All control measures shall be inspected at least once each week and following any storm event of 0.5 inches or greater.
3. All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.
4. Built up sediment shall be removed from silt fence or haybale barriers when it has reached one third the height of the fence or bale, or when "bulges" occur.
5. All diversion dikes shall be inspected and any breaches promptly repaired.
6. Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy growth.
7. A maintenance inspection report shall be made after each inspection.
8. The Contractor's site superintendent shall be responsible for inspections, maintenance and repair activities, and filling out the inspection and maintenance report.
9. The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the Plans.
10. The length of time of exposure of area disturbed during construction shall not exceed 45 days.
11. An area shall be considered stable if one of the following has occurred:
    a. Base coarse gravels have been installed in areas to be paved;
    b. A minimum of 85% vegetated growth as been established;
    c. A minimum of 3 inches of non-erosive material such as stone of riprap has been installed or
    d. Erosion control blankets have been properly installed.

B. MULCHING
1. Timing
Mulching – mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards that shall be used to assure this.

a. Apply mulch prior to any storm event.

This is applicable when working within 100 feet of wetlands. It shall be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.

b. Required Mulching within a specified time period.

The time period can range from 21 to 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

2. Mulch Application

Type	Standard rate Per 1,000 s.f.	Winter Rate Per 1,000 s.f.	Use and Comments
Hay or Straw	75–92 lbs.	150–185 lbs.	Must be dry and free from mold. May be used with plantings.
Jute and Fibrous Matting	As per manufactures specifications	As per manufactures specifications	Used in scope areas, water courses and other areas.
Crushed Stone ¼" to 1–½"	Spread more dia.than ½" thick	Spread more than ½" thick	Effective in controlling wind and water erosion.
Wood chips or bark mulch	460 to 920 lbs.	–	Used mostly with trees and shrub plantings.
Erosion Control Mix	2" thick min.	Per winter season specifications	* The organic matter content is between 80 and 100%, dry weight basis. * Particle size by weight is 100% passing a 6" screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen. * The organic portion needs to be fibrous and elongated. * Large portions of silts, clays or fine sands are not acceptable in the mix. * Soluble salts content is less than 4.0 mmhos/cm. * The pH should fall between 5.0 and 8.0.

3. Maintenance

All mulches shall be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by the specified thickness of mulch, additional mulch shall be immediately applied.

C. TEMPORARY GRASS COVER
1. Seedbed Preparation

Apply fertilizer at the rate of 600 pounds per acre of 10–10–10. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of three (3) tons per acre. Only lime may be used within 25' of the reference line. Only lime or slow release nitrogen and low phosphorous fertilizer which meet DES Env–Wq 1402.15(a) and (b) standards may be used beyond 25' from the reference line.

2. Seeding

a. Utilize annual rye grass at a rate of 40 lbs/acre.

b. Where the soil has been compacted by construction operations, loosen soil to a depth of two (2) inches before applying fertilizer, lime and seed.

c. Apply seed uniformly by hand, cyclone seeder, or hydroseeder (slurry including seed and fertilizer). Hydroseedings, which include mulch, may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.

3. Maintenance

Temporary seedings shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

D. FILTERS
1. Straw/Hay Bales

Sheet Flow Applications
a. Bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another.

b. All bales shall be string–tied. Bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales to prevent deterioration of the bindings.

c. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of four (4) inches. After the bales are staked and chinked, the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to four (4) inches against the uphill side of the barrier. Ideally, bales should be placed ten (10) feet away from the toe of slope.

d. Each bale shall be securely anchored by at least two (2) stakes driven through the bale. The first stake in each bale shall be driven toward the previously laid bale to force the bales together. Stakes shall be driven deep enough into the ground to securely anchor the bales.

e. The gaps between bales shall be chinked (filled by wedging) with hay to prevent water from escaping between the bales.

2. Silt Fence

a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

Physical Property	Test	Requirements
Filtering Efficiency	VTM–51	75% minimum
Tensil Strength at 20% Maximum Elongation*	VTM–52	Extra Strength 50 lb/lin in (min.) Standard Strength 30 lb.lin in (min.)
Flow Rate	VTM–51	0.3 gal/sf/minute (min.)

* Requirements reduced by 50 percent after six (6) months of installation.

Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120° F.

b. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer and driven securely into the ground (minimum of 16 inches).

c. A trench shall be excavated approximately six (6) inches wide and eight (8) inches deep along the line of posts and upslope from the barrier.

d. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.

e. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

f. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (g) applying.

g. The trench shall be backfilled and the soil compacted over the filter fabric.

h. Silt fences shall be removed when they have served their useful purpose but not before the upslope areas has been permanently stabilized.

3. Tubular sediment matrix (TSM)

Sheet Flow Applications
a. TSM shall be placed in a single row, lengthwise on the contour, with ends of adjacent TSM lengths tightly abutting one another.

b. TSM shall be installed in accordance with manufacture's recommendations

4. Sequence of Installation

Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.

5. Maintenance

a. Silt barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary check dam.

b. Should the fabric on silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.

c. Sediment deposits shall be removed when deposits reach approximately one third (1/3) the height of the barrier.

d. Any sediment deposits remaining in place after the silt barrier is no longer required shall be removed. The area shall be prepared and seeded.

e. Additional stone, if needed, shall be added to the construction entrance, stone lined swales, etc., periodically to maintain proper function of the erosion control structure.

E. PERMANENT SEEDING:

1. Bedding – stones larger than 3/4", trash, roots, and other debris that will interfere with seeding and future maintenance of the area shall be removed. Where feasible, the soil shall be tilled to a depth of 4" to prepare a seedbed and mix fertilizer into the soil.

2. Furnish up to 4" depth of loam, where necessary, to establish the 4" deep seed bed. Fertilizer – lime and fertilizer shall be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and fertilizer should be based on an evaluation of soil tests and in compliance with NHDES Wetlands and CSPA regulations. When a soil test is not available, the following minimum amounts should be applied.

3. Agricultural Limestone @ 100 lbs. per 1,000 s.f.
10–20–20 fertilizer @ 12 lbs. per 1,000 s.f.

Seed Mixture:

Type	Rate: lbs. per Acre	Rate: lbs. per 1,000 s.f.
Tall Fescue	20	0.46
Creeping Red Fescue	20	0.46
Red Top	2	0.05
Total	42	0.97

4. Sodding – sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to supplier's specifications. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water coursed, easily erodible soils (fine sand/silt) etc.

F. OVER WINTER STABILIZATION

1. If a construction site is not stabilized with pavement, a road gravel base, 85% mature vegetation cover or riprap by October 15 then the site shall be protected with over–winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mix, erosion control mats, riprap or gravel base on a road. The winter construction period is from October 15 through May 15.
2. If approved by NHDES, winter excavation and earthwork shall be completed such that no more than 1 acre of the site is without stabilization at any one time. Limit the exposed area to those areas in which work is to occur during the following 5 days and that can be mulched in one day prior to any snow event.
3. During winter construction, a double row of sediment barriers (i.e. silt fence with hay bales or erosion control mix) shall be placed between any natural resource and the disturbed area.
4. During frozen conditions, sediment barriers shall consist of erosion control mix berms or any other recognized sediment barriers.
5. All proposed vegetated areas having a slope of less than 15%, which do not exhibit a minimum of 85% vegetative growth by October 15, or which are disturbed after October 15, shall be seeded and covered with 3 to 4 tons of hay or straw mulch per acre secured with anchored netting, or 2 inches of erosion control mix.
6. All proposed vegetated areas having a slope greater than 15%, which do not exhibit a minimum of 85% vegetative growth by October 15, or which are disturbed after October 15, shall be seeded and covered with a properly installed erosion control blanket or a minimum 4 inches of erosion control mix.
7. Installation of anchored hay mulch, erosion control mix or erosion control blanket shall not occur over snow greater than one inch in depth.
8. Seeding – Between the dates of October 15 and May 15, loam or seed will not be required. If the date is after October 15, and if the exposed area has been loomed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed, and then mulched with anchored hay or erosion control mix. All areas seeded during the winter will be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 85% catch) shall be re–vegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be temporarily stabilized and re–vegetated in the spring.
9. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized temporarily with stone or erosion control blanket, determined by a professional engineer.
10. After November 15, incomplete road or parking areas, where active construction has stopped by winter season, shall be protected with a minimum 3 inch layer of gravel. The gravels shall have a graduation such that less than 12% of the sand portion, or material passing number 4 sieve, by weight, passes the number 200 sieve.

Maintenance
Maintenance measures shall be applied as needed during the entire construction season. After each rainfall, snow storm or period of thawing and runoff, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Following the temporary and/or final seeding and mulching, the contractor shall, in the spring, inspect and repair any damages and/or bare spots. An established vegetative cover means a minimum of 85% of areas vegetated with vigorous growth.

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(603) 433–2335 www.ALTUS–ENG.com

STATE OF NEW HAMPSHIRE – CORY D. BELDEN No. 14239 – LICENSED PROFESSIONAL ENGINEER
7/25/15

ISSUED FOR: CONSTRUCTION
ISSUE DATE: AUGUST 25, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	PRELIMINARY PLANS	CDB	07/10/15
1	CONSTRUCTION	CDB	08/14/15
2	CONSTRUCTION (REVISED)	CDB	08/25/15

DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684–DESIGN WEST.DWG

SCALE: AS SHOWN

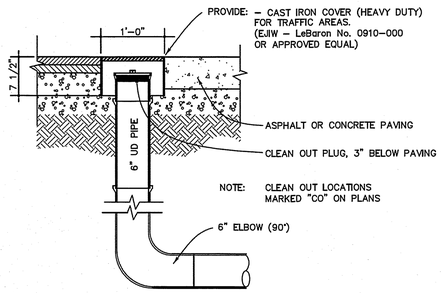
OWNER/APPLICANT:
CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:
WEST ROAD RECONSTRUCTION
(LAFAYETTE ROAD TO PEVERLY HILL ROAD)
PROJECT #7200
PORTSMOUTH, NH

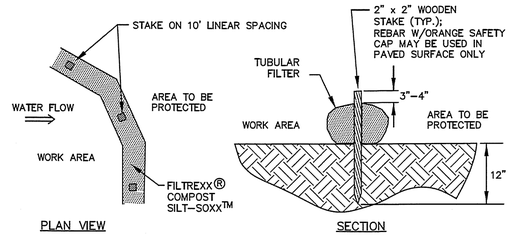
TITLE: DETAILS

SHEET NUMBER: D.1

P4684

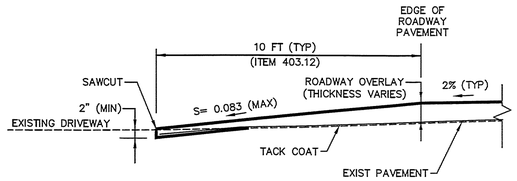


CLEANOUT NOT TO SCALE



NOTES:
1. SILTSOXX OR APPROVED EQUAL SHALL BE USED FOR TUBULAR SEDIMENT BARRIERS.
2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
3. COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
4. ALL SEDIMENT TRAPPED BY BARRIER SHALL BE DISPOSED OF PROPERLY.

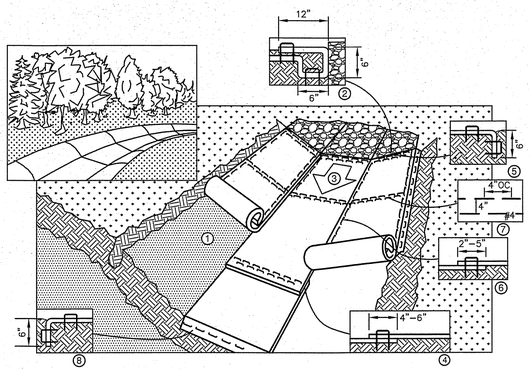
TUBULAR SEDIMENT BARRIER DETAIL NOT TO SCALE



NOTES

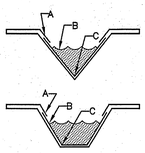
1. CONTRACTOR SHALL SAWCUT A 1" MINIMUM SCORE LINE IN EACH DRIVEWAY AT THE CONFORM LINE.
2. THE LENGTH OF EACH DRIVEWAY CONFORM MAY VARY BASED ON THE EXISTING DRIVEWAY SLOPES AND ROADWAY OVERLAY THICKNESS AT EACH LOCATION. CONTRACTOR SHALL VERIFY LIMITS OF EACH DRIVEWAY CONFORM WITH CITY ENGINEER PRIOR TO CONSTRUCTING.

DRIVEWAY CONFORM NOT TO SCALE



NOTES

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"–6" OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER TO SECURE BLANKETS.
5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"–5" (DEPENDING ON BLANKET TYPE) AND STAPLED. TO INSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE BLANKET BEING OVERLAPPED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.



CRITICAL POINTS:

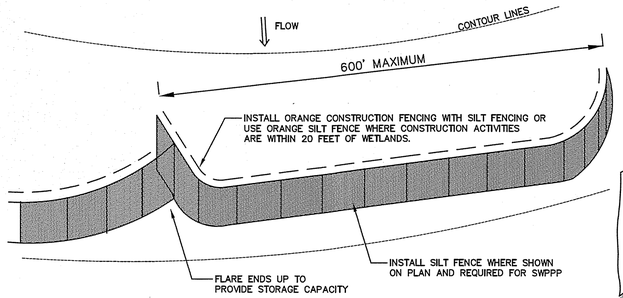
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

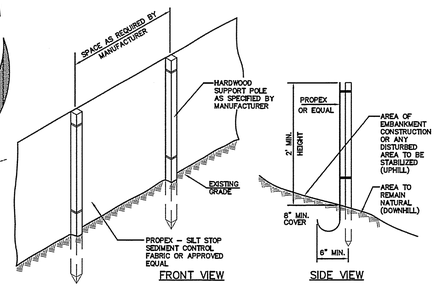
NOTES:

* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

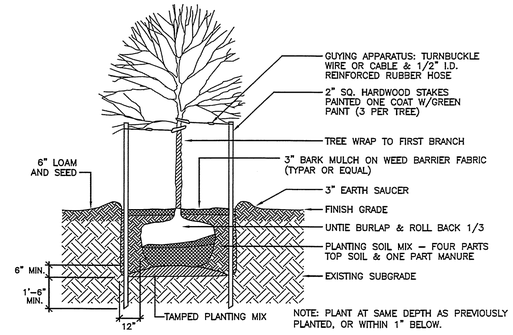
** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.

EROSION CONTROL BLANKET - SWALE NOT TO SCALE

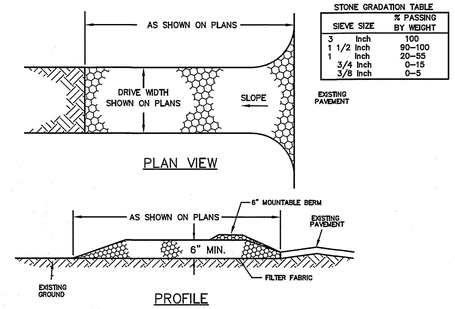




SILT AND ORANGE CONSTRUCTION FENCE LAYOUT DETAIL NOT TO SCALE



DECIDUOUS TREE PLANTING DETAIL NOT TO SCALE



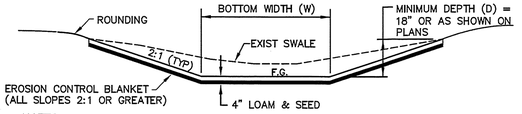
STONE GRADATION TABLE

SIEVE SIZE	% PASSING BY WEIGHT
3 Inch	100
1 1/2 Inch	90–100
1 Inch	20–55
3/4 Inch	0–15
3/8 Inch	0–5

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – NHDOT STANDARD STONE SIZE #4 – SECTION 703 OF NHDOT STANDARD.
2. LENGTH – DETAILED ON PLANS (50 FOOT MINIMUM).
3. THICKNESS – SIX (6) INCHES (MINIMUM).
4. WIDTH – FULL DRIVE WIDTH UNLESS OTHERWISE SPECIFIED.
5. FILTER FABRIC – MIRAFI 600X OR EQUAL APPROVED BY ENGINEER.
6. SURFACE WATER CONTROL – ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE, IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH 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.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AT ALL ENTRANCES TO PUBLIC RIGHTS–OF–WAY, AT LOCATIONS SHOWN ON THE PLANS, AND/OR WHERE AS DIRECTED BY THE ENGINEER.
10. DETAIL SHOWN FOR REFERENCE. IF REQUIRED BASED ON CONTRACTOR OPERATIONS, ITEM SHALL BE PAID FOR UNDER ITEM 699.

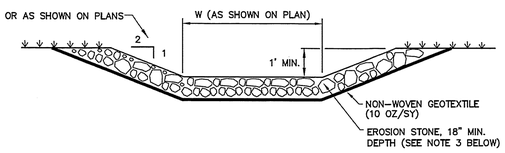
STABILIZED CONSTRUCTION EXIT NOT TO SCALE



NOTES

1. THE FOUNDATION AREA OF THE SWALE SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL.
2. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA AND BE FREE OF IRREGULARITIES.
3. EARTH FILLS REQUIRED TO MEET SUBGRADE REQUIREMENTS BECAUSE OF OVER EXCAVATION OR TOPOGRAPHY SHALL BE COMPACTED TO THE SAME DENSITY AS THE SURROUNDING SOIL TO PREVENT UNEQUAL SETTLEMENT THAT COULD CAUSE DAMAGE TO THE COMPLETED SWALE.
4. VEGETATION SHALL BE ESTABLISHED IN THE SWALE OR AN EROSION CONTROL MATTING INSTALLED PRIOR TO DIRECTING STORMWATER TO IT.
5. MAINTENANCE OF THE VEGETATION IS EXTREMELY IMPORTANT IN ORDER TO PREVENT RILLING, EROSION, AND FAILURE OF THE SWALE. MOWING SHALL BE DONE FREQUENTLY ENOUGH TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION AND TO KEEP GRASSES IN A VIGOROUS CONDITION. THE VEGETATION SHALL NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE EROSION RESISTANCE IN THE SWALE.
6. THE SWALE SHOULD BE INSPECTED PERIODICALLY AND AFTER ANY STORM GREATER THAN 0.5" OF RAINFALL IN 24 HOURS TO DETERMINE ITS CONDITION. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

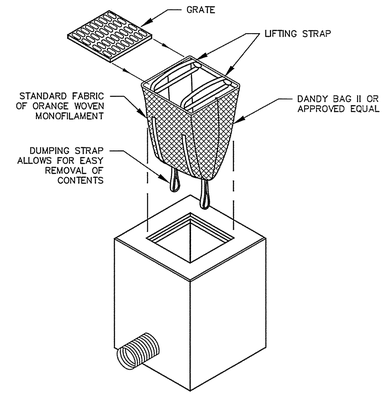
VEGETATED SWALE NOT TO SCALE



NOTES

1. CONSTRUCT RIP RAP LINED SWALE TO THE WIDTHS AND LENGTHS SHOWN ON THE PLAN.
2. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIPRAP SHALL BE PREPARED TO LINES AND GRADES SHOWN ON THE PLANS.
3. EROSION STONE USED FOR THE RIP RAP LINED SWALE SHALL MEET THE GRADATION SHOWN ON THE PLANS.
4. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE EROSION STONE. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 18 INCHES.
5. THE EROSION STONE MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

RIPRAP LINED SWALE NOT TO SCALE



NOTE: ALL CATCH BASINS AND DRIAN INLETS WITHIN OR ADJACENT TO THE PROJECT THAT HAVE THE POTENTIAL TO RECEIVE SURFACE RUNOFF FORM EXPOSED EXCAVATED AREAS SHALL BE PROTECTED. TO BE PAID UNDER ITEM 699.

INSTALLATION AND MAINTENANCE:

INSTALLATION: REMOVE THE GRATE FROM CATCH BASIN. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO CATCH BASIN INSERT SO THE GRATE IS BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING DEVICES, INSERT THE GRATE INTO THE INLET.

MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF THE UNIT AFTER EACH STORM EVENT. AFTER EACH STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE CATCH BASIN INSERT. IF THE CONTAINMENT AREA IS MORE THAN 1/3 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED. TO EMPTY THE UNIT, LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE. IF USING OPTIONAL ABSORBENTS; REPLACE ABSORBENT WHEN NEAR SATURATION.

STORM DRAIN INLET PROTECTION NOT TO SCALE

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14233
LICENSED PROFESSIONAL ENGINEER
8/25/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 25, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	PRELIMINARY PLANS	CDB	07/10/15
1	CONSTRUCTION	CDB	08/14/15
2	CONSTRUCTION (REVISED)	CDB	08/25/15

DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684–DESIGN WEST.DWG

SCALE: AS SHOWN

OWNER/APPLICANT:

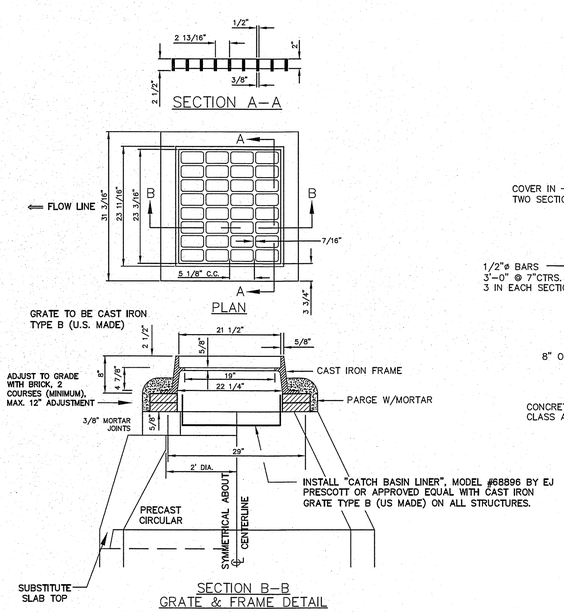
CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:

WEST ROAD RECONSTRUCTION
(LAFAYETTE ROAD TO PEVERLY HILL ROAD)
PROJECT #7200
PORTSMOUTH, NH

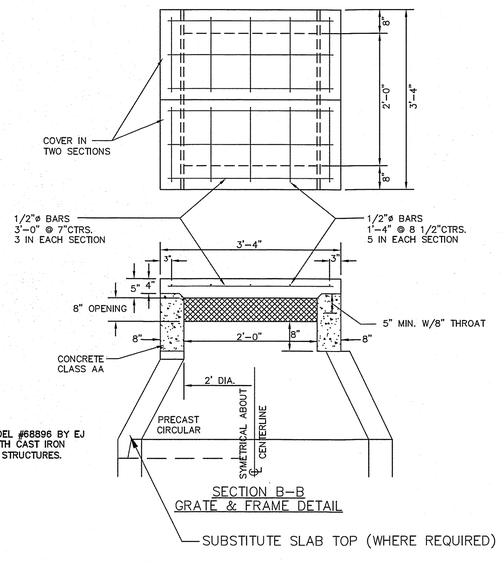
TITLE: DETAILS

SHEET NUMBER: D.2



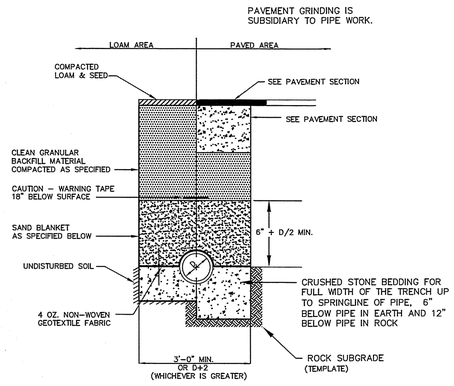
CATCH BASIN FRAME & GRATE (TYPE B)

NOT TO SCALE



CATCH BASIN TYPE C

NOT TO SCALE



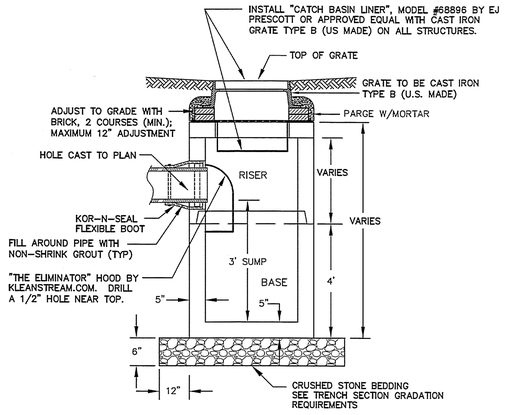
BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

SAND BLANKET/BARRIER		CRUSHED STONE BEDDING	
SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT
1/2"	90 - 100	1"	100
200	0 - 15	3/4"	90 - 100
		3/8"	20 - 55
		# 4	0 - 10
		# 8	0 - 5

* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

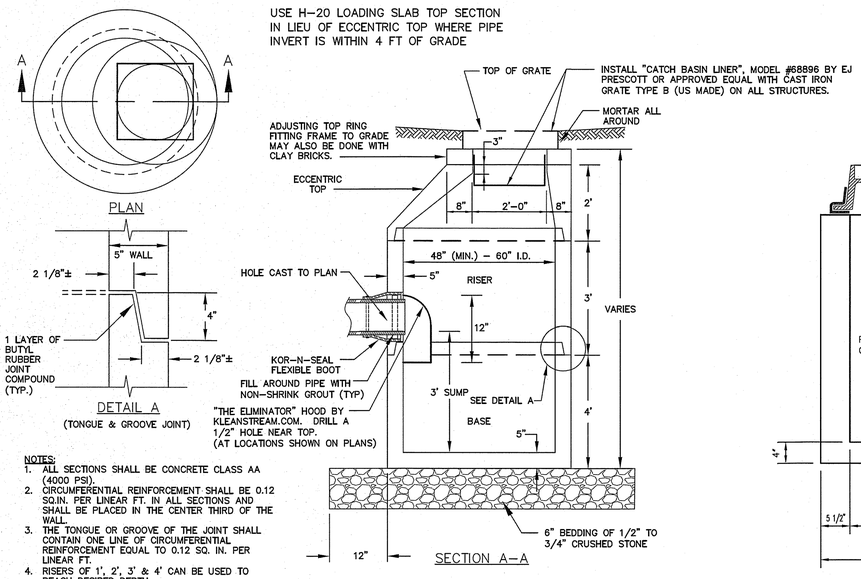
DRAIN TRENCH SECTION

NOT TO SCALE



SLAB TOP CATCH BASIN

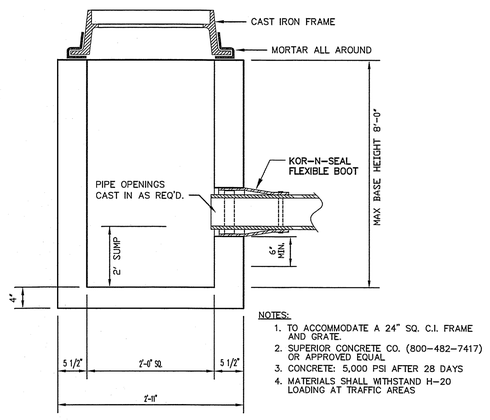
NOT TO SCALE



NOTES:
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.

CATCH BASIN

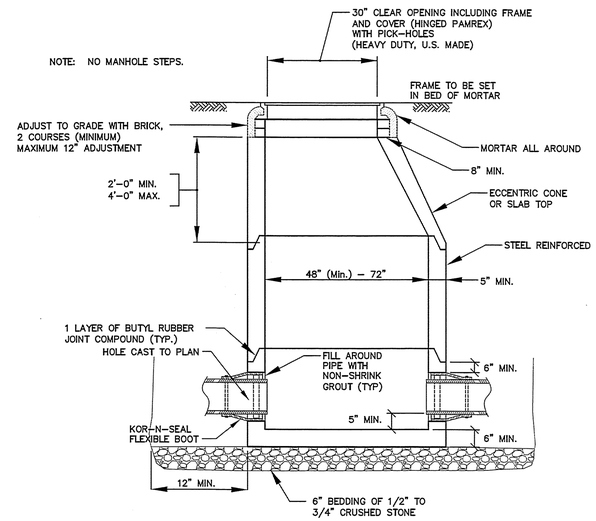
NOT TO SCALE



NOTES:
1. TO ACCOMMODATE A 24" SQ. C.I. FRAME AND GRATE.
2. SUPERIOR CONCRETE CO. (800-482-7417) OR APPROVED EQUAL
3. CONCRETE: 5,000 PSI AFTER 28 DAYS
4. MATERIALS SHALL WITHSTAND H-20 LOADING AT TRAFFIC AREAS

DROP INLET

NOT TO SCALE



DRAIN MANHOLE DETAIL

NOT TO SCALE

P4684

ALTUS ENGINEERING, INC.

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STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14239
LICENSED PROFESSIONAL ENGINEER
7/25/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 25, 2015

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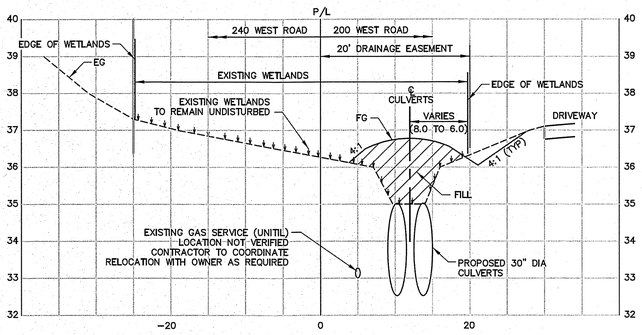
PORTSMOUTH, NH 03801

PROJECT:

WEST ROAD RECONSTRUCTION
(LAFAYETTE ROAD TO PEVERLY HILL ROAD)
PROJECT #7200
PORTSMOUTH, NH

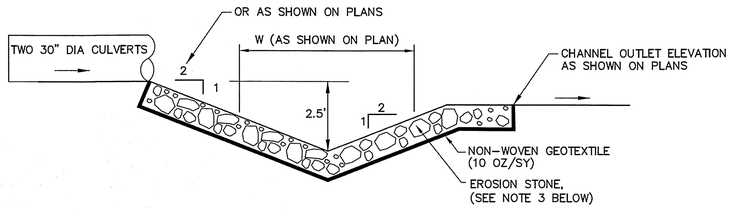
TITLE: DETAILS

SHEET NUMBER: D.3



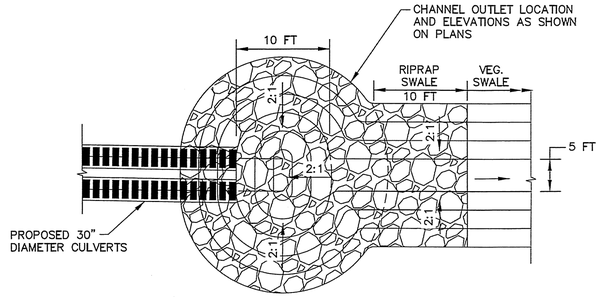
SECTION A-A

SCALE: 1" = 10' (HORIZONTAL)
1" = 2' (VERTICAL)



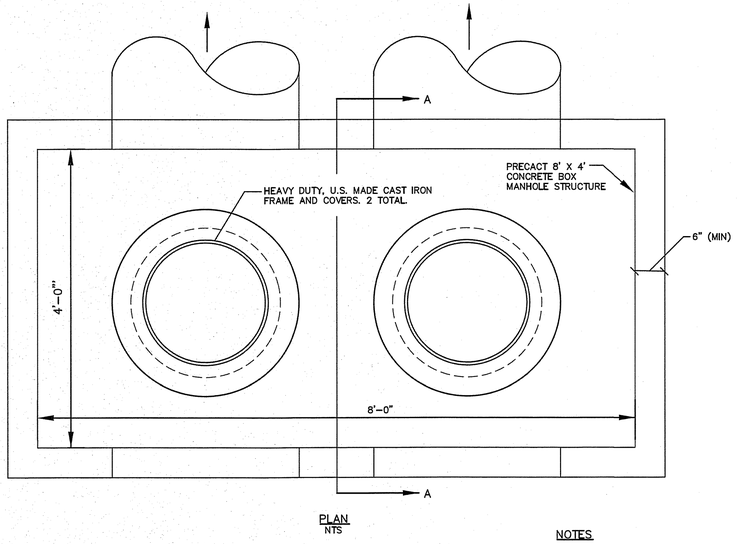
NOTES

1. CONSTRUCT PLUNGE POOL TO THE WIDTHS AND LENGTHS SHOWN ON THE PLAN.
2. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIPRAP SHALL BE PREPARED TO LINES AND GRADES SHOWN ON THE PLANS.
3. EROSION STONE USED FOR THE PLUNGE POOL SHALL MEET THE SIZE, DEPTH, AND GRADATION SHOWN ON THE PLANS.
4. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE EROSION STONE. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 18 INCHES.
5. THE EROSION STONE MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

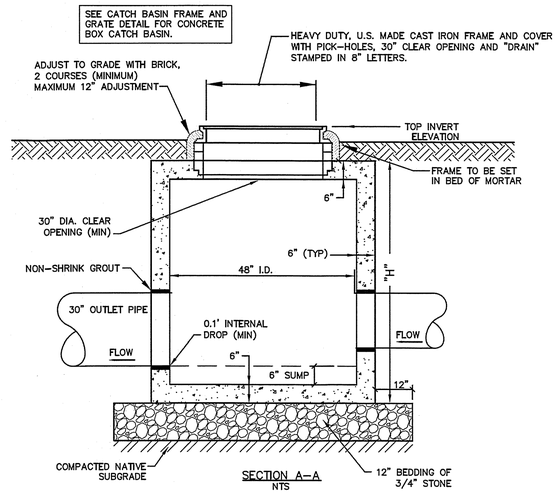


OUTLET PLUNGE POOL

NOT TO SCALE



PLAN
NTS



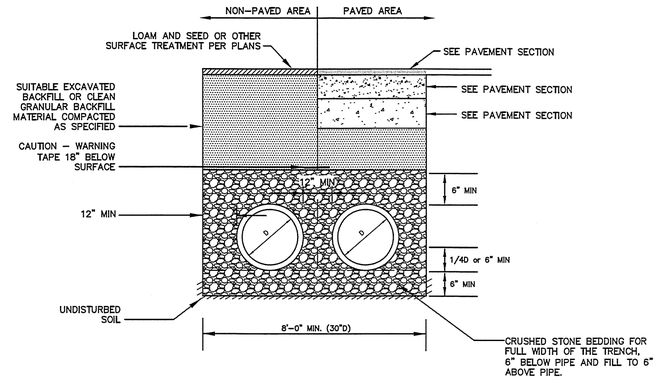
SECTION A-A
NTS

NOTES

1. CONCRETE BOX SHALL BE PRECAST CONCRETE (4000 psi).
2. ALL MANHOLE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
3. USE H-20 LOADING SLAB TOP SECTION WHERE PIPE INVERT IS WITHIN 4 FT OF GRADE.
4. MANHOLE STEPS ARE NOT PERMITTED.

CONCRETE BOX DRAIN MANHOLE / CATCH BASIN DETAIL

NOT TO SCALE



BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

SAND BLANKET/BARRIER	
SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 - 100
200	0 - 15

SCREENED GRAVEL OR CRUSHED STONE BEDDING*	
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 - 100
3/8"	20 - 55
# 4	0 - 10
# 8	0 - 5

* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

STORM DRAIN TRENCH SECTION - PARALLEL PIPES

NOT TO SCALE

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14235
LICENSED PROFESSIONAL ENGINEER
7/25/15

ISSUED FOR: CONSTRUCTION

ISSUE DATE: AUGUST 25, 2015

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	NHDES WETLANDS PERMIT	CDB	05/27/15
1	PRELIMINARY PLANS	CDB	07/10/15
2	CONSTRUCTION	CDB	08/14/15
3	CONSTRUCTION (REVISED)	CDB	08/25/15

DRAWN BY: CDB
APPROVED BY: JKC
DRAWING FILE: 2684-DESIGN WEST.DWG

SCALE: AS SHOWN

OWNER/APPLICANT:

CITY of PORTSMOUTH
DEPT. OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

PROJECT:

WEST ROAD RECONSTRUCTION
(LAFAYETTE ROAD TO PEVERLY HILL ROAD)
PROJECT #7200
PORTSMOUTH, NH

TITLE: DETAILS

SHEET NUMBER: D.4

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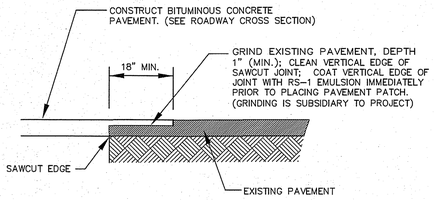
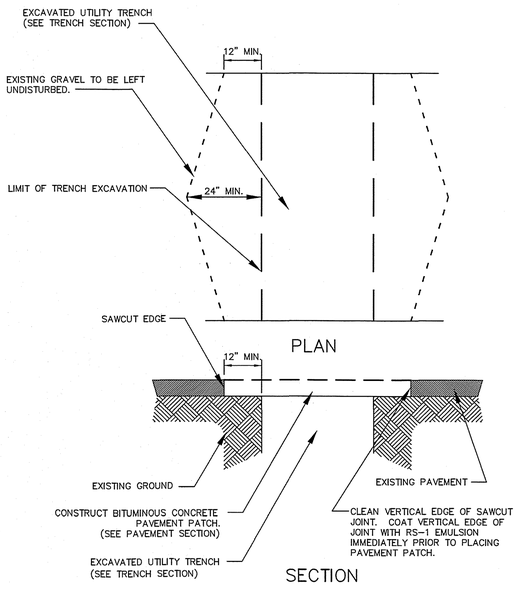


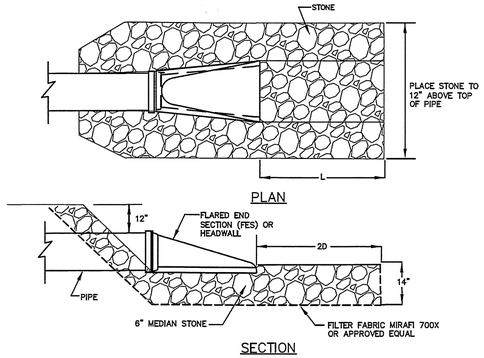
TYPICAL PAVEMENT TRANSITION DETAIL

NOT TO SCALE



TYPICAL TRENCH PATCH

NOT TO SCALE



MAINTENANCE

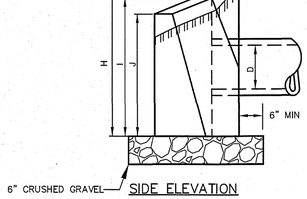
THE CULVERT END PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIPRAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

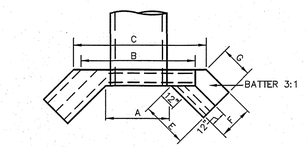
CONSTRUCTION SPECIFICATIONS

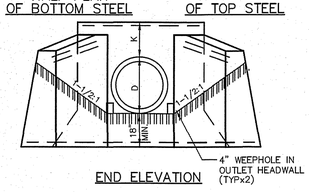
1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIPRAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR RIPRAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIPRAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

RIPRAP DRIVEWAY CULVERT END PROTECTION

NOT TO SCALE

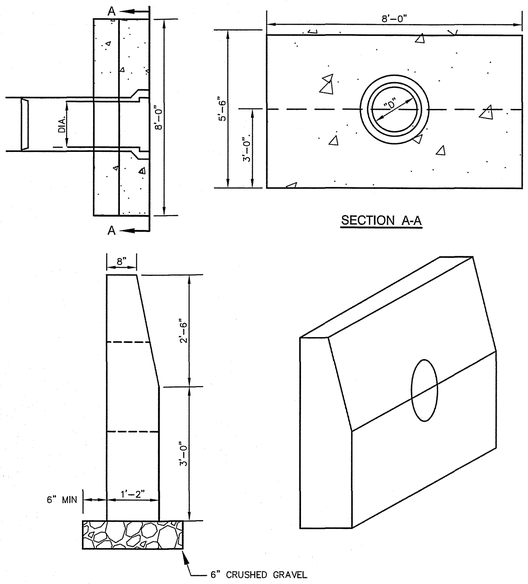






DIA. D INCHES	DIMENSIONS (2:1 SLOPE)									
	A	B	C	E	F	G	H	I	J	K
18"	2'-6"	4'-1"	4'-6"	3'-0"	1'-9"	2'-0"	4'-6"	4'-0"	3'-7"	1'-6"
24"	3'-0"	4'-5"	5'-0"	3'-0"	1'-11"	2'-3"	5'-0"	4'-6"	3'-10"	1'-6"

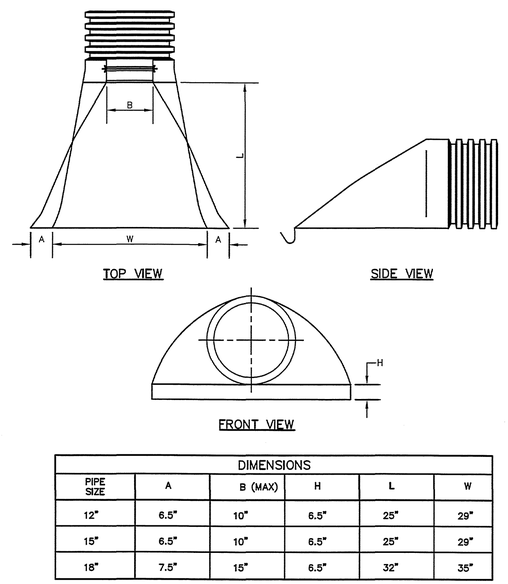
CONCRETE HEADWALL w/WINGWALLS NOT TO SCALE



NOTES:

1. ALL DIMENSIONS GIVEN IN FEET & INCHES.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. CONCRETE: 3,000 PSI MINIMUM AFTER 28 DAYS.

CONCRETE HEADWALL (FLAT) NOT TO SCALE



DIMENSIONS					
PIPE SIZE	A	B (MAX)	H	L	W
12"	6.5"	10"	6.5"	25"	29"
15"	6.5"	10"	6.5"	25"	29"
18"	7.5"	15"	6.5"	32"	35"

NOTES:

1. END SECTIONS SHALL BE GALVANIZED STEEL CONFORMING TO AASHTO M36/M AND DOT SECTION 603.
2. ALL DIMENSIONS ARE NOMINAL. DIMENSIONS MAY VARY BASED ON MANUFACTURER.

STEEL END SECTION DETAIL NOT TO SCALE

ALTUS ENGINEERING, INC.

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STATE OF NEW HAMPSHIRE – CORY D. BELDEN, NO. 14238 – LICENSED PROFESSIONAL ENGINEER

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SHEET NUMBER: D.5

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