CITY OF PORTSMOUTH, NEW HAMPSHIRE

FOR CONSTRUCTION

SHEAFE & CHAPEL STREET IMPROVEMENTS

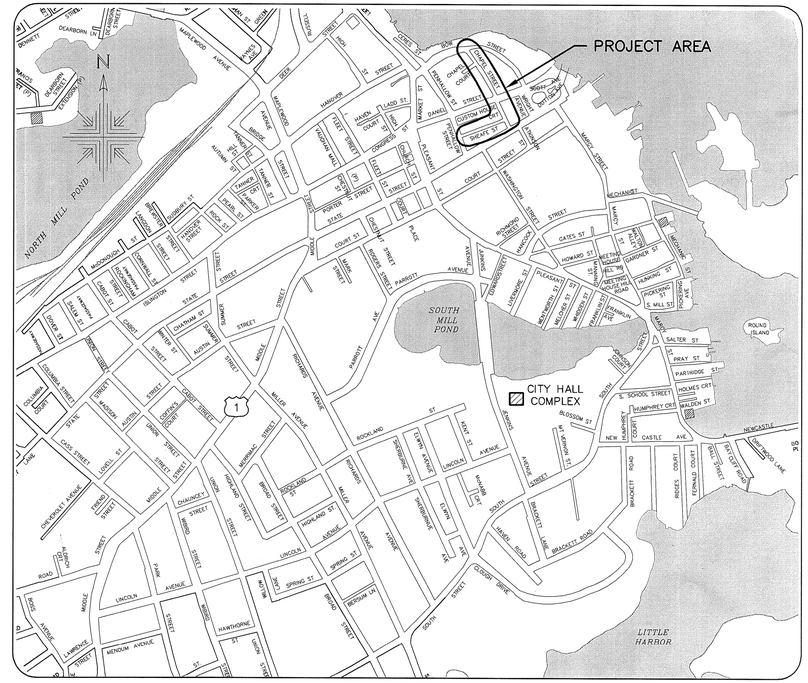
CITY BID No. 68–15

LOCATION PLAN

PREPARED BY
UNDERWOOD ENGINEERS, INC.
PORTSMOUTH, NEW HAMPSHIRE

MARCH 25, 2015

VICINITY MAP



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LEGEND:

EXISTING	PROPOSED	
(SURVEY) (AERIAL)		STRUCTURE/BUILDINGS
		APPROXIMATE PROPERTY LINE/ROW
		PAINTED LINE
		EDGE OF PAVEMENT
VGC	(NEW) (RESET)	VERTICAL GRANITE CURB
		GRAVEL ROAD/DRIVE/TRAIL
		IRON ROD
RWG		RETAINING WALL GRANITE
RWB		RETAINING WALL BRICK
RWC		RETAINING WALL CONCRETE
RWS		RETAINING WALL STONE
RWW		RETAINING WALL WOOD
RWM		RETAINING WALL MORTARED
		SEWER MANHOLE
		SEWER CLEANOUT
		SEWER SERVICE LOCATION AT BLDG. FOUNDATION
S		SEWER SERVICE LATERAL W/CLEANOUT (WITHIN ROW)
		SEWER SERVICE LATERAL (PRIVATE PROPERTY)
		DRAIN MANHOLE
		TELEPHONE MANHOLE
		CATCH BASIN/RESET CB GRATE
		HYDRANT
		WATER GATE VALVE
		REDUCER
		FITTING – TEE
		FITTING – 45°, 22½°, 11¼°
		COUPLING
		SOLID SLEEVE
W		WATER SERVICE LATERAL
		DRAIN SERVICE LATERAL W/CLEANOUT
		DRAIN SERVICE LATERAL AT ROOF LEADER
		DRAIN SERVICE LOCATION AT BLDG. FOUNDATION
		THRUST BLOCK
		WATER SHUT OFF VALVE
		SIAMESE FIRE CONNECTION
		GAS SHUT OFF VALVE
		GAS VALVE
		GAS METER
		UTILITY POLE W/ ARM & LIGHT
		UTILITY POLE
		RELOCATED UTILITY POLE
		GENERATOR
		GUY POLE
E		ELECTRIC BOX
S	S	SEWER LINE
FM		FORCE MAIN
W	W	WATER LINE
D		DRAIN LINE
G		GAS LINE
		UNDERGROUND TELEPHONE
UGU		UNDERGROUND UTILITIES
OHW		OVERHEAD UTILITIES
		SINGLE POLE TRAFFIC SIGN
		MAILBOX
		GRANITE BOUND/POST
		LANDSCAPE LINE

LEGEND:

EXISTING	PROPOSED	
		DEC. TREE
		CONIFEROUS TREE
		DEC. SHRUB
		EVERGREEN SHRUB
		TREELINE
		FENCE
59		1' CONTOUR ELEVATION
60		5' CONTOUR ELEVATION
		BENCH MARK
		TEST PIT
	B5	BORING
		LEDGE
		CONCRETE
		BRICK
		GRANITE COBBLES
R		SUBSURFACE REFUSAL
N/R		SUBSURFACE NO REFUSAL
W		SUBSURFACE GROUNDWATER
		LIMIT OF WORK
	SP	SUMP PUMP (REPORTED/FOUND)
	FD	FLOOR DRAIN (REPORTED/FOUND)
	DT	PERFORM DYE TEST (OR OTHER MEANS TO CONFIRM ALL SANITARY SERVICE CONNECTIONS)
	94	DRIVEWAY IDENTIFICATION NUMBER
	G130	CURB IDENTIFICATION NUMBER (FG = FLUSH GRANITE)

ABBREVIATIONS:

AB	ABANDONED
AC	ASPHALT CONCRETE (BITUMINOUS)
AIR	AIR
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AVG	AVERAGE
B	BORING
BL	BASELINE
BLDG	BUILDING
BS	BLACK STEEL PIPE
BSW	BITUMINOUS SIDEWALK
CB	CATCH BASIN
CFS	CUBIC FEET PER SECOND
CI	CAST IRON PIPE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CONC	CEMENT CONCRETE
CONST	CONSTRUCT
CONT	CONTINUOUS, CONTINUATION
CPDT	CORRUGATED POLYETHYLENE DRAINAGE TUBING
CPE	CORRUGATED POLYETHYLENE
CS	COATED STEEL PIPE
CSW	CONCRETE SIDEWALK
D	DRAIN
DEC	DECIDUOUS
DI	DUCTILE IRON
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DMH	DRAINAGE MANHOLE
DN	DOWN
EL	ELEVATION
EMER	EMERGENCY
ENGR	ENGINEER
EOG	EDGE OF GRAVEL
EOP	EDGE OF PAVEMENT
ETW	EDGE OF TRAVELED WAY
EXIST	EXISTING
FDN	FOUNDATION
FF	FINISHED FLOOR
FM	FORCE MAIN
FT	FOOT OR FEET
GAS	PROPANE GAS
GEN	GENERATOR
GHWC	GAS & HOT WATER CONDUIT
GND	GROUND
GPM	GALLONS PER MINUTE
H.B.P.	HOT BITUMINOUS PAVEMENT
HW	HEADWATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IN	INCH
INV	INVERT ELEVATION
LA	LANDSCAPED AREA
LAG	LANDSCAPED GRASS AREA
LB	POUND
LF	LINEAR FEET
LGT	LIGHT
L.O.W.	LIMIT OF WORK
LP	LIGHT POLE
LPA	LOW PRESSURE AIR
MJ	MECHANICAL JOINT
MON	MONUMENT
MW	MUNICIPAL WATER
NA OR N/A	NOT APPLICABLE
NET	NEW ENGLAND TELEPHONE COMPANY
NGVD	NATIONAL GEODETIC VERTICAL DATUM
N/F	NOW OR FORMERLY
N/R	NO REFUSAL
OD	OUTSIDE DIAMETER
OS	OUTLET STRUCTURE
PCF	POUNDS PER CUBIC FOOT
PK	SURVEYOR'S NAIL
PL	PROPERTY LINE
PL	PLASTIC GAS LINE
PP	PLASTIC GAS LINE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSNH	PUBLIC SERVICE COMPANY OF N.H.
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE SDR 35
PVCU	PVC UNDERDRAIN
PVDR	PVC DRAIN RETURN
PVMT	PAVEMENT
PVSA	PVC SAMPLE LINE
PVSL	PVC SUCTION LINE
R	REFUSAL
R (RAD)	RADIUS
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RD	ROAD
REF	REFER OR REFERENCE
RET	RETAINING WALL
REQD	REQUIRED
RS	RAW SEWAGE
ROW	RIGHT OF WAY MUNICIPAL
RWB	BLOCK RETAINING WALL
RWC	CONCRETE RETAINING WALL
RWG	GRANITE RETAINING WALL
RWW	WOOD TIMBER RETAINING WALL
S	SEWER OR SEPTIC TANK
S	SLOPE (I.E., FT. PER FT.) IN PROFILES
SA	SAMPLE LINE
SAC	SLOPED FACED ASPHALT CURB
SCH	SCHEDULE
SD	SUMP DISCHARGE
SED	SEDIMENTATION
SEW	SEWAGE
SF	SQUARE FEET
SGC	SLOPED FACED GRANITE CURB
SHT	SHEET
SMH	SEWER MANHOLE
ST	STEEL
STA	STATION
STD	STANDARD
STRL	STRUCTURAL
STRS	STAIRS
S/W	SIDEWALK
SYMM	SYMMETRICAL
TBM	TEMPORARY BENCH MARK
TD	TANK DRAIN
THK	THICKNESS
TRANS	TRANSFORMER
THRESH	DOOR THRESHOLD
TYP	TYPICAL
U/P	UTILITY POLE
V	VENT
VCC	VERTICAL FACED CONCRETE CURB
VCD	VC DRAIN
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VGC	VERTICAL FACED GRANITE CURB
W	WATER
W	WALL
WD	WOOD
W/	WITH

1. THIS IS A STANDARD LEGEND SHEET, THEREFORE SOME ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT ON THE DRAWINGS.

2. CONTACT ENGINEER FOR ABBREVIATIONS USED BUT NOT SHOWN ON THESE DRAWINGS.

ISSUE FOR
APPROVAL Date 3/13/15 By BTD
CONSTRUCTION Date [illegible] By [illegible]
RECORD DRAWING Date – By –

NO.	REVISIONS	APP'D

Drawn/Chk. RMG/TJB
Designed BTD
Checked PDM
Approved –
Date 03/25/15
Book No. –
Project No. 1902
Dwg. ID 1902-gen notes
Scale AS SHOWN

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LEGEND

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO G-1

GENERAL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION, PROTECTION AND REPAIR (IF DAMAGED) OF ALL EXISTING UTILITY MAINS AND SERVICES. THE LOCATIONS OF KNOWN SEWER AND WATER MAINS, SHOWN ON THESE DRAWINGS, ARE APPROXIMATE. HOWEVER, ALL GAS, WATER AND SEWER SERVICE LATERALS ARE NOT SHOWN AND THE CONTRACTOR IS TO ANTICIPATE THEIR EXISTENCE. AVAILABLE TIE SHEETS FOR GAS AND WATER ARE PROVIDED IN THE APPENDIX OF THE PROJECT MANUAL. VIDEO LOGS AND SANITARY SURVEYS FOR SEWER LATERALS ARE ALSO PROVIDED IN THE PROJECT MANUAL. NOTIFY DIG-SAFE PRIOR TO COMMENCING CONSTRUCTION. (1-888-344-7233). CONTRACTOR SHALL GIVE ADEQUATE NOTICE TO THE ENGINEER OF CONFLICTS OF PROPOSED WORK WITH MARKED UTILITIES PRIOR TO CONSTRUCTING THE PROPOSED WORK.

2. THE CONTRACTOR SHALL MAINTAIN SINGLE LANE TRAFFIC AND ACCESS TO HOMES AT ALL TIMES. TRAFFIC CONTROL WARNING DEVICES SHALL BE IN ACCORDANCE WITH MUTCD REQUIREMENTS AND SECTION 01570 OF THE PROJECT MANUAL.

3. ALL STREET OPENINGS SHALL BE COVERED AT THE END OF EACH DAY'S OPERATIONS TO ENSURE SAFE VEHICULAR AND PEDESTRIAN TRAFFIC. THE CONTRACTOR SHALL MAINTAIN SAFE PASSAGE FOR 2 LANES OF TRAFFIC AT THE END OF EACH WORK DAY. DUST CONTROL OPERATIONS ARE TO BE CONTINUOUS THROUGHOUT CONSTRUCTION.

4. A NPDES PERMIT FOR CONSTRUCTION ACTIVITIES IS REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS REQUIRED TO PREPARE A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND TO SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA TO FULFILL PROJECT REQUIREMENTS. THE SWPPP MUST BE PREPARED IN ACCORDANCE WITH THE EPA'S CURRENT REQUIREMENTS. NO WORK IS TO PROCEED UNTIL THE SWPPP AND THE NOI IS SUBMITTED AND ACCEPTED BY THE OWNER. A COPY OF THE NOI, SWPPP REQUIREMENTS AND EXAMPLE SWPPP ARE INCLUDED IN THE PROJECT MANUAL APPENDIX.

5. THIS SET OF PLANS HAS BEEN CREATED TO BE USED IN CONJUNCTION WITH A TECHNICAL SPECIFICATION ENTITLED "PROJECT MANUAL, SHEAFE AND CHAPEL STREET IMPROVEMENTS, PORTSMOUTH, NH.".

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL SURPLUS EARTH, LEDGE, CURB, PIPE AND SEWER OR DRAIN STRUCTURES EXCAVATED DURING CONSTRUCTION, UNLESS MATERIALS ARE CLAIMED BY THE OWNER OR OTHERWISE INDICATED IN THE PROJECT MANUAL OR THE DRAWINGS.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PROPERTY RESTORATION BOTH PUBLIC AND PRIVATE. UTILITIES DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER, UNLESS OTHERWISE PROVIDED FOR IN THE BID SCHEDULE ITEMS.

8. PAVEMENT REPAIRS TO DRIVEWAYS OR OTHER AREAS OUTSIDE LIMITS OF PAYMENT, AS DEFINED ON THE DRAWINGS, IS SUBSIDIARY AND WILL NOT BE MEASURED FOR PAYMENT.

9. THE LINE WORK REPRESENTING THE EXISTING UNDERGROUND STRUCTURES AND PIPES IS BASED ON A FIELD SURVEY AND TIE SHEETS IN THE PROJECT MANUAL APPENDIX. THE ENGINEER/SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN ON THE PLANS OR THE PROJECT MANUAL APPENDIX COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER/SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. EVERY BUILDING OR UNIT WITHIN THE PROJECT AREA HAS A LEAST ONE GAS, SEWER AND WATER SERVICE EXTENDING FROM THE MAIN IN THE STREET TO THE BUILDING AND THE CONTRACTOR SHOULD CONSIDER CONFLICTS, HAND EXCAVATION AND DECREASE IN PRODUCTION, WHEN PREPARING THEIR BID.

10. THE EXACT LOCATION AND ELEVATION OF GAS LINES SHALL BE DETERMINED ON THE GROUND BY THE CONTRACTOR. GAS LINES IN DIRECT CONFLICT MAY NEED TO BE RE-LOCATED. THE CONTRACTOR SHALL COORDINATE RELOCATION WITH UNITIL, IN ADVANCE OF HIS WORK. COORDINATION WITH THE GAS COMPANY (PHIL JOHNSON: (603) 294-5757) AND OTHER UTILITIES WILL BE SUBSIDIARY AND WILL NOT BE CONSIDERED FOR PAYMENT. REFERENCE SPECIFICATION SECTION 01020 – COORDINATION FOR RESPECTIVE UTILITY CONTACTS.

11. OVERHEAD WIRES AND WIRE DROPS TO BUILDINGS ARE NOT SHOWN. THE CONTRACTOR SHALL ANTICIPATE THEIR EXISTENCE IN ALL OPERATIONS.

12. PROPERTY LINES SHOWN ARE APPROXIMATE ONLY AND WERE COMPILED FROM CITY OF PORTSMOUTH ASSESSOR MAPS AND ARE NOT THE RESULT OF AN ON-THE-GROUND SURVEY.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND RELOCATION OF ALL ROADWAY SIGNS. ANY SIGN DAMAGED DURING THE CONTRACTOR'S COMPLETION OF THE WORK SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.

14. ALL PIPE LENGTHS SHOWN ON THE PLANS REPRESENT CENTER OF MANHOLE TO CENTER OF MANHOLE LENGTHS. REFER TO SECTION 01025 FOR PAY LIMITS.

SURVEY NOTES:

1. VERTICAL DATUM: NAVD 1988.

2. CONTRACTOR TO VERIFY TBMS (BENCHMARKS) BY LEVELING BETWEEN TBMS SHOWN ON THE DRAWINGS PRIOR TO SETTING ANY GRADES/ELEVATIONS. CONTACT THE ENGINEER IF DISCREPANCIES ARE FOUND.

3. HORIZONTAL DATUM: NAD 83 (NH STATE PLANE SYSTEM).

4. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (I.E. 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. DETAILED INVESTIGATION OF UTILITY STRUCTURES (E.G. MANHOLE ENTRY) WAS NOT PERFORMED IN DETERMINING SIZE AND MATERIALS OF UTILITY PIPE SYSTEMS.

6. FLOOR ELEVATIONS ARE SHOT ON THE OUTSIDE DOOR THRESHOLD UNLESS OTHERWISE IDENTIFIED.

PLAN REFERENCES:

1. "PLAN FOR SIDEWALK RECONSTRUCTION FOR DANIEL, PENHALLOW, AND SHEAFE STREETS, PORTSMOUTH, NH", PREPARED BY JAMES VERRA AND ASSOCIATES, NOV. 2012.

2. "LIMITED EXISTING CONDITIONS PLAN FOR CHAPEL STREET, PORTSMOUTH, NH", PREPARED BY JAMES VERRA AND ASSOCIATES, NOV. 2014.

3. UPDATED CITY OF PORTSMOUTH GIS 2006 FLYOVER INFORMATION, BASED ON NAVD88/NAD 83 DATUM, RAISED TO TIE INTO MSC SURVEY DATA BASED ON NGVD29/NAD 83. (CONVERSION FACTOR OF +0.765).

4. "TOPOGRAPHIC MAP, CITY OF PORTSMOUTH, ROCKINGHAM COUNTY, NEW HAMPSHIRE" BY AERIAL SURVEY AND PHOTO, INC. NORRIDGEWOCK, MAINE, DATED 05-03-94.

5. "PROPERTY MAPS, PORTSMOUTH NEW HAMPSHIRE", BY AERIAL SURVEY AND PHOTO, INC. NORRIDGEWOCK, MAINE, UPDATED APRIL 1, 2001.

6. "STATE STREET UTILITIES UPGRADE AND ROADWAY IMPROVEMENTS, PORTSMOUTH, NH", RECORD DRAWINGS, PREPARED BY CMA ENGINEERS, JAN. 2012.

7. "DANIEL STREET SIDEWALK RECONSTRUCTION" BID DOCUMENTS PREPARED BY PORTSMOUTH DPW, SPRING 2013.

8. "STATE STREET AND BOW STREET SEWERS AND FORCE MAINS, CITY OF PORTSMOUTH, NH", PREPARED BY WRIGHT, PIERCE, BARNES, AND WYMAN, MARCH 1976.

CONSTRUCTION SEQUENCE (GENERAL):

PERFORM WORK, IN GENERAL, IN ACCORDANCE WITH AN APPROVED SCHEDULE.

1. PRIOR TO THE START OF CONSTRUCTION PROVIDE ENGINEER WITH A WRITTEN NARRATIVE OF THE CONSTRUCTION METHODS TO BE USED AND INCLUDE A PRELIMINARY SCHEDULE OF KEY MILESTONES, INCLUDING COORDINATION OF UTILITY PIPE INSTALLATIONS AND COORDINATION WITH GAS COMPANY, AND OTHER UTILITIES AS APPLICABLE.

2. REFER TO PROSECUTION OF WORK SECTION 0100 AND SECTION 01010 (SUMMARY OF WORK) FOR ADDITIONAL PROJECT REQUIREMENTS.

3. THE CONTRACTOR SHALL CONDUCT EXPLORATORY EXCAVATIONS WITH THE ENGINEER TO IDENTIFY POTENTIAL CONFLICTS AT UTILITY CROSSINGS. PAYMENT FOR EXCAVATION OF TEST PITS WILL BE CONSIDERED ONLY WHEN SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER.

4. DISPOSE OF SURPLUS AND UNSUITABLE MATERIALS AS THE WORK PROGRESSES. STOCKPILE OF MATERIALS IN PUBLIC RIGHTS OF WAY WILL ONLY BE PERMITTED IN AREAS APPROVED BY THE CITY OF PORTSMOUTH, DPW.

5. INSTALL AND MAINTAIN TEMPORARY AND PERMANENT EROSION CONTROL DEVICES THROUGHOUT CONSTRUCTION AS SHOWN ON THE DRAWINGS, PER THE APPROVED SWPPP AND/OR AS APPROVED BY THE ENGINEER.

6. PRE-DRAIN AND/OR DEWATER EXCAVATIONS BEFORE ALIGNING PIPE. INSTALL PIPE ON STABLE BEDDING (IN DRY CONDITIONS) TO THE ELEVATIONS SHOWN ON DRAWINGS.

7. IMMEDIATELY STABILIZE DISTURBED AREAS AFTER PIPE INSTALLATION AND REESTABLISH TEMPORARY EROSION CONTROL DEVICES MOVED DURING CONSTRUCTION.

8. INSTALL CRUSHED GRAVEL OR RECLAIMED BASE AS SHOWN ON DRAWINGS, IN TRENCH AT END OF EACH DAY. VISUAL INSPECTION, ALIGNMENT TESTS AND DEFLECTION TESTS OF PIPES SHALL BE COMPLETED NO LESS THAN THIRTY (30) DAYS FOLLOWING INSTALLATION. CONSTRUCT PAVEMENT REPAIRS AS SOON AS PRACTICAL, FOLLOWING UTILITY INSTALLATIONS AND TESTING.

9. RESTORE ALL DRAINAGE SWALES AND CULVERT PIPES IMMEDIATELY AFTER PIPE INSTALLATION.

10. FINISH GRADING, LOAM AND SEED DISTURBED AREAS AND BACK UP PAVEMENT WITH GRAVEL IMMEDIATELY FOLLOWING PAVEMENT REPAIRS.

11. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES AS SOON AS VEGETATION IS ESTABLISHED AND AREAS ARE STABILIZED.

ROAD AND SIDEWALK NOTES:

1. REFER TO THE SCHEDULES OF QUANTITIES ON SHEET G-5 FOR ADDITIONAL INFORMATION ON DESIGN INTENT AND LIMITS OF MATERIAL INSTALLATION (E.G. CURB, SIDEWALK, ETC.) AS SHOWN ON SHEETS R-1 TO R-3.

2. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING NEW PAVEMENT MARKINGS CONSISTENT WITH THE TYPES AND LOCATIONS OF EXISTING MARKINGS AS OBSERVED IN THE FIELD (E.G. CROSS WALKS, STOP BARS, CENTERLINE, STRIPING, ETC.). PROPOSED PAVEMENT MARKINGS ARE DELINEATED ON THE R-SHEETS OF THE DRAWING SET. PAVEMENT MARKINGS SHALL MEET ADA AND/OR MUTCD STANDARDS. TRAFFIC MARKING PAINT FOR STRIPING SHALL BE CHLORINATED RUBBER.

3. FULL DEPTH ROAD RECONSTRUCTION IS INTENDED FOR ALL STREETS EXCEPT WHERE SUITABLE BANK RUN GRAVEL SUBBASE MATERIAL IS ENCOUNTERED AND CAN BE LEFT IN PLACE. FULL WIDTH PAVEMENT RECLAMATION IS PROVIDED FOR TEMPORARY ROAD SURFACE DURING PIPE INSTALLATION WORK.

4. SIDEWALK DESIGNATED TO REMAIN SHALL BE PROTECTED FROM DAMAGE BY EQUIPMENT AND EXCAVATIONS. SIDEWALKS DAMAGED BY THE CONTRACTOR, AS A RESULT OF THEIR OPERATIONS, SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE. BRICK MASONRY SIDEWALKS WILL BE RESTORED OR EXPANDED TO THE LIMITS SHOWN UNLESS OTHERWISE DIRECTED.

5. WHERE CURBING AND/OR SIDEWALKS ARE PROPOSED, THE CONTRACTOR WILL CONSTRUCT CURB TIP DOWNS AT TRANSITION POINTS FOR DRIVEWAYS OR CROSS WALKS (SUBSIDIARY TO ITEMS 5.3.2 AND 5.4).

DRAIN STRUCTURE NOTES:

1. IN GENERAL, NEW CB'S WILL BE SET AT THE LOCATIONS SHOWN. EXISTING PIPE, CB'S AND DMH STRUCTURES WITHIN THE TRENCH PAYMENT LIMITS FOR NORMAL EXCAVATION OF THE PROPOSED PIPE ALIGNMENT SHALL BE (SUBSIDIARY). ALL FRAMES AND GRATES SHALL BE DELIVERED TO THE PORTSMOUTH DPW (SUBSIDIARY). ALL NEW CATCH BASIN RIMS SHALL BE SET AT BINDER PAVEMENT ELEVATION (SEE DETAIL SHEET D-2). ABANDONING DRAIN STRUCTURES OUTSIDE NORMAL EXCAVATION LIMITS WILL BE PAID AS ITEM 2.10.

2. MANHOLE AND CATCH BASIN BASES, RISERS, CONE SECTIONS, AND SLAB TOPS SHALL PROVIDE A MINIMUM 6" PERIPHERY OF MONOLITHIC SOLID WALL SEPARATION BETWEEN OPENINGS (CORINGS AND SECTIONS).

3. ALL CATCH BASINS, DRAIN MANHOLES, & DRAIN LINES SHALL BE CLEANED PRIOR TO ACCEPTANCE.

4. STORM DRAIN LATERALS SHALL BE PROVIDED WHERE INDICATED UNLESS OTHERWISE DIRECTED BY THE ENGINEER (ITEM 2.1.06X).

5. DMH RIMS SHALL BE SET 1/8" TO 1/4" BELOW GRADE WHEN IN PAVEMENT OR GRAVEL ROADS (I.E., PLOWED AREAS). RIMS SHALL BE SET AT GRADE IN NON-PLOWED AREAS UNLESS OTHERWISE INDICATED.

WATER DISTRIBUTION SYSTEM NOTES:

1. THE CONTRACTOR SHALL MAINTAIN WATER SERVICE TO RESIDENTS AT ALL TIMES. IN THE EVENT THAT SERVICE HAS TO BE TEMPORARILY INTERRUPTED THE INTERRUPTION SHALL BE SCHEDULED IN ADVANCE. THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE WATER TIE-IN'S ON BOW STREET AND PENHALLOW STREET 10 DAYS IN ADVANCE FOR DPW APPROVAL. THE AFFECTED RESIDENTS AND BUSINESSES SHALL BE GIVEN A MINIMUM OF TWO (2) BUSINESS DAYS (48 HOURS) VERBAL AND WRITTEN NOTICE BEFORE CONDUCTING THE WORK. SEE KEY NOTE (6).

2. NEW WATER MAIN SHALL BE 8-INCH DUCTILE IRON UNLESS OTHERWISE NOTED.

3. ALL EXISTING WATER BOXES AND OTHER CASTINGS TO REMAIN IN PLACE THAT ARE DISTURBED OR RELOCATED BY CONSTRUCTION ACTIVITIES SHALL BE ADJUSTED TO EXISTING LINE AND GRADE, UNLESS SHOWN OTHERWISE ON THESE PLANS OR AS DIRECTED BY THE ENGINEER (SUBSIDIARY).

4. ALL EXISTING WATER PIPE IDENTIFIED AS ABANDONED SHALL BE DEMOLISHED AS FOLLOWS: CAP PIPE AT EACH END AND ABANDON IN PLACE UNLESS REMOVAL IS REQUIRED BECAUSE OF OTHER INTERFERENCES. THIS WORK IS SUBSIDIARY TO PIPE INSTALLATIONS AND WILL NOT BE MEASURED FOR PAYMENT. ASBESTOS PIPE ENCOUNTERED IN THE EXCAVATION, SHALL BE ABANDONED IN PLACE AND INTACT OR REMOVED IF DIRECTED. PAYMENT FOR ASBESTOS PIPE REMOVAL WILL BE MEASURED FOR PAYMENT ONLY IF REMOVED AS DESCRIBED IN SECTION 01025, ITEM 6.9.

5. ALL WATER SERVICE CONNECTIONS SHALL MATCH EXISTING SIZES AND BE COPPER TUBING UNLESS INDICATED OTHERWISE ON THE DRAWINGS OR DIRECTED OTHERWISE. THE ESTIMATED QUANTITIES IN THE BID SCHEDULE REFLECT A MINIMUM SIZE OF 3/4" WHERE THE EXISTING SIZE IS NOT SHOWN ON THE PLAN. ANY NEW SERVICES INTENDED TO SERVE NEW OR FUTURE CONSTRUCTION SHALL BE 1" (MIN.).

6. ALL GATE VALVES SHALL HAVE RESTRAINED MECHANICAL JOINTS AND OPEN RIGHT.

7. ALL TEES AND BENDS SHALL BE CONSTRUCTED USING BOTH MECHANICAL AND THRUST BLOCK RESTRAINTS, SUBSIDIARY TO WATER SYSTEM WORK (SEE SHEET D-3).

8. MAINTAIN A MINIMUM 10 FEET HORIZONTAL DISTANCE (WHERE POSSIBLE) AND 18" VERTICAL DISTANCE BETWEEN WATER MAIN AND SEWER PIPING. NOTIFY ENGINEER OF ANY DISCREPANCY OR CONFLICT.

SANITARY SEWER NOTES:

1. ALL SEWER SERVICE, UNLESS OTHERWISE DIRECTED OR APPROVED BY THE ENGINEER, LATERALS SHALL BE 6" DIAMETER. MINIMUM SLOPE SHALL BE 0.02 FT/FT. SEWER LATERALS SHALL BE INSTALLED TO THE LIMITS OF THE EXISTING SIDEWALKS AS SHOWN ON THE DRAWINGS. ANY SERVICE WORK EXTENDING PAST THE PROPERTY LINE SHALL BE APPROVED BY THE PROPERTY OWNER, THE CITY, AND THE ENGINEER PRIOR TO COMPLETION. WORK COMPLETED BEYOND THE PROPERTY LINE WITHOUT PRIOR APPROVAL IS NOT PERMITTED AND WILL NOT BE MEASURED FOR PAYMENT. SEE AVAILABLE SEWER VIDEO LOGS AND HOUSE SURVEYS IN THE APPENDIX OF THE PROJECT MANUAL FOR EXISTING SERVICE LATERAL INFORMATION.

2. THE CONTRACTOR SHALL PHASE UTILITY WORK SO AS TO MINIMIZE DISRUPTIONS TO SEWER FLOWS. BYPASS PUMPING, (OR OTHER APPROVED METHODS), SHALL BE USED AS NECESSARY TO MAINTAIN ACTIVE SEWER AND, SHALL BE SUBSIDIARY TO THE WORK. INTERRUPTIONS TO SEWER SERVICE SHALL NOT CAUSE SURCHARGES.

3. SERVICE CONNECTIONS TO THE SEWER, DETERMINED TO BE YARD DRAINS, FOUNDATION DRAINS OR ROOF LEADERS SHALL NOT BE CONNECTED TO THE NEW SANITARY SEWER. THE CONTRACTOR IS TO NOTIFY THE ENGINEER IMMEDIATELY OF POTENTIAL STORM DRAINS OR SUBSURFACE DRAINS ENCOUNTERED DURING CONSTRUCTION.

4. SEWER CONSTRUCTION SHALL PROCEED FROM THE LOWEST POINT UPWARD UNLESS OTHERWISE APPROVED BY THE ENGINEER.

5. SMH RIMS SHALL BE SET 1/8" TO 1/4" BELOW GRADE WHEN IN PAVEMENT OR GRAVEL ROADS (I.E., PLOWED AREAS). RIMS SHALL BE SET AT GRADE IN NON-PLOWED AREAS UNLESS OTHERWISE INDICATED.

6. ALL EXISTING SEWER STRUCTURES (PIPE AND MANHOLES) TO BE ABANDONED SHALL BE PREPARED AS FOLLOWS:

   MANHOLES – SHALL BE REMOVED TO A DEPTH OF 4' BELOW GRADE. THE REMAINING BASE OF STRUCTURES SHALL BE FILLED WITH GRAVEL AND COMPACTED IN 8" LIFTS, (INCIDENTAL, WHEN LOCATED IN PROPOSED UTILITY ALIGNMENT). WHEN EXISTING SMH TO BE ABANDONED IS BEYOND THE TRENCH LIMITS OF THE PROPOSED UTILITY, PAYMENT WILL BE UNDER BID ITEM 1.10.

   PIPE – ALL PIPE TO BE ABANDONED IN PLACE AND SHALL BE CUT & PLUGGED AT BOTH ENDS, SUBSIDIARY. PIPES EXCEEDING 12-INCH DIAMETER, TO BE ABANDONED, WILL BE FILLED WITH FLOWABLE FILL (WHERE DIRECTED BY ENGINEER) AND PAID FOR UNDER ITEM 1.11

NO.	REVISIONS	APP'D
	ISSUE FOR APPROVAL Date 3/15/15 By BTD	
	CONSTRUCTION Date -3/15/16 By	
	RECORD DRAWING Date - By -	

Drawn/Chk RMG/TJB
Designed BTD
Checked PDM
Approved -
Date 03/25/15
Book No. -
Project No. 1902
Dwg. ID 1902-gen notes.
Scale AS SHOWN

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
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GENERAL NOTES

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO G-2

SHEET 3 OF 25

KEY NOTES:

ROADWAY

1 CONSTRUCT BRICK CURB RAMP (ITEMS 5.2.B AND 5.5A) WITH ADA DETECTABLE WARNING PANEL (ITEM 5.5B) FOR CROSS WALK. INSTALL PAVEMENT MARKINGS AT CROSSWALK (ITEM 632.3112).

2 SAWCUT EXISTING PAVEMENT FOR NEAT JOINT AT TIE–IN AND APPLY TACK WITH EMULSION PRIOR TO PAVING (SUBSIDIARY TO ITEM 4.1X).

3 COLD PLANE EXISTING PAVEMENT (1.5" DEPTH) FOR WEARING COURSE PAVEMENT TIE–IN (ITEM 4.7) TO MEET EXISTING GRADES (SEE DETAIL SHEET D–4).

4A COORDINATE INSTALLATION OF "PAY AND DISPLAY" OR COIN OPERATED PARKING METER (METER INSTALLATION AND LOCATION TO BE PROVIDED BY DPW).

4B REMOVE PARKING METER (SUBSIDIARY TO ITEM 5.2.B)

5 RADIANT HEAT TUBING (OR COILS) REPORTED BELOW EXISTING BRICK SIDEWALK FOR SNOW MELT. UNCOVER BRICKS WITH HAND TOOLS TO EXPOSE HEATING SYSTEM AND REVIEW WITH ENGINEER TO DETERMINE IF THE SYSTEM CAN BE MAINTAINED IN PLACE. IF REMOVAL IS NECESSARY, PROPERTY OWNER HAS FIRST SALVAGE RIGHTS BEFORE DISPOSAL BY THE CONTRACTOR. WORK DESCRIBED FOR THESE LOCATIONS IS SUBSIDIARY TO ITEM 5.2.B.

6 REFER TO LANDSCAPE DRAWINGS FOR BRICK WALK DETAILS, LIGHTING, AND PLAN ENLARGEMENTS.

7 COORDINATE DRIVEWAY SURFACE WITH SITE DEVELOPMENT WORK AT #25 CHAPEL STREET. CONTRACTOR WILL BE RESPONSIBLE FOR PREPARING DRIVEWAY SURFACE AS SHOWN ON THE PLANS (SEE CROSS SECTIONS). FINAL SURFACE MATERIAL MAY DEPEND ON PROGRESS AND TIMING OF THE WORK. THE APPROVED SITE PLAN SPECIFIES BRICK DRIVEWAY SURFACE CONSTRUCTION (TO BE COMPLETED BY DEVELOPER).

8 COORDINATE WITH DPW FOR SIGN INSTALLATION:
- A. NO PARKING HERE TO CORNER – SHEAFE STREET
- B. HANDICAP PARKING – CHAPEL STREET
- C. LOADING ZONE (HOURS TBD) – CHAPEL STREET

9 ROW LIMITS SHOWN ARE APPROXIMATE AND BASED ON CITY OF PORTSMOUTH TAX MAP INFORMATION. THE STREETS IN THE PROJECT AREA DO NOT HAVE A RECORDED LAYOUT AND THEREFORE FORMAL ARRANGEMENTS FOR ACCESS ARE NOT PROVIDED FOR PROPOSED SIDEWALK /ROAD WORK TO MATCH EXISTING LIMITS (INCLUDING INTERFACE OF NEW WORK WITH EXISTING SURFACES).

10 ADJUST CATCH BASIN RIM TO MEET FINISH GRADE AND ALIGN WITH FACE OF CURB (ITEM 2.5A).

11 CONSTRUCT PARKING AREA PAVEMENT RESTORATION TO APPROXIMATE EXISTING GRADES AS DIRECTED BY THE ENGINEER:
- ITEM 4.1A – 3/4" BINDER COURSE PAVEMENT (2.25" DEPTH) – 40 TONS
- ITEM 4.1B – 3/8" WEARING COURSE PAVEMENT (1.25" DEPTH) – 25 TONS
- ITEM 4.4A – COMMON EXCAVATION–ROADWAY – 100 CY
- ITEM 4.5.1A – FURNISH AND INSTALL CRUSHED GRAVEL (ROADWAY RECONSTRUCTION) – UP TO 25 CY
- ITEM 632.0104 – RETROREFLECTIVE PAINT PAVEMENT MARKING; SSL 4" WHITE – 325 LF

GRADING GRAVEL SUBBASE, SO THAT FINISHED GRADES WILL MATCH EXISTING SURFACES AND TIE–IN WITH WITH NEW WORK, WILL BE SUBSIDIARY TO ITEMS 4.5.1A AND 4.1A. SEE KEY NOTE 2 FOR REQUIREMENTS AT TIE–IN LOCATIONS.

WATER

1A FURNISH & INSTALL 8"x45° DI FITTINGS (TYP.), SUBSIDIARY TO ITEM 3.1.08

1B FURNISH & INSTALL 8" 22 ½ ° DI FITTINGS, SUBSIDIARY TO ITEM 3.1.08

1C FURNISH & INSTALL 8" 11 ¼° DI FITTINGS, SUBSIDIARY TO ITEM 3.1.08

1D FURNISH & INSTALL 8"x8"x6" TEE, SUBSIDIARY TO ITEM 3.1.08

1E FURNISH & INSTALL 8"x8"x8" TEE, SUBSIDIARY TO ITEM 3.1.08

1F FURNISH & INSTALL 8"x4" REDUCER, SUBSIDIARY TO ITEM 3.1.08

1G FURNISH & INSTALL 8"x6" REDUCER, SUBSIDIARY TO ITEM 3.1.08

2A FURNISH & INSTALL 4" GATE VALVE, PAY AS ITEM 3.4.04

2B FURNISH & INSTALL 6" GATE VALVE, PAY AS ITEM 3.4.06

2C FURNISH & INSTALL 8" GATE VALVE, PAY AS ITEM 3.4.08

3 CONNECT PROPOSED WATER MAIN TO EXISTING WATER SYSTEM USING SOLID SLEEVE COUPLING (SUBSIDIARY TO ITEM 3.1.XX)

4 EXCAVATE EXPLORATORY TEST PIT (ITEM 6.4). LOCATE AND RECORD PIPE INVERT /TOP OF PIPE. REPORT FINDINGS TO ENGINEER.

5 CONSTRUCT WATER SERVICE LATERAL FOR HOMES (ITEMS 3.2X AND 3.3X) AND BUSINESSES. MATCH EXISTING SIZE UNLESS INDICATED OTHERWISE. LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATION AND MATCHING CONNECTIONS FOR THE PROPERTY LOCATIONS SHOWN UNLESS OTHERWISE DIRECTED.

6 WATER MAIN TIE–IN AT NIGHT:
- SUBMIT WORK SEQUENCE AND COORDINATION PLAN TO DPW FOR REVIEW 10 DAYS IN ADVANCE OF SCHEDULING THE WORK.
- IDENTIFY HOW IMPACTS SUCH AS INTERRUPTIONS TO WATER SERVICE (BUSINESSES AND RESTAURANTS), TRAFFIC ROUTING, ETC. WILL BE MINIMIZED.
- NIGHT WORK WILL BE NECESSARY.
- REFER TO THE WATER SYSTEM WORK PLAN PROVIDED IN SPECIFICATION SECTION 01515 – TEMPORARY WATER (POTABLE).

7 EXISTING WATER SERVICE CONNECTS TO MAIN ON ADJACENT SIDE STREET (TO BE CONFIRMED BY OWNER AND ENGINEER). NO WATER SERVICE WORK IS PROPOSED AT THIS LOCATION.

8 FURNISH AND INSTALL HYDRANT ASSEMBLY INCLUDING 8"X6" DI BRANCH PIPING, FITTINGS, AND 6" GATE VALVE (ITEM 3.5).

SEWER

1A CONSTRUCT NEW SEWER SERVICE IN CITY R.O.W. (ITEM 1.1.06A). LOCATION IS CONSIDERED APPROXIMATE BASED ON SEWER VIDEOS AND HOMEOWNER QUESTIONNAIRES THAT ARE ON FILE. EXACT LOCATIONS FOR THE EXISTING SERVICES ARE UNKNOWN. THE CONTRACTOR WILL BE RESPONSIBLE TO CONFIRM LOCATIONS WITH THE ENGINEER BEFORE SEWER MAINLINE CONSTRUCTION.

1B EXTEND SEWER SERVICE BEYOND ROW AND INTO BUILDING FOUNDATION, WORK TO INCLUDE: EVALUATION OF INTERIOR PLUMBING (CONTRACTOR/ENGINEER), PROPERTY OWNER COORDINATION (MEMORANDUM OF UNDERSTANDING OR OTHER PERMISSION DOCUMENTS TO BE PROVIDED BY DPW), EXTENSION OF SEWER SERVICE FROM THE STREET TO THE FOUNDATION (LOCATION AS APPROVED BY THE ENGINEER ITEM 1.1.06A AND 1.1.06B), FIELD CORE THROUGH FOUNDATION (INCLUDING FOUNDATION SEAL, ITEM 1.9X), AND CONNECTION TO INTERIOR PLUMBING (ITEM 1.16).

1C EXISTING SEWER SERVICE LATERAL CONNECTS TO SEWER MAIN ON ADJACENT (SIDE) STREET. NO SEWER SERVICE LATERAL WORK IS PROPOSED AT THIS LOCATION.

2 REMOVE EXISTING SEWER MANHOLE AND PLUG PIPES, SUBSIDIARY TO TRENCH EXCAVATION WHEN INSIDE NORMAL EXCAVATION LIMITS. OTHERWISE PAY AS ITEM 1.10.

3 CONNECT TO EXISTING SEWER USING FLEXIBLE TRANSITION COUPLING (SUBSIDIARY TO ITEM 1.X.XX)

4 NOT USED

5 NOT USED

6 NOT USED

7 EXCAVATE EXPLORATORY TEST PIT AT EXISTING SEWER MAIN AND MEASURE INVERT ELEVATION AT PROPOSED TIE–IN LOCATION. REPORT FINDINGS TO THE ENGINEER BEFORE PROCEEDING.

8 CONSTRUCT INSIDE DROP STRUCTURE, ITEM 1.6.

DRAIN

1 RESET CATCH BASIN FRAME AND GRATE ASSEMBLY SO GRATE IS FLUSH WITH CURB LINE AND MEETS FINAL GRADE (ITEM 2.5A).

2 DRAIN SERVICE LATERALS: (FIELD DETERMINE INVERT ELEVATIONS AS DIRECTED BY THE ENGINEER)
- A. CONSTRUCT DRAIN SERVICE LATERAL TO THE ROW (OR AS DIRECTED). CONNECT TO EXISTING PIPING FOR SUMP PUMP, FOUNDATION DRAIN, OR SURFACE DRAIN. WHERE NO EXISTING PIPING IS CONFIRMED FOR CONNECTION, TERMINATE LATERAL WITH CLEANOUT AND WATER TIGHT PLUG (ITEM 2.1.06A.). FOR ROOF LEADERS, CONSTRUCT CAST IRON RISER ASSEMBLY AND CONNECT TO DRAIN SERVICE LATERAL (ITEM 2.4B).
- B. EXTEND DRAIN SERVICE LATERAL BEYOND ROW FOR CONNECTION TO ROOF LEADER OR SUMP PUMP DISCHARGE PIPING (ITEM 2.1.06B). COORDINATE WITH PROPERTY OWNER (MEMORANDUM OF UNDERSTANDING OR OTHER PERMISSION DOCUMENTS TO BE PROVIDED BY DPW).
- C. NO DRAIN SERVICE LATERAL PROPOSED. EXISTING DRAIN SERVICE LATERAL (FOR SUMP PUMP OR SURFACE DRAIN) DISCHARGES TO ADJACENT STREET.

3 EXCAVATE EXPLORATORY TEST PIT (ITEM 6.4).
- A. LOCATE AND RECORD PIPE INVERT /TOP OF PIPE. REPORT FINDINGS TO ENGINEER.
- B. EXPOSE BUILDING FOUNDATION. RECORD FOUNDATION MATERIAL (I.E. STONE, CONCRETE, ETC.) AND RECORD BOTTOM OF FOOTING ELEVATION (WHEN BELOW PROPOSED PIPE TRENCH LIMIT). REPORT FINDING TO ENGINEER FOR CONFIRMATION BEFORE PROCEEDING WITH EXCAVATION FOR UTILITY INSTALLATION.

4 CONSTRUCT "KLEANSTREAM ELIMINATOR" HOOD AT CB WHEN OUTLET PIPE IS 12" (ITEM 2.6A).

5 CONNECT PROPOSED CPE DRAIN TO EXISTING DRAIN PIPE WITH FLEXIBLE COUPLING OR FITTING (SUBSIDIARY TO ITEM 2.1.XX).

6 CONNECT PROPOSED DRAIN PIPE(S) TO EXISTING STRUCTURE AND MODIFY EXISTING PENETRATION AS NECESSARY (SUBSIDIARY TO 2.X.XX WHEN PROPOSED AND EXISTING DIAMETERS MATCH). WHEN PENETRATION DOES NOT EXIST AT PROPOSED CONNECTION, FIELD CORE EXISTING STRUCTURE (ITEM 2.9X). RAISE STRUCTURE TO FINAL GRADE (ITEM 2.5A)

7 REMOVE EXISTING CATCH BASIN OR MANHOLE AND PLUG PIPES (SUBSIDIARY TO TRENCH EXCAVATION WHEN INSIDE NORMAL EXCAVATION LIMITS, OTHERWISE PAY AS ITEM 2.10).

ISSUE FOR
APPROVAL By BTD Date 3/13/15
CONSTRUCTION By [illegible] Date 7/15/15
RECORD DRAWING By – Date –

NO.	REVISIONS	APP'D

Drawn/Chk RWG/TJB
Designed BTD
Checked PDM
Approved –
Date 03/25/15
Book No. –
Project No. 1902
Dwg. ID 1902–gen notes..
Scale AS SHOWN

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
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KEY NOTES

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO G–3

SHEET 4 OF 25

DRAINAGE STRUCTURE SCHEDULE

Plan Sheet	Street	Catch Basins	Rim	Item#2.5.4: 4' Dia.Drain Manhole (VF)		Item #2.6.2: 2' Dia. Drop Inlet (VF)			Item#2.6.4: 4' Dia. Catch Basin (VF)		
				Invert	Total	Invert	Sump	Total	Invert	Sump	Total
P-1	Sheafe	CB #2	23.00	-	-	-	-	-	17.40	3.0	8.60
P-1	Sheafe	CB #6	25.7	-	-	-	-	-	21.2	3.0	7.50
P-1	Sheafe	DI #3	27	-	-	22.9	0.0	4.10	-	-	-
P-1	Sheafe	CB #7	26.1	-	-	-	-	-	22.3	3.0	6.80
P-2	Chapel	CB #1	23.10	-	-	-	-	-	17.25	3.0	8.85
P-2	Chapel	DI #1	23.50	-	-	19.20	0.0	4.30	-	-	-
P-2	Chapel	DI #2	24.70	-	-	20.50	3.0	7.20	-	-	-
		Subtotal (Rim to Sump):			**0.0**			**15.6**			**31.8**
		Rounding :			0.0			4.4			3.2
		BASE BID Estimated Quantity:			**0.0**			**20.0**			**35.0**
P-3	Chapel	CB #3	25.50	-	-	-	-	-	22.90	3.0	5.60
P-3	Chapel	CB#4	30.10	-	-	-	-	-	25.60	3.0	7.50
P-3	Chapel	DMH#1	30.10	25.70	4.40	-	-	-	-	-	-
P-3	Chapel	CB #5	38.70	-	-	33.74	3.0	7.96	33.74	3.0	7.96
		Subtotal (Rim to Sump):			**4.4**			**8.0**			**21.1**
		Rounding :			0.6			2.0			3.9
		BID ALT. No.1 Estimated Quantity:			**5.0**			**10.0**			**25.0**

DRAIN PIPE SCHEDULE

Plan Sheet	Street	From	To	ITEM#2.1.12 12" HDPE (LF)	ITEM#2.1.15 15" HDPE (LF)
P-1	Sheafe	CB #1	CB #2	23	-
P-1	Sheafe	CB #2	CB #6	155	-
P-1	Sheafe	CB #7	DI #3	115	-
P-1	Sheafe	dmh 5b	CB #7	17	-
P-2	Chapel	CB #2936	CB #1	-	58
P-2	Chapel	DI #1	DI #2	117	-
		Subtotal (Center to Center):		**427**	**58**
		Rounding :		23	17
		BASE BID Total Estimated Quantity		**450**	**75**
P-3	Chapel	CB #3	CB #4	131	-
P-3	Chapel	CB #4	DMH #1	25	-
P-3	Chapel	DMH #1	CB# 5	96	-
		Subtotal (Center to Center):		**252**	**0**
		Rounding :		23	0
		BASE BID Estimated Quantity		**275**	**0**

SERVICE LATERAL SCHEDULE

Plan Sheet	Street	House No.	ITEM#1.1.06A: 6" PVC Sewer in Right of Way (LF)	ITEM#1.1.06B: 6" PVC Sewer on Private Property (LF)	ITEM#1.4: CI Sewer Cleanout Covers (EA)	ITEM #2.1.06A: 6" CPDT Drain in ROW (LF)	ITEM#2.1.06B: 6" CPDT Drain on Private Property (LF)	ITEM#2.4A: CI Cleanout Assembly (EA)	ITEM#2.4A: CI Roof Leader Assembly (EA)	ITEM#3.2A: 3/4 Copper Service Pipe (LF)	ITEM#3.3A: 3/4" Water Service Connection (EA)	ITEM#3.2B: 1 1/2" Water Service (LF)	ITEM#3.3B: 1 1/2" Water Service Connection (EA)	ITEM#3.2C: 2" Copper Service (LF)	ITEM#3.3C: 2" Water Service Connection (EA)
P-1	State	111	10	-	1	4	5	-	-	-	-	-	-	-	-
P-1	Sheafe	59	14	-	1	18	-	-	-	5	1	-	-	-	-
P-1	State	121	-	-	-	-	-	-	-	-	-	-	-	-	-
P-1	Sheafe	49	17	-	1	27	-	-	1	7	1	-	-	-	-
P-1	State	129	-	-	-	8	50	-	4	-	-	-	-	-	-
P-1	Sheafe	43	19	-	1	27	-	-	2	8	1	-	-	-	-
P-1	State	147	-	-	-	-	-	-	-	15	1	-	-	-	-
P-1	Sheafe	37	17	-	1	10	-	-	-	7	1	-	-	-	-
P-1	Sheafe	31	17	5	1	55	-	1	1	9	1	-	-	-	-
P-1	Sheafe	29	-	-	3	10	-	-	-	9	1	-	-	-	-
P-1	Sheafe	19	-	-	-	17	-	-	1	8	1	-	-	-	-
P-1	Sheafe	17	-	-	-	18	-	-	1	9	1	-	-	-	-
P-1	Sheafe	20	-	-	-	10	-	-	1	10	1	-	-	-	-
P-1	Sheafe	18	-	-	-	-	-	-	-	8	1	-	-	-	-
P-1	Sheafe	11	-	-	-	19	-	-	1	9	1	-	-	-	-
P-1	Sheafe	9	-	-	-	39	-	-	1	9	1	-	-	-	-
P-1	Sheafe	3	-	-	-	21	-	-	1	9	1	-	-	-	-
P-1	Sheafe	16	-	-	-	-	-	-	-	-	-	-	-	-	-
P-1	Sheafe	14	-	-	-	-	-	-	-	-	-	-	-	-	-
P-1	Sheafe	25	-	-	-	-	-	-	-	-	-	-	-	-	-
P-2	State	107	12	-	1	49	10	-	3	17	1	-	-	-	-
P-2	Chapel	20	16	-	1	42	-	-	3	16	1	-	-	-	-
P-2	Chapel	25	-	-	-	0	-	-	-	-	-	10	1	-	-
P-2	Chapel	28	15	-	1	15	-	1	1	18	1	-	-	-	-
P-2	Chapel	40	16	-	1	20	-	1	2	16	1	-	-	-	-
P-2	Daniel	135	-	-	-	-	-	-	-	-	-	-	-	6	1
P-2	Daniel	129/127	18	-	1	8	-	2	-	-	-	-	-	-	-
P-2	Daniel	125	18	-	1	-	-	-	-	-	-	-	-	-	-
P-2	Daniel	123	-	-	-	-	-	-	-	-	-	-	-	-	-
		Subtotal:	189.0	5.0	15.0	417.0	65.0	5.0	23.0	189.0	18.0	10.0	1.0	6.0	1.0
		Rounding:	36.0	5.0	0.0	33.0	35.0	5.0	2.0	11.0	2.0	15.0	1.0	14.0	1.0
		BASE BID Estimated Quantity:	**225.0**	**10.0**	**15.0**	**450.0**	**100.0**	**10.0**	**25.0**	**200.0**	**20.0**	**25.0**	**2.0**	**20.0**	**2.0**
P-3	Daniel	126	36	18	2	50	80	-	4	-	-	-	-	-	-
P-3	Daniel	150	1	-	-	-	-	-	-	20	1	-	-	-	-
P-3	Chapel	100	18	-	1	5	-	-	-	5	1	-	-	-	-
P-3	Chapel	101	15	-	1	50	105	-	3	-	-	-	-	-	-
P-3	Chapel	105	20	-	1	45	-	-	-	20	1	-	-	-	-
P-3	Chapel	110	20	-	1	28	15	-	2	6	1	-	-	-	-
P-3	Chapel	132	62	-	1	-	-	-	-	9	1	-	-	-	-
P-3	Bow	76-82	-	-	-	-	-	-	-	11	1	-	-	-	-
		Subtotal:	172.0	18.0	7.0	178.0	200.0	0.0	9.0	71.0	6.0	0.0	0.0	0.0	0.0
		Rounding:	28.0	7.0	3.0	22.0	35.0	5.0	1.0	14.0	4.0	0.0	0.0	0.0	0.0
		BID ALT No.1 Estimated Quantity:	**200.0**	**25.0**	**10.0**	**200.0**	**235.0**	**5.0**	**10.0**	**85.0**	**10.0**	**0.0**	**0.0**	**0.0**	**0.0**

SEWER MANHOLE SCHEDULE

Plan Sheet	Street	Manhole	Item#1.5.4: 4' Dia. (VF)
P-1	Sheafe Street	7	7.0
P-2	Chapel Street	1	8.9
P-2	Chapel Street	2	8.1
P-2	Chapel Street	3	7.1
	Subtotal:		**31.1**
	Rounding:		3.9
	BASE BID Estimated Quantity:		**35.0**
P-3	Chapel Street	4	5.0
P-3	Chapel Street	5	6.8
P-3	Chapel Street	6	8.1
	Subtotal:		**19.9**
	Rounding:		0.1
BID ALTERNATE No.1 Estimated Quantity:			**20.0**

SEWER PIPE SCHEDULE

Plan Sheet	Street	From	To	ITEM#1.1.08 8" PVC (LF)	ITEM#1.1.15 15" PVC (LF)
P-1	Sheafe Street	SMH 2	SMH 7	248	-
P-2	Chapel Street	SMH 5520	SMH 1	-	4
P-2	Chapel Street	SMH 1	SMH 2	70	-
P-2	Chapel Street	SMH 2	SMH 3	100	-
P-2	Chapel Street	SMH 3	SMH 1626 (Daniel)	56	-
	Subtotal (Center to Center):			**474**	**4**
	Rounding :			26	16
	BASE BID Total Estimated Quantity			**500**	**20**
P-3	Chapel Street	SMH 1626 (Daniel)	SMH 4	18	-
P-3	Chapel Street	SMH 4	SMH 5	110	-
P-3	Chapel Street	SMH 5	SMH 6	112	-
	Subtotal (Center to Center):			**240**	**0**
	Rounding :			10	0
	BID ALT No.1 Estimated Quantity			**250**	**0**

WATER PIPE AND APPURTENANCE SCHEDULE

Plan Sheet	Street	ITEM #3.1.04: 4" DI Water	ITEM #3.1.08: 8" DI Water	ITEM#3.4.04: 4" Gate Valve	ITEM #3.4.08: 8" Gate Valve	ITEM #3.4.08X: Water Tie-In	ITEM#3.5: Hyd. Assembly
P-1	Sheafe	-	390	-	2	1	-
P-2	Chapel	10	230	1	2	-	-
	Subtotal:	**10**	**620**	**1**	**4**	**1**	**0**
	Rounding :	15	30	0	0	0	0
BASE BID Estimated Quantity:		**25**	**650**	**1**	**4**	**1**	**0**
P-3	Chapel	70	450	4	1	1	1
	Subtotal:	**70**	**450**	**4**	**1**	**1**	**1**
	Rounding :	5	0	0	0	0	0
BID ALT No.1 Estimated Qty:		**75**	**450**	**4**	**1**	**1**	**1**

Notes:
1. See Service Lateral Schedule for additional water system quantities

SEWER SERVICE RECONSTRUCTION SCHEDULE

Dwg. No.	House No.	Street Name	Existing Service Discharge Location (Building Penetration/Connection)	Proposed Service Location (Building Penetration/Connection)	Record Drawings	Tie Sheets	Basement Survey	Comments
P-1	#3	Sheafe	Exits west building wall to Penhallow	Maintain existing condition. No service replacement proposed	Y	Y		
P-1	#9	Sheafe	Exits rear of building (north) to Custom House Court	Maintain existing condition. No service replacement proposed	Y	Y		Drain lateral off Custom House Court
P-1	#11	Sheafe	Exits rear of building (north) to Custom House Court	Maintain existing condition. No service replacement proposed	Y	Y		Drain lateral off Custom House Court
P-1	#17	Sheafe	Exits rear of building (north) to Custom House Court	Maintain existing condition. No service replacement proposed	Y	Y		Drain lateral off Custom House Court
P-1	#19	Sheafe	Pumped to rear (north) of building and discharges to upstream SMH (4F) on Custom House Court	Maintain existing condition. No service replacement proposed	Y	Y		Drain lateral off Custom House Court
P-1	#29	Sheafe	Shares servec with #31 Sheafe and exits north or exits west side of building and discharges to SMH 2333 in Sheafe	Replace to ROW	Y		Y	Drain lateral off Custom House Court
P-1	#31	Sheafe	Exits front of building (south) to Sheafe Street	Replace to ROW	Y		Y	Drain lateral off Custom House Court
P-1	#37	Sheafe	Exits front of building (south) to Sheafe Street	Replace to ROW			Y	
P-1	#43	Sheafe	Exits east side of building and discharges to Sheafe Street	Replace to ROW			Y	
P-1	#49	Sheafe	Exits front of building (south) to Sheafe Street	Replace to ROW			Y	
P-1	#59	Sheafe	Exits front of building (south) to Sheafe Street	Replace to ROW			Y	
P-1	#25	Sheafe	Exits west building wall and discharges to Penhallow	Maintain existing condition	Y	Y		Drain lateral off Penhallow
P-1	#14	Sheafe	Unconfirmed - Reportedly shares sevice with #25 Sheafe Strect and discharges to Penhallow	TBD - Maintain existing condition				
P-1	#16	Sheafe	Unconfirmed - Reportedly shares sevice with #25 Sheafe Street and discharges to Penhallow	TBD - Maintain existing condition				
P-1	#175	State	Shares service with #177 State St. Separate stub connection provided. Both 175 & 177 discharge to State St.		Y	Y		Private CB sewer connection?
P-1	#18	Sheafe	Discharges to State Street	Maintain existing condition. No service replacement proposed				Confirmed with dye test
P-1	#20	Sheafe	Discharges to State Street	Maintain existing condition. No service replacement proposed				Confirmed with dye test
P-1	#147	State	Exits east side of building (under Pocket Park) to State Street		Y	Y		
P-1	#129	State	Exits front of building (south) to State Street	Maintain existing condition. No service replacement proposed	Y	Y		
P-1	#121	State	Exits front of building (south) to State Street	Maintain existing condition. No service replacement proposed	Y	Y		
P-1	#111	State	Exits rear of building (north) to Sheafe Street	Replace to ROW			Y	

SEWER SERVICE RECONSTRUCTION SCHEDULE (CONTINUED)

P-2	#93	State	Exits front of building (south) to State Street	Maintain existing condition. No service replacement proposed	Y	Y		Drain lateral to State Street
P-2	#25	Chapel	Service discharges to off site manhole (also 135 Daniel St.) and manhole discharges to Chanel Street	Connect 6" outlet pipe for off site SMH to SMH 3 on Chapel Street				
P-2	#135-143	Daniel	Three services enter SMH in brick walkway and Discharge to Chapel	Replace to ROW				Connie Bean/Army and Navy building
P-2	#107	State	Exits northeast side of building and discharges to Chapel Street	Replace to ROW			Y	
P-2	#20	Chapel	Exits front of building (north) and discharges to Chapel Street	Replace to ROW				
P-2	#28	Chapel	Exits front of building (north) and discharges to Chapel Street	Replace to ROW			Y	
P-2	#40	Chapel	Unconfirmed - Reportedly discharges to Chapel out the front of building (renovations in progress)	TBD				
P-2	#127	Daniel						
P-2	#129	Daniel	Exits front of building (north) and discharges to Daniel Street	TBD			Y	
P-2	#125	Daniel	Unconfirmed - Reportedly discharges out the back to Chapel Street	TBD				
P-2	#123	Daniel	Exits rear of building (south) and follows alley/drive to discharge on Chapel	Replace to ROW			Y	
P-3	#126	Daniel	Currently two services: 1. Service exits east side of building and discharges on Chapel Street across Daniel Street 2. Service for upper floors exits east s	1. TBD - Evaluate internal plumbing for intrcepting lines to upper floors and running new service line along basement ceiling and out to Chapel for sewer main connection upstream of proposed SMH #4			Y	Basement service serves front (Daniel Street) half of building. Basement floor toilet no longer in use.
P-3	#100	Chapel	Exits south side of building and discharges to Chapel Street	Replace to ROW			Y	
P-3	#110	Chapel	Exits south side of building and discharges to Chapel Street	Replace to ROW				
P-3	#132	Chapel	Exits south side of building and discharges to Chapel Street	Replace to ROW				
P-3	#105	Chapel	Exits front right (southeast) corner and discharges to Chapel Street	Replace to ROW				
P-3	#101	Chapel	Unconfirmed-may exit front of building toward southeast corner and discharge to Chapel Street	TBD - Replace to ROW as shown on the Drawings if existing service discharges to Chapel Street				
P-3	#150	Daniel	Exits front of building (south) to Daniel Street	Maintain existing condition. No service replacement proposed				

Notes
1. Shaded rows represent existing service locations that could not be confirmed prior to bidding

ISSUE FOR
APPROVAL By BTD Date 3/13/15
CONSTRUCTION By — Date 3/25/15
RECORD DRAWING By — Date —

NO.	REVISIONS	APP'D

Drawn/Chk. RMG/TJB
Designed BTD
Checked PDM
Approved —
Date 03/25/15
Book No. —
Project No. 1902
Dwg. ID 1902-Quantities
Scale AS SHOWN

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

SUMMARY OF QUANTITIES
PROPOSED UTILITIES
SHEAFE & CHAPEL STREET IMPROVEMENTS
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO G-4
SHEET 5 OF 25

SUMMARY OF ROADWAY QUANTITIES

Sheafe Street Full Box Out Section Elements

Binder Course:	2.5	in	0.21	ft	Roadway Excavation Depth (Note 1)	22	in	1.83	ft
Wearing Course:	1.5	in	0.13	ft					
Crushed:	6	in	0.50	ft					
Bank Run:	12	in	1.00	ft					
Stabilized Base:	0	in	0.00	ft					
	TOTAL Rb:		**1.83**	**ft**					

Chapel Street Full Box Out Cross Section Elements

Binder Course:	3.5	in	0.29	ft	Roadway Excavation Depth (Note 1)	25	in	2.08	ft
Wearing Course:	1.5	in	0.13	ft					
Crushed:	8	in	0.67	ft					
Bank Run:	12	in	1.00	ft					
Stabilized Base:	0	in	0.00	ft					
	TOTAL Rb:		**2.08**	**ft**					

Location (SHEET)	(STATION)	Length (ft)	Width (ft)	Existing Centerline Grade (ft)	Finished Centerline Grade (ft)	Centerline Δ (FG-EG) (ft)	Depth of Common Excavation[2] (ft)	Depth of Additional Bank Run Gravels (ft)	ITEM# 4.4A: Common Excavation (Roadway) (CY)	ITEM#4.5.2: Bank Run Gravel (CY)	ITEM#4.5.1A: Crushed Gravel (Roadway) (CY)	ITEM#4.3: Stabilized Base (8" Depth) (SY)	ITEM#4.1A: Hot Bituminous Pavement (Binder) (TON)	ITEM#4.1B: Hot Bituminous Pavement (Wearing) (TON)
Sheafe Street														
R-1	30+10	0	20	23.3	23.32	0.02	1.81	0.00	0	0.0	0.0	0	0	0
R-1	30+50	40	12	24.0	24.02	0.02	1.81	0.00	43	23.7	11.9	71	10	6
R-1	31+00	50	12	24.8	24.90	0.10	1.73	0.00	39	22.2	11.1	67	9	6
R-1	31+20	20	12			0.05	1.78	0.00	16	8.9	4.4	27	4	2
R-1	31+50	50	17	25.6	25.55	-0.05	1.88	0.00	46	26.9	13.4	81	13	8
R-1	32+00	50	17	26.3	26.40	0.10	1.73	0.00	57	31.5	15.7	94	13	8
R-1	32+50	50	17	27.1	27.12	0.02	1.81	0.00	56	31.5	15.7	94	13	8
R-1	33+00	50	17	27.1	27.22	0.12	1.71	0.00	56	31.5	15.7	94	13	8
R-1	33+50	50	17	26.8	26.69	-0.11	1.94	0.00	58	31.5	15.7	94	13	8
R-1	33+76	26	20	26.2	26.16	0.00	1.83	0.00	32	17.8	8.9	53	7	4
Chapel Street														
R-2	1+19	0	16	22.2	22.20	0.00	2.08	0.00	0	0.0	0.0	0	0	0
R-2	1+50	31	19	22.8	22.96	0.16	1.92	0.00	40	20.1	13.4	60	12	5
R-2	2+00	50	19	23.5	23.59	0.09	1.99	0.00	69	35.2	23.5	106	21	9
R-2	2+50	50	19	24.1	24.14	0.04	2.04	0.00	71	35.2	23.5	106	21	9
R-2	3+00	50	19	24.7	24.66	-0.04	2.12	0.00	73	35.2	23.5	106	21	9
R-2	3+50	50	19	25.1	25.17	0.07	2.01	0.00	73	35.2	23.5	106	21	9
R-2	3+61	11	30	25.3	25.29	0.00	2.08	0.00	20	10.0	6.7	30	6	3
R-2	3+61	0	30	25.3	25.29	0.00	2.08	0.00	0	0.0	0.0	0	0	0
R-2	3+95	34	30	25.2	25.21	0.00	2.08	0.00	79	37.8	25.2	113	22	10
R-2	3+95	0	30	25.2	25.21	0.00	2.08	0.00	0	0.0	0.0	0	0	0
		662							**827**	**434**	**252**	**1,302**	**222**	**112**

	ITEM# 4.4A: Common Excavation (Roadway) (CY)	ITEM#4.5.2: Bank Run Gravel (CY)	ITEM#4.5.1A: Crushed Gravel (Roadway) (CY)	ITEM#4.3: Stabilized Base (8" Depth) (SY)	ITEM#4.1A: Hot Bituminous Pavement (Binder) (TON)	ITEM#4.1B: Hot Bituminous Pavement (Wearing) (TON)
Subtotal:	827	434	252	1302	222	112
Rounding	173	66	48	48	28	38
BASE BID Estimated Quantity:	**1,000**	**500**	**300**	**1,350**	**250**	**150**

R-3	4+00	5	20	25.4	25.38	-0.02	2.10	0.00	10	4.6	3.1	14	3	1
R-3	4+50	50	20	26.8	26.98	0.18	1.90	0.01	74	37.0	24.7	111	22	9
R-3	5+00	50	20	28.4	28.48	0.08	2.00	0.00	72	37.0	24.7	111	22	9
R-3	5+50	50	20	30.7	30.62	-0.08	2.16	0.00	39	37.0	24.7	111	22	9
R-3	6+00	50	22	34.4	34.45	0.05	2.03	0.00	41		25.9	117	23	10
R-3	6+50	50	22	39.3	39.30	0.00	2.08	0.00	42		27.2	122	24	10
R-3	7+00	50	16	42.1	41.84	-0.26	2.34	0.00	39		23.5	106	21	9
R-3	7+50	50	16	40.6	40.72	0.12	1.96	0.00	32		19.8	89	18	8
R-3	8+00	50	16	36.5	36.50	0.00	2.08	0.00	30		19.8	89	18	8
R-3	8+50	50	14	31.9	31.90	0.00	2.08	0.00	29		18.5	83	17	7
R-3	8+70	20	14	30.3	30.30	0.00	2.08	0.00	11		6.9	31	6	3
									418	116	219	984	195	84

Notes:
1) Roadway excavation depth will vary by location based on existing vs. proposed centerline grade

	ITEM# 4.4A: Common Excavation (Roadway) (CY)	ITEM#4.5.2: Bank Run Gravel (CY)	ITEM#4.5.1A: Crushed Gravel (Roadway) (CY)	ITEM#4.3: Stabilized Base (8" Depth) (SY)	ITEM#4.1A: Hot Bituminous Pavement (Binder) (TON)	ITEM#4.1B: Hot Bituminous Pavement (Wearing) (TON)
Subtotal:	418	116	219	984	195	84
Rounding	32	34	31	16	30	16
BID ALT. No.1 Estimated Quantity:	**450**	**150**	**250**	**1,000**	**225**	**100**

CURB SCHEDULE

Plan Sheet	Street	ID #	Radius	ITEM#5.3.2: Straight Granite Curb (LF)	ITEM#5.3.3: Curved Granite Curb (LF)	ITEM#5.3.4: Flush Granite Curb (LF)	ITEM#5.4: Reset Granite Curb (LF)	ITEM#4.2A: Hot Bituminous Pavement - Hand Worked (Along Curb, 3" depth)** (TON)
R-1	Sheafe	G 1	15		22			0.42
R-1	Sheafe	G 2	3		5			0.09
R-1	Penhollow	G 3		6				0.11
R-1	Penhollow	G 4		8				0.15
R-1	Sheafe	G 5	5		8			0.15
R-1	Sheafe	G 6		182				3.44
R-1	Sheafe	G 7		61				1.15
R-1	Sheafe	G 8		18				0.34
R-1	Sheafe	G 9		36				0.68
R-1	Sheafe	G 10	9		15			0.28
R-1	Sheafe	FG 1				350		
R-1	Sheafe	FG 2				250		
R-2	Chapel	G 11					42.0	0.79
R-2	Chapel	G 12					86.0	1.63
R-2	Chapel	G 13					20.0	0.38
R-2	Chapel	G 14					27.0	0.51
R-2	Chapel	G 15	10		16			0.30
R-2	Chapel	G 16	10				11.0	0.21
R-2	Chapel	G 17			15			0.28
R-2	Chapel	G 18		55				1.04
R-2	Chapel	G 19		32				0.60
R-2	Chapel	G 20					46.0	0.87
		Subtotal:		398	81	600	232	13
		Adjusted Subtotal: (assumes 30% of reset curb damaged/lost)		468				
		Rounding:		32	19	50	18	12
		BASE BID Estimated Quantity:		**500**	**100**	**650**	**250**	**25**
R-3	Daniel	G 21		6				0.11
R-3	Chapel	G 22	10		16			0.30
R-3	Chapel	G 23		27				0.51
R-3	Chapel	G 24		23				0.43
R-3	Chapel	G 25		40				0.76
R-3	Chapel	G 26		6				0.11
R-3	Sheafe	G 27		23				0.43
R-3	Chapel	G 28		10				0.19
R-3	Chapel	G 29					25	0.47
R-3	Chapel	G 30					115	2.17
R-3	Chapel	G 31					12	0.23
R-3	Chapel	G 32					11	0.21
R-3	Chapel	G 33					11	0.21
R-3	Chapel	G 34					80	1.51
R-3	Chapel	G 35					15	0.28
R-3	Chapel	G 36					16	0.30
R-3	Chapel	G 37					15	0.28
R-3	Chapel	G 38					60	1.13
R-3	Chapel	G 39					21	0.40
R-3	Chapel	G 40	10		16			0.30
R-3	Daniel	G 41		3				0.06
R-3	Bow	G 42					18.0	0.34
R-3	Chapel	FG 3				150		2.84
R-3	Chapel	FG 4				150		2.84
R-3	Chapel	FG 5				75		1.42
R-3	Chapel	FG 6				75		1.42
R-3	Chapel	FG 7				15		0.28
R-3	Chapel	FG 8				15		0.28
R-3	Chapel	FG 9				20		0.38
R-3	Chapel	FG 10	5			20		0.38
		Subtotal:		138	32	520	399	21
		Adjusted Subtotal: (assumes 30% of reset curb damaged/lost)		258				
		Rounding:		42	18	30	51	29
		BASE BID Estimated Quantity:		**300**	**50**	**550**	**450**	**50**

** Note: When Class A concrete is substituted for roadway base and pavement courses adjacent to the granite curb (1' max width), payment will be made under Item 4.2A at 2 Tons per cubic yard of concrete.

DRIVEWAY PAVEMENT SUMMARY

Plan Sheet	Street	House #	ID #	Driveway Area (SF)	ITEM#4.2A: Hot Bituminous Pavement - Hand Worked (2" Depth) (TON)	ITEM#4.5.1B: Crushed Gravel (Drives) (CY)
R-1	State Street	107	1	80	1.0	1.5
R-1	Sheafe Street	111	2	74	0.9	1.4
R-1	State Street	129	3	0	0.0	0.0
R-1	State Street	129	4	0	0.0	0.0
R-1	State Street	147	5	68	0.9	1.3
R-1	State Street	147	6	104	1.3	1.9
R-1	Sheafe Street	147	7	20	0.3	0.4
R-1	Sheafe Street	175	8	0	0.0	0.0
R-1	Sheafe Street	37	9	72	0.9	1.3
R-1	Sheafe Street	49	10	105	1.3	1.9
R-2	Chapel Street	59	11	114	1.4	2.1
R-2	Chapel Street	127/129	12	70	0.9	1.3
R-2	Chapel Street	25	13	234	3.0	4.3
				Driveway Total:	11.9	17.4

Hand Paving Total from Curb Schedule:	25
Hand Paving Total from Sidewalk Schedule:	50
Hand Paving Total from Paver Schedule:	100
Subtotal:	187 17
Rounding:	13 8
TOTAL	**200 25**

R-3	State Street	93	14	378	4.8	7.0
R-3	Daniel Street	126	15	306	3.9	5.7
R-3	Chapel Street	100	16	84	1.1	1.6
R-3	Chapel Street	110	17	84	1.1	1.6
R-3	Chapel Street	122	18	60	0.8	1.1
R-3	Chapel Street	122	19	94	1.2	1.7
R-3	Chapel Street	101	20	200	2.5	3.7
				Driveway Total:	15.3	22.3

Hand Paving Total from Curb Schedule:	50
Hand Paving Total from Sidewalk Schedule:	50
Hand Paving Total from Paver Schedule:	50
Subtotal:	165 22
Rounding:	35 3
TOTAL	**200 25**

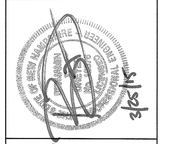
SIDEWALK SCHEDULE

Plan Sheet	Street	Location FROM		TO		Area SY	ITEM# 4.2A Hot Bit. Pavement Hand Worked (SY)	ITEM# 4.2A Hot Bit. Pavement Hand Worked (4") (SY)	ITEM# 5.2.A Replace or Modify Brick Sidewalk (SY)	ITEM# 5.2.B Brick Sidewalk (SY)	ITEM# 5.2.C Flush Pavers (SY)
R-1	Sheafe	30+00	LT	33+75	LT	125		28.50			125
R-1	Sheafe	33+75	LT	33+85	LT	9	0.76			9	
R-1	Sheafe	33+75	RT	33+85	RT	7	0.57			7	
R-1	Sheafe	32+85	RT	33+75	RT	60	5.13			60	
R-1	Sheafe	31+10	RT	31+75	RT	43	3.71			43	
R-1	Sheafe	30+75	RT	30+90	RT	10	0.86			10	
R-1	Sheafe	30+10	RT	30+50	RT	27	2.28			27	
R-2	Chapel	03+25	LT	03+60	LT	23	2.00		23		
R-2	Chapel	2+10	LT	3+20	LT	73	6.27			73	
R-2	Chapel	1+30	LT	1+80	LT	33	2.85		33		
R-2	Chapel	3+60	RT	3+70	RT	7	0.57		7		
R-2	Chapel	2+90	RT	3+60	RT	54	4.66		54		
R-2	Chapel	2+25	RT	2+65	RT	22	1.90			22	
R-2	Chapel	3+95	LT	4+05	LT	6	0.48		6		
R-2	Chapel	4+05	LT	4+30	LT	19	1.66			19	
R-2	Chapel	4+30	LT	5+85	LT	121		27.49			121
						Subtotal:	34	56	123	271	246
						Flush Pavers at Upper Chapel/Bow:					50
						Rounding:	16	44	27	29	29
						BASE BID Estimated Quantity:	**50**	**100**	**150**	**300**	**325**
R-3	Daniel	6+00	LT	6+30	LT	23	2.00		23		
R-3	Chapel	6+45	LT	6+85	LT	27	2.28		27		
R-3	Chapel	6+85	LT	7+60	LT	29		6.65			29
R-3	Chapel	6+70	RT	8+30	RT	107	9.12			107	
R-3	Chapel	5+40	RT	6+70	RT	101	8.65		101		
R-3	Chapel	3+90	RT	5+15	RT	97	8.31		97		
						Subtotal:	30	7	248	107	29
						lush Pavers at Upper Chapel and Chapel/Bow:		15			50
						Rounding:	20	28	27	18	21
						BID ALT No.1 Estimated Quantity:	**50**	**50**	**275**	**125**	**100**

ISSUE FOR
APPROVAL — Date 3/13/15 — By BTD
CONSTRUCTION — Date 3/25/15 — By MC
RECORD DRAWING — Date – — By –

NO.	REVISIONS	APP'D

Drawn / Chk. RMG / TJB
Designed BTD
Checked PDM
Approved –
Date 03/25/15
Book No. –
Project No. 1902
Dwg. ID 1902-Quantities
Scale AS SHOWN



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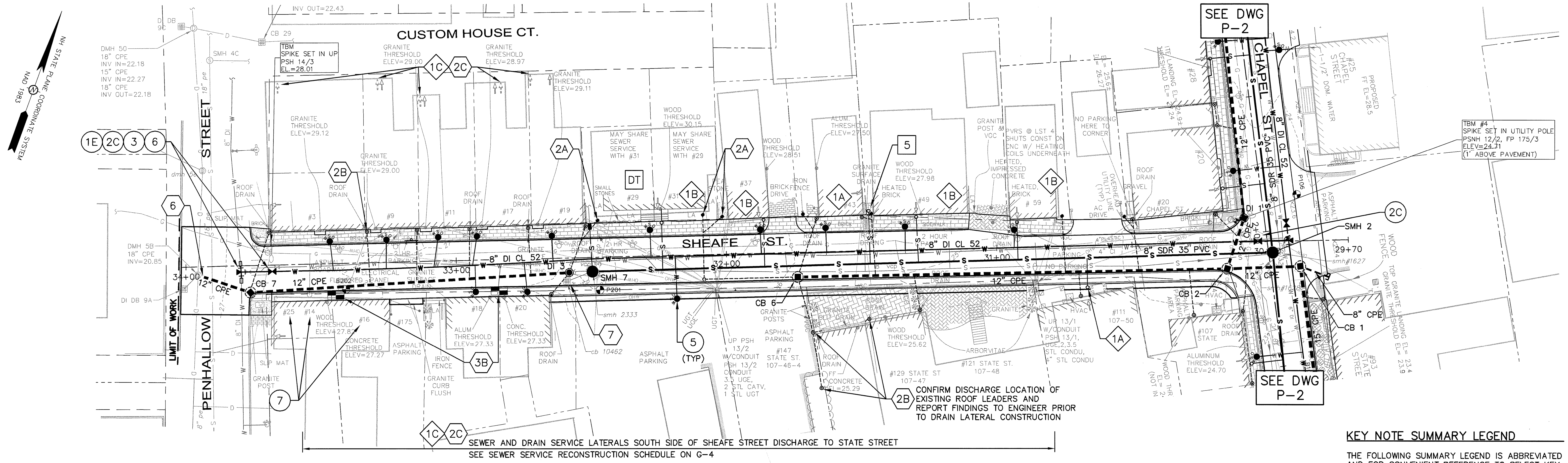
SUMMARY OF QUANTITIES
ROADWAY RESTORATION

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO G-5

SHEET 6 OF 25

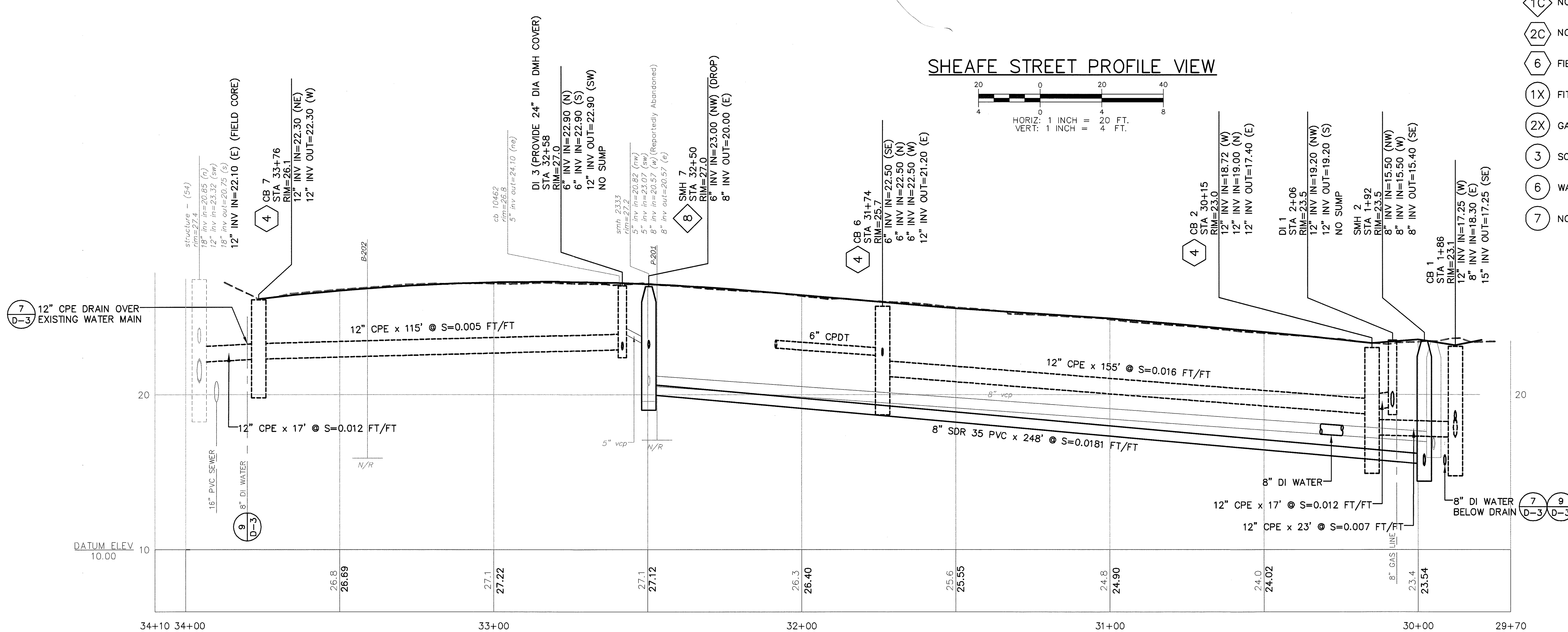


SHEAFE STREET PLAN VIEW

SCALE: 1 INCH = 20 FT.

SHEAFE STREET PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.



KEY NOTE SUMMARY LEGEND

THE FOLLOWING SUMMARY LEGEND IS ABBREVIATED AND FOR CONVENIENT REFERENCE TO SELECT KEY NOTES ONLY (REFER TO SHEET G-3 FOR KEY NOTES):

Symbol	Description
DT	DYE-TEST
1C	NO SEWER SERVICE PROPOSED
2C	NO DRAIN SERVICE PROPOSED
6	FIELD CORE
1X	FITTING
2X	GATE VALVE
3	SOLID SLEEVE CONNECTION
6	WATER TIE-IN AT NIGHT
7	NO WATER SERVICE PROPOSED

ISSUE FOR	Date	By
APPROVAL	3/13/15	BTD
CONSTRUCTION	3/25/15	BTD
RECORD DRAWING		

NO.	REVISIONS	APP'D

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Scale AS SHOWN

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Tel. 603-436-6192 Fax. 603-431-4733

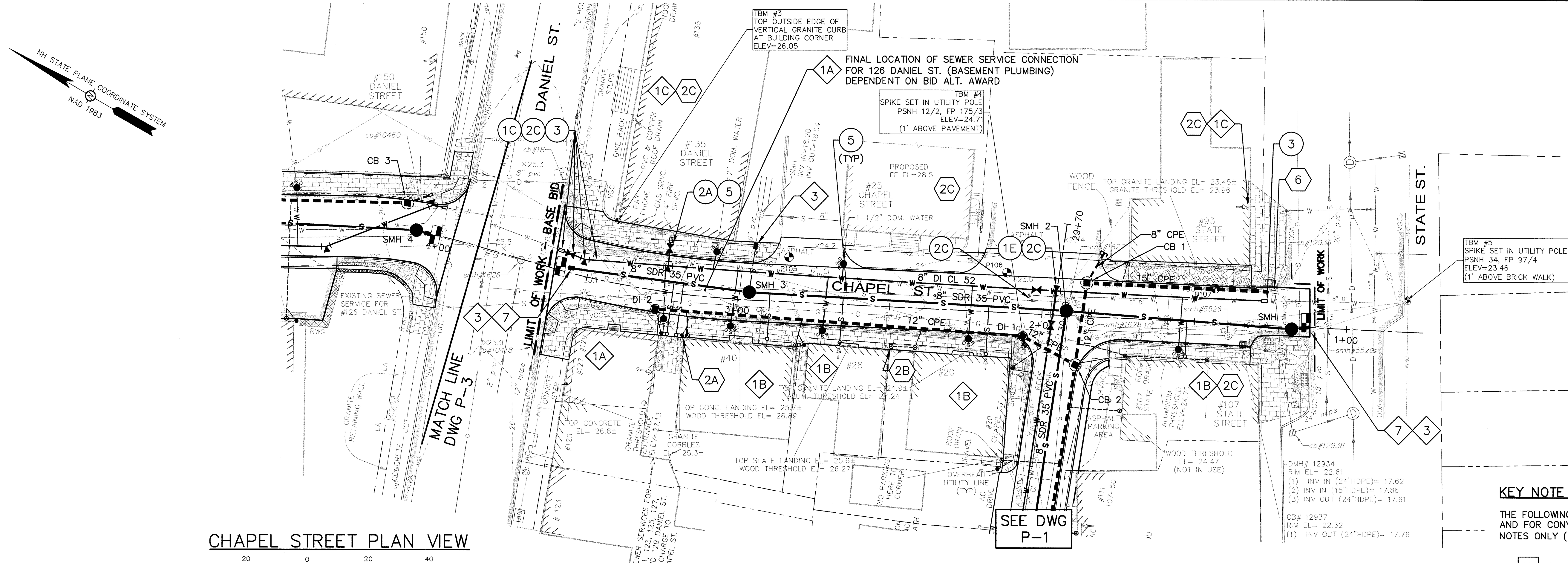
SHEAFE STREET UTILITIES PLAN

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P-1

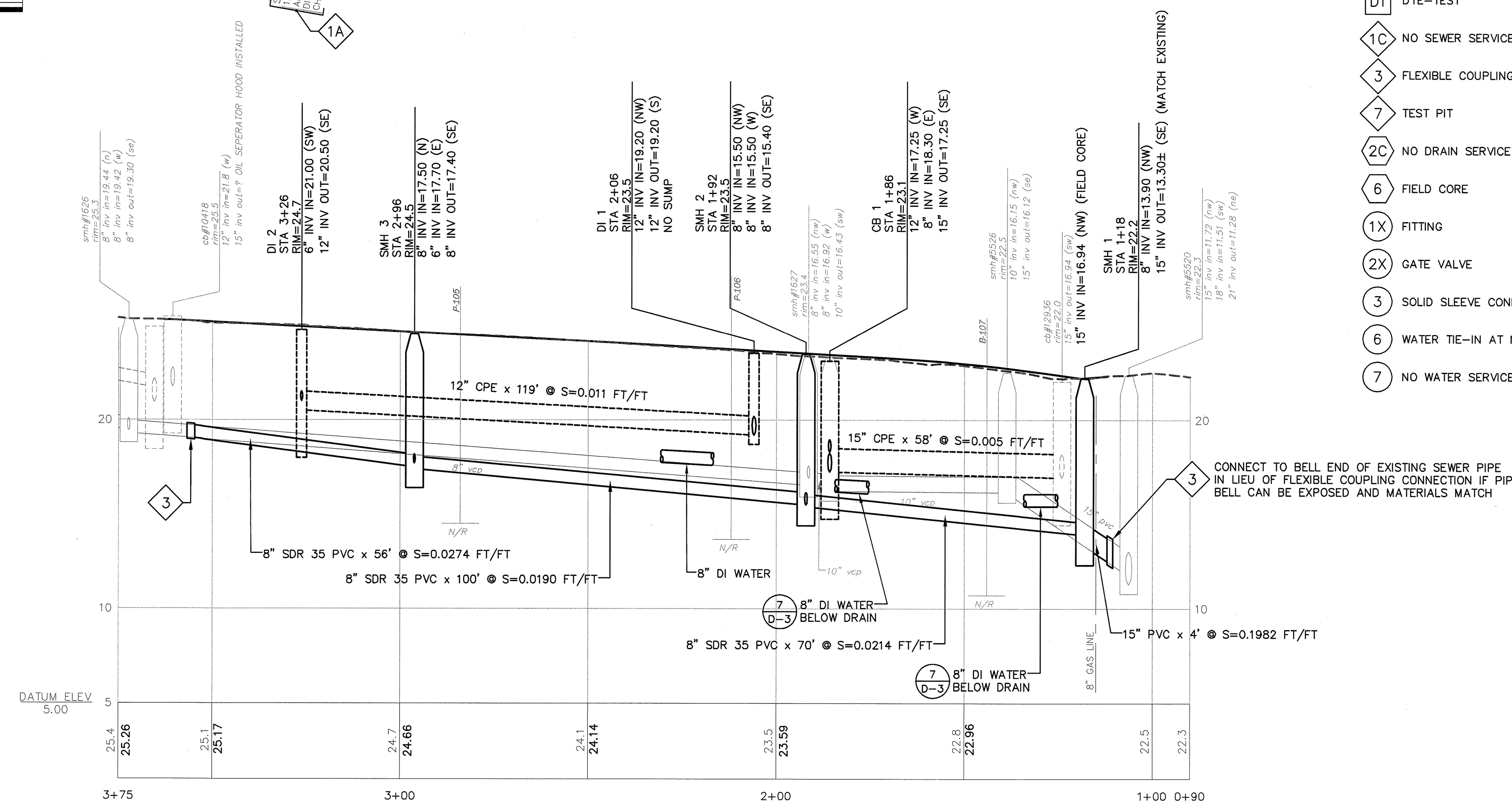
CHAPEL STREET PLAN VIEW



SCALE: 1 INCH = 20 FT.

CHAPEL STREET PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.



KEY NOTE SUMMARY LEGEND

THE FOLLOWING SUMMARY LEGEND IS ABBREVIATED AND FOR CONVENIENT REFERENCE TO SELECT KEY NOTES ONLY (REFER TO SHEET G-3 FOR KEY NOTES):

- DT — DYE-TEST
- 1C — NO SEWER SERVICE PROPOSED
- 3 — FLEXIBLE COUPLING
- 7 — TEST PIT
- 2C — NO DRAIN SERVICE PROPOSED
- 6 — FIELD CORE
- 1X — FITTING
- 2X — GATE VALVE
- 3 — SOLID SLEEVE CONNECTION
- 6 — WATER TIE-IN AT NIGHT
- 7 — NO WATER SERVICE PROPOSED

ISSUE FOR	Date	By
APPROVAL	3/13/15	BTD
CONSTRUCTION	3/25/15	
RECORD DRAWING	–	–

NO.	REVISIONS	APP'D

Drawn/Chk. RMG/TJB
Designed BTD
Checked PDM
Approved –
Date 03/25/15
Book No. –
Project No. 1902
Dwg. ID 1902base
Scale AS SHOWN

STATE OF NEW HAMPSHIRE — PHILIP D. MacDONALD No. 7642 — LICENSED PROFESSIONAL ENGINEER

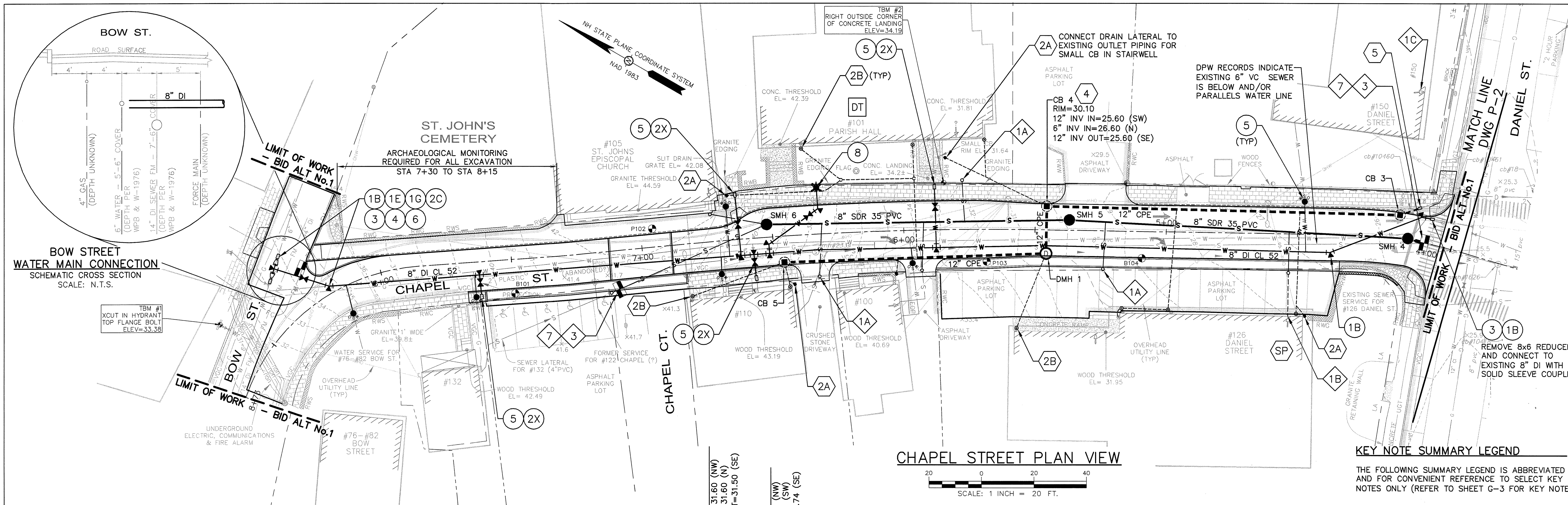
UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

CHAPEL STREET UTILITIES PLAN

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P-2



KEY NOTE SUMMARY LEGEND

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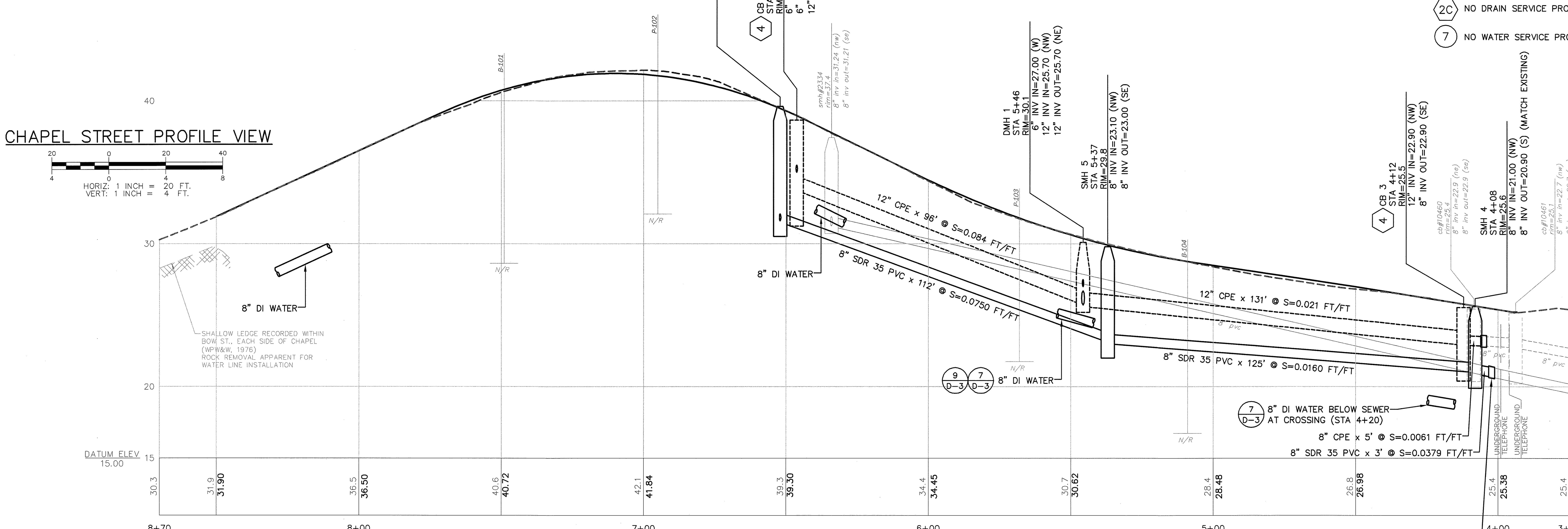
- DT DYE–TEST
- 1C NO SEWER SERVICE PROPOSED
- 2C NO DRAIN SERVICE PROPOSED
- 7 NO WATER SERVICE PROPOSED



CONNECT EXISTING SEWER PIPE DIRECTLY TO SMH 4 IN LIEU OF STUB PIPE AND FLEXIBLE COUPLING CONNECTION WHEN DIRECTED BY ENGINEER

ISSUE FOR	Date	By
APPROVAL	3/13/15	BTD
CONSTRUCTION	3/25/15	KJP
RECORD DRAWING	–	–

Drawn/Chk RMG/TJB
Designed BTD
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Approved –
Date 03/25/15
Book No. –
Project No. 1902
Dwg. ID 1902base
Scale AS SHOWN

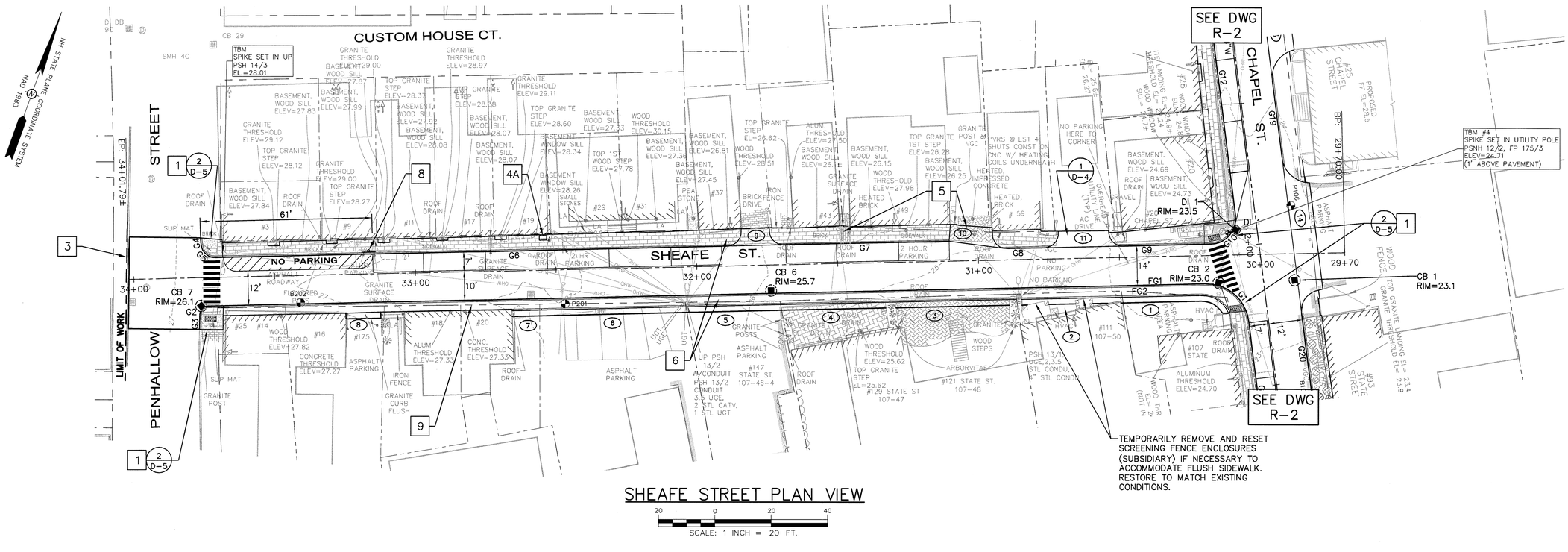
UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

CHAPEL STREET UTILITIES PLAN
BID ALTERNATIVE No.1

SHEAFE & CHAPEL STREET IMPROVEMENTS

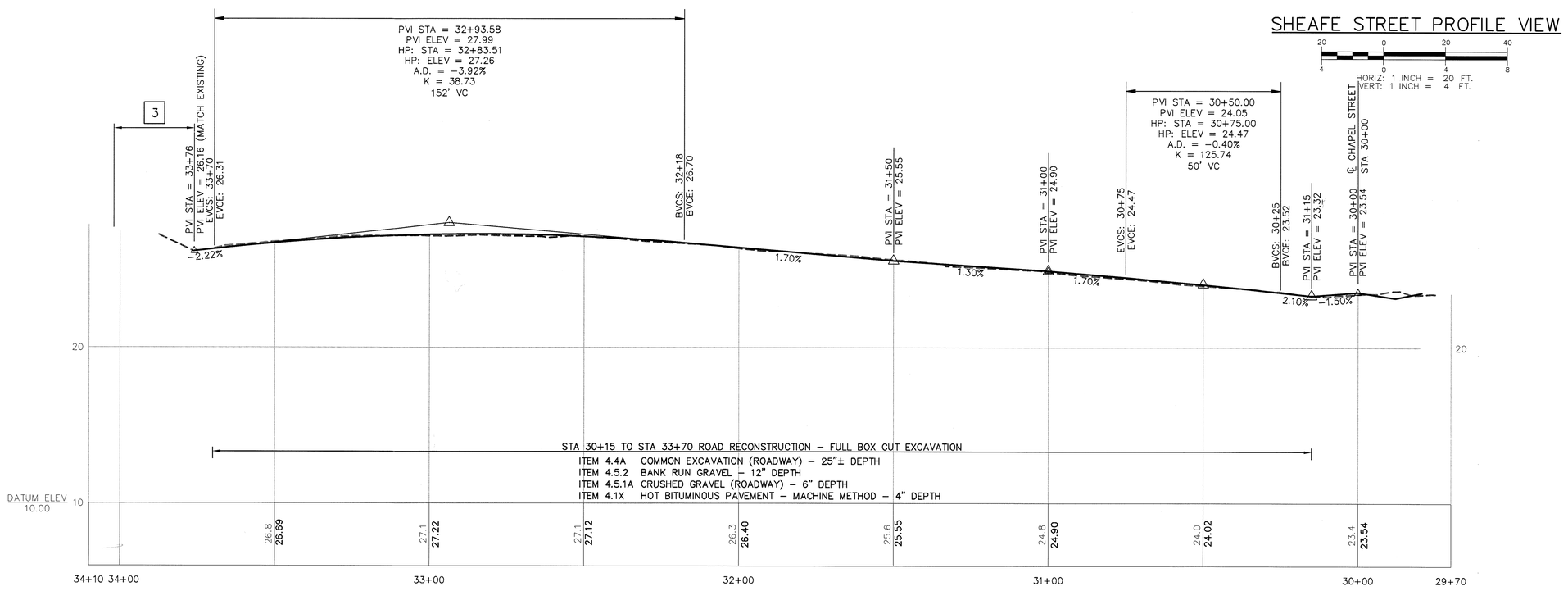
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO P-3



SHEAFE STREET PLAN VIEW

SCALE: 1 INCH = 20 FT.



SHEAFE STREET PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

ISSUE FOR	By	Date
APPROVAL	BTD	3/13/15
CONSTRUCTION		
RECORD DRAWING		

NO.	REVISIONS	APP'D

Drawn/Chk RMG/TJB
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Checked PDM
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Project No. 1902
Dwg. ID 1902base
Scale AS SHOWN

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

SHEAFE STREET ROADWAY PLAN
SHEAFE & CHAPEL STREET IMPROVEMENTS
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO R-1
SHEET 10 OF 25

NH STATE PLANE COORDINATE SYSTEM
NAD 1983

CHAPEL STREET PLAN VIEW

20 0 20 40
SCALE: 1 INCH = 20 FT.

CHAPEL STREET PROFILE VIEW

20 0 20 40
4 0 4 8
HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

ISSUE FOR		
APPROVAL	Date 3/13/15	By BTD
CONSTRUCTION	Date 3/25/15	By MJP
RECORD DRAWING	Date –	By –

NO.	REVISIONS	APP'D

Drawn/Chk. RMG/TJB
Designed BTD
Checked PDM
Approved –
Date 03/25/15
Book No. 1902
Project No. 1902base
Dwg. ID
Scale AS SHOWN

NEW HAMPSHIRE – THE GRANITE STATE – PROFESSIONAL ENGINEER – Timothy J. MacDONALD No. 7642 – LICENSED – 3/25/15

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

CHAPEL STREET ROADWAY PLAN

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO R-2

SHEET 11 OF 25

NH STATE PLANE COORDINATE SYSTEM
NAD 1983

PRIOR TO ROAD CONSTRUCTION AND AS PART OF ROADWAY LAYOUT, CHECK FINAL GRADES ALONG THE SILL ELEVATION FOR EACH TOMB (4 LOCATIONS). REPORT FINDINGS TO THE ENGINEER.

CURB SEGMENTS G27 AND G28 DO NOT TIP DOWN AT RAMP. MAINTAIN 5" CURB REVEAL TO RETAIN LANDSCAPE PLANTING AREA.

TBM #1
XCUT IN HYDRANT TOP FLANGE BOLT
ELEV=33.38

TBM #2
RIGHT OUTSIDE CORNER OF CONCRETE LANDING
ELEV=34.19

ST. JOHN'S CEMETERY
#105 ST. JOHNS EPISCOPAL CHURCH
#101 PARISH HALL
#100
#110
#132
#76–#82 BOW STREET
#150 DANIEL STREET
#126 DANIEL STREET

CHAPEL ST.
BOW ST.
CHAPEL CT.
DANIEL ST.

LIMIT OF WORK – BID ALT No.1
MATCH LINE DWG R-2

PC: 7+85.96
PT: 7+28.87
PT: 6+81.37
PC: 5+47.48
PT: 4+29.32
PC: 3+88.88

CB 4 RIM=30.1
CB 5 RIM=38.7
CB 3 RIM=25.5

R=1200.00 L=133.88
R=150.00 L=40.43
R=75.00 L=86.44

57.23' N34°08'38"W
47.30' N35°29'05"W
118.17' N29°05'32"W
21.77' N13°38'52"W

EP: 8+70.00
PT: 8+72.34

CHAPEL STREET PLAN VIEW

SCALE: 1 INCH = 20 FT.

PVI STA = 7+07.70
PVI ELEV = 44.99
HP: STA = 7+09.75
HP: ELEV = 41.91
A.D. = –19.00%
K = 6.84
130' VC

PVI STA = 8+50
PVI ELEV = 31.90

EVCS: 7+73
EVCE: 39.01

BVCS: 6+43
BVCE: 38.62

PVI STA = 5+56.47
PVI ELEV = 30.17
LP: STA = 5+06.47
LP: ELEV = 28.67
A.D. = 6.80%
K = 14.71
100' VC

EVCS: 6+06
EVCE: 35.07

BVCS: 5+06
BVCE: 28.67

PVI STA = 4+50
PVI ELEV = 26.98

PVI STA = 3+95
PVI ELEV = 25.21

–9.20%
9.80%
3.00%
3.20%

CHAPEL STREET PROFILE VIEW

HORIZ: 1 INCH = 20 FT.
VERT: 1 INCH = 4 FT.

STA 4+00 TO STA 5+50 ROAD RECONSTRUCTION – FULL BOX CUT EXCAVATION
ITEM 4.4A COMMON EXCAVATION (ROADWAY) – 25"± DEPTH
ITEM 4.5.2 BANK RUN GRAVEL – 12" DEPTH
ITEM 4.5.1A CRUSHED GRAVEL (ROADWAY) – 8" DEPTH
ITEM 4.1X HOT BITUMINOUS PAVEMENT – MACHINE METHOD – 5" DEPTH

DATUM ELEV 15.00

	8+70	8+00	7+00	6+00	5+00	4+00	3+75
	30.3	36.5	40.6	42.1	39.3	34.4	30.7	28.4	26.8	25.4	25.4
	31.9	36.50	40.72	41.84	39.30	34.45	30.62	28.48	26.98	25.38	25.26

ISSUE FOR
APPROVAL By BTD Date 3/13/15
CONSTRUCTION By MM Date 3/25/15
RECORD DRAWING By – Date –

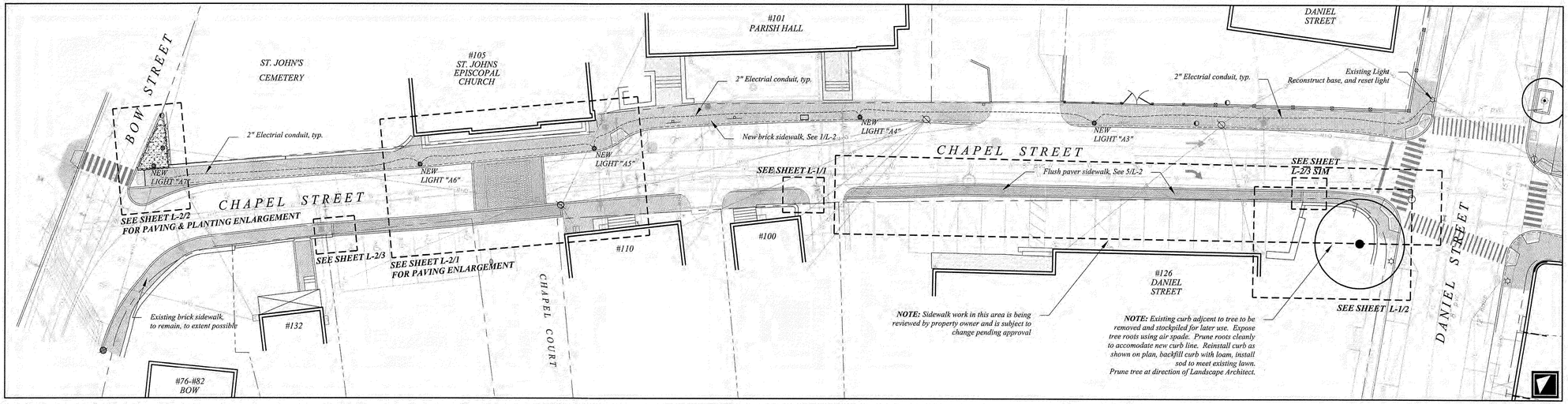
NO.	REVISIONS	APP'D

Drawn/Chk RMG/TJB
Designed BTD
Checked PDM
Approved –
Date 03/25/15
Book No. –
Project No. 1902
Dwg. ID 1902base
Scale AS SHOWN

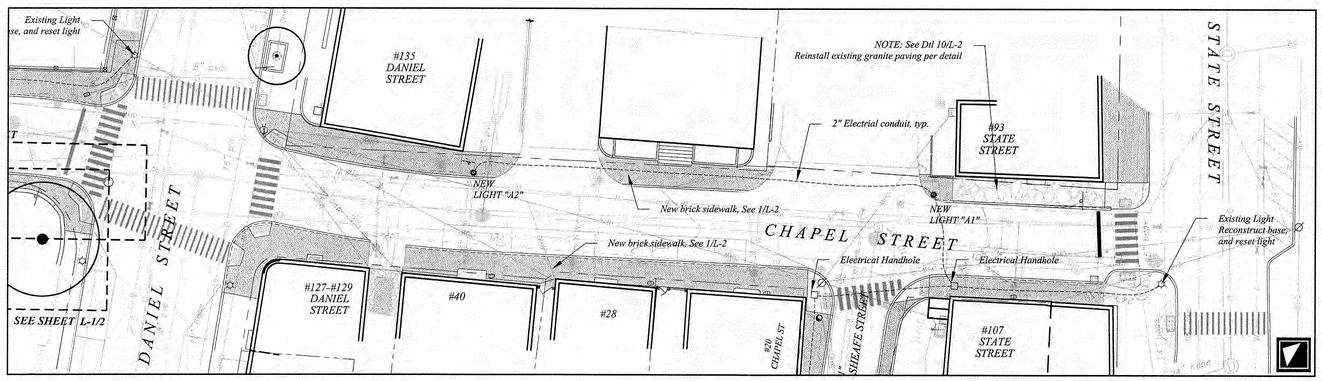
CHAPEL STREET ROADWAY PLAN
BID ALTERNATIVE No.1
SHEAFE & CHAPEL STREET IMPROVEMENTS
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

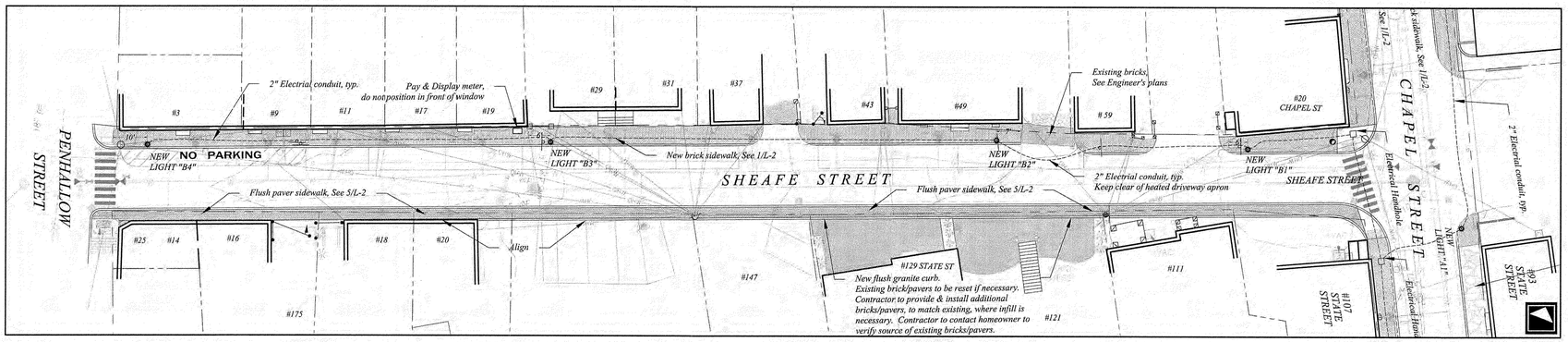
DWG NO R-3
SHEET 12 OF 25



CHAPEL STREET: BOW STREET ~ DANIEL STREET **(BID ALT No.1)**



CHAPEL STREET: DANIEL STREET ~ STATE STREET **(BASE BID)**



SHEAFE STREET **(BASE BID)**

MATERIALS LIST

Brick sidewalk - *Morin Brick, artisan flashed, modular size*

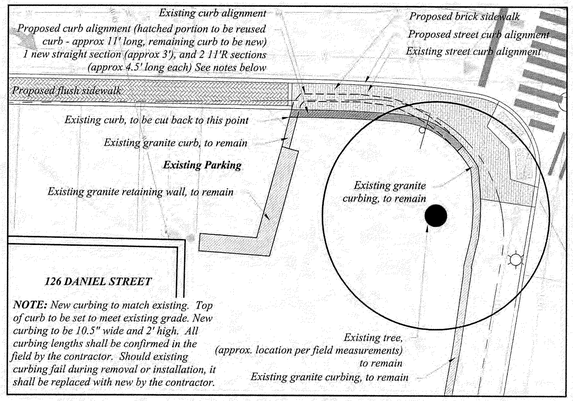
Flush paver sidewalk - *Unilock Town Hall Paver - Burgundy Red/Burnt Clay/Old Oak (mix evenly)*

Decorative Paver Crossing -
Border: Unilock Town Hall Paver - Burgundy Red/Burnt Clay/Old Oak (mix evenly) (Type A)
Field: Unilock Courtstone Paver - Dawn Mist/Pebble Taupe (mix evenly) (Type B)
NOTE: samples of Dawn Mist & Pebble Taupe Courtstone shall be provided to the city for acceptance

PAVER LEGEND

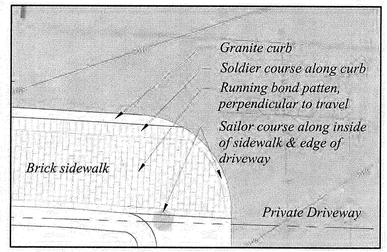
BRICK SIDEWALK

FLUSH PAVER SIDEWALK



2 ***GRANITE CURB AT EXISTING TREE***
Scale: 1" = 10' - 0"

0 2 5 10 20



1 ***BRICK SIDEWALK AT PRIVATE DRIVEWAY, TYP.***
Scale: 1/4" = 1' - 0"

0 2 4 8

0 5 10 20 40

ISSUE FOR
APPROVAL Date — By —
CONSTRUCTION Date — By —
RECORD DRAWING Date — By —

NO.	REVISIONS	APP'D

Drawn/Chk. VM
Designed RW
Checked RW
Approved —
Date 03/25/15
Book No. —
Project No. 1902
Dwg. ID 1902Dsite
Scale 1" = 20'

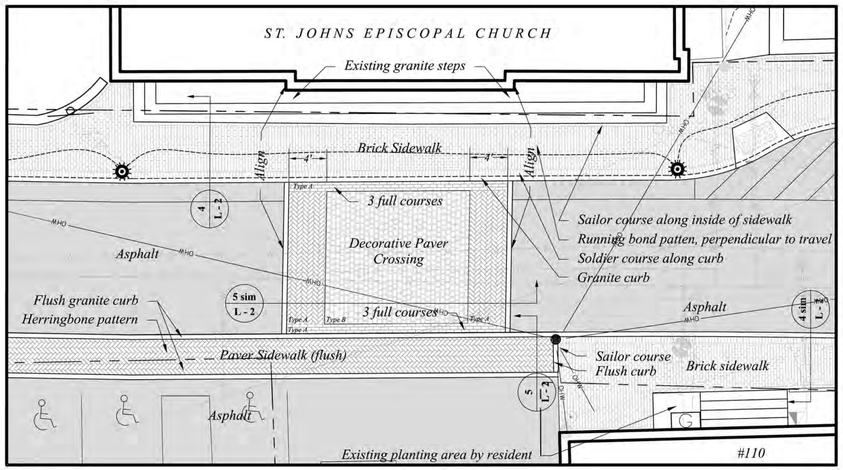
LICENSED LANDSCAPE ARCHITECT — ROBERTA N. WOODBURN — 002 — STATE OF NEW HAMPSHIRE

WOODBURN & COMPANY
Landscape Architecture, LLC

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

DECORATIVE PAVING & LIGHTING PLAN
SHEAFE & CHAPEL STREET IMPROVEMENTS
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

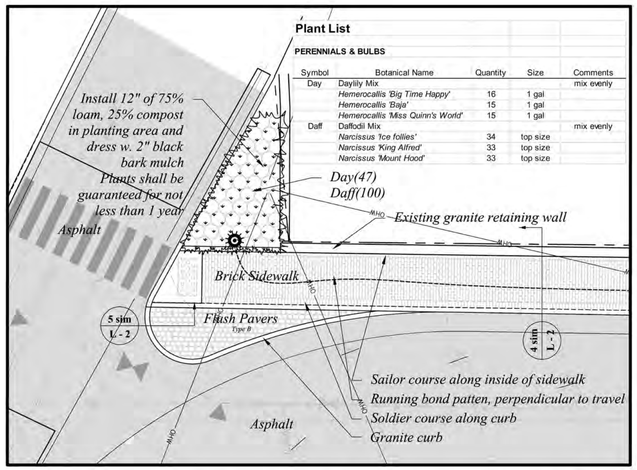
DWG NO L-1
SHEET 13 OF 25



1 PAVING ENLARGEMENT AT CHURCH

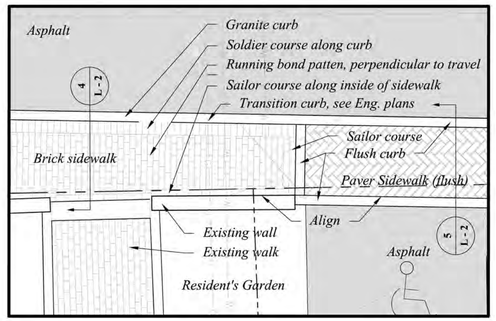
Scale: 1/8" = 1' - 0"

0 2 4 8 16



2 PAVING ENLARGEMENT & PLANTING AT CHAPEL & BOW

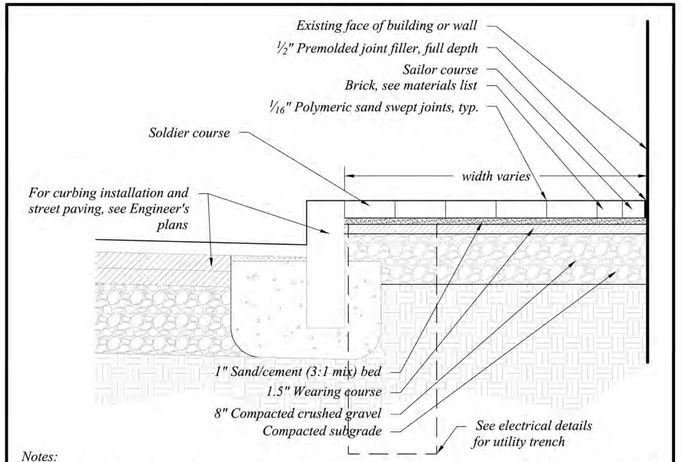
Scale: 1/8" = 1' - 0"



3 TRANSITION FLUSH TO RAISED SIDEWALK

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

0 2 4 8



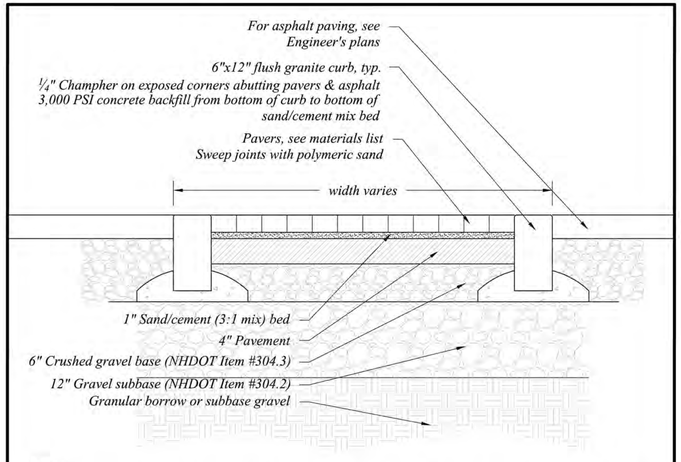
Notes:

1. Brick sidewalk shall be installed as detailed and per City of Portsmouth requirements/specifications and shall include a continuous paver edge restraint system at all locations not adjcent to curbs, buildings or walls. Edge restraint to be Border Concepts Steel Landscape Edging "Border King" 1/4" black edging.

2. Bedding material shall be a sand/cement mix that is 3 parts sand and 1 part cement. Sand shall conform with ASTM C33 and cement shall be portland cement Type I/Type II.

4 TYPICAL BRICK SIDEWALK SECTION

Scale: NTS



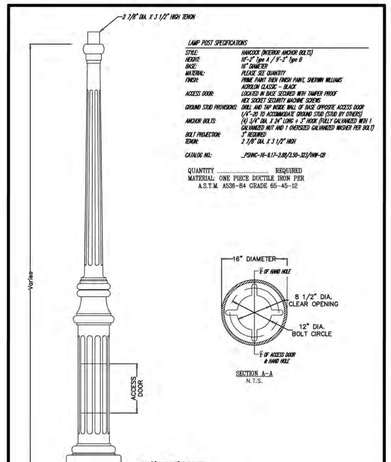
Notes:

1. Bedding material shall be a sand/cement mix that is 3 parts sand and 1 part cement. Sand shall conform with ASTM C33 and cement shall be portland cement Type I/Type II.

2. Where flush paver sidewalk abuts building face, flush graite curb shall be omitted along building face, pavers shall abutt building face. 1/2" Premolded joint filler, full depth, to be installed between building & pavers.

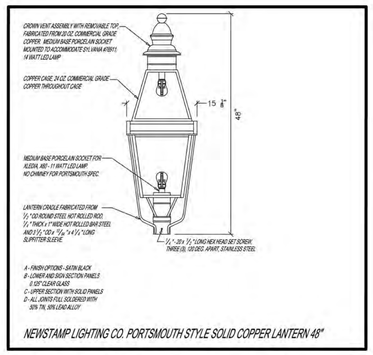
5 TYPICAL FLUSH PAVER SECTION

Scale: NTS



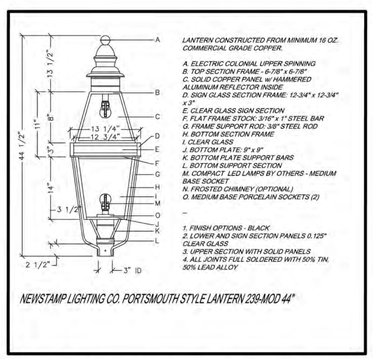
6 LIGHT POLE

Scale: NTS



7 LANTERN - 48" HEIGHT - Type A

Scale: NTS



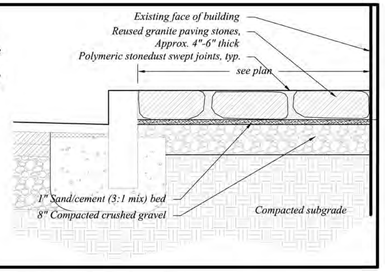
8 LANTERN - 44" HEIGHT - Type B

Scale: NTS

Notes:

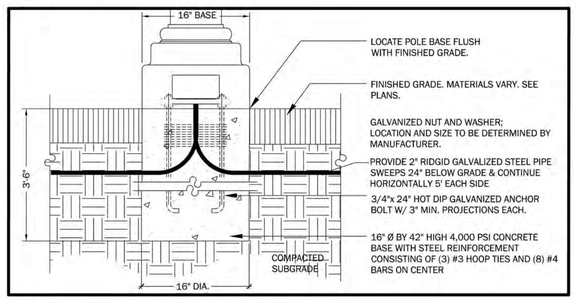
1. Additional historic granite paving stones are not availble. Contractor distribute existing stones in an even pattern, to the extent possible.

2. Bedding material shall be a sand/cement mix that is 3 parts sand and 1 part cement. Sand shall conform with ASTM C33 and cement shall be portland cement Type I/Type II.



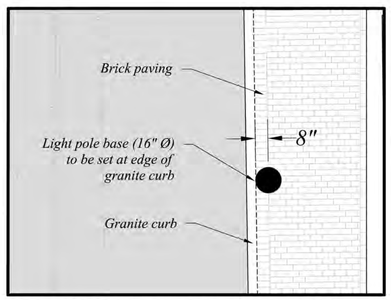
10 HISTORIC GRANITE SIDEWALK SECTION

Scale: NTS



9 LIGHT POLE INSTALLATION

Scale: NTS



10 LIGHT POLE LOCATION, TYP.

Scale: NTS

ISSUE FOR
APPROVAL — By — Date —
CONSTRUCTION — By — Date —
RECORD DRAWING — By — Date —

NO.	REVISIONS	APP'D

Drawn / Chk: VM
Designed: RW
Checked: RW
Approved: —
Date: 03/25/15
Book No.: —1902
Project No.: 1902base
Dwg. ID:
Scale: as noted

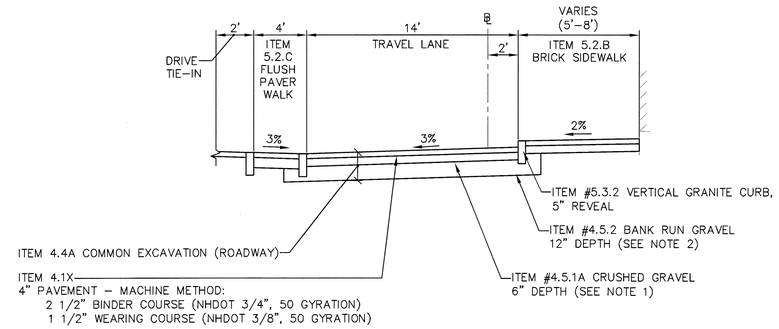
NEW HAMPSHIRE LICENSED LANDSCAPE ARCHITECT — ROBERTA N. WOODBURN — 002

WOODBURN & COMPANY
Landscape Architecture, LLC

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

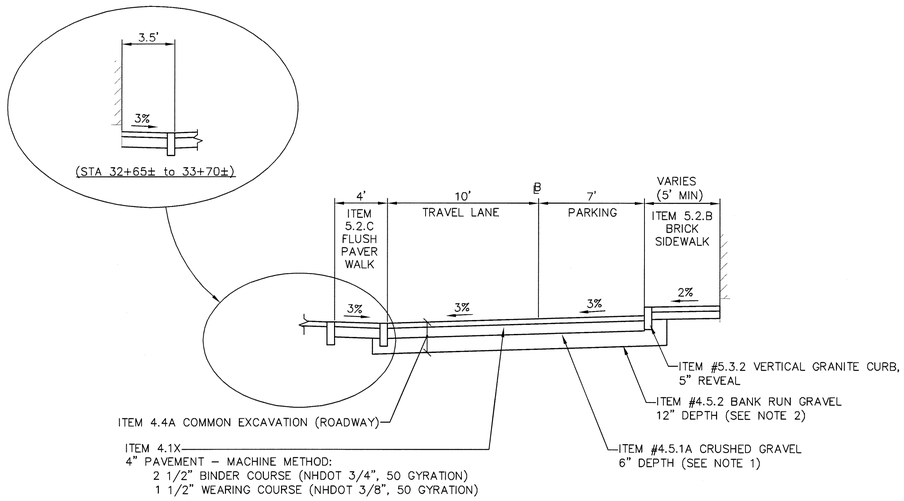
DECORATIVE PAVING DETAILS
SHEAFE & CHAPEL STREET IMPROVEMENTS
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO L-2
SHEET 14 OF 25



TYPICAL SECTION SHEAFE ST.

SCALE: 1"=5' (STA 30+10 TO 30+95)

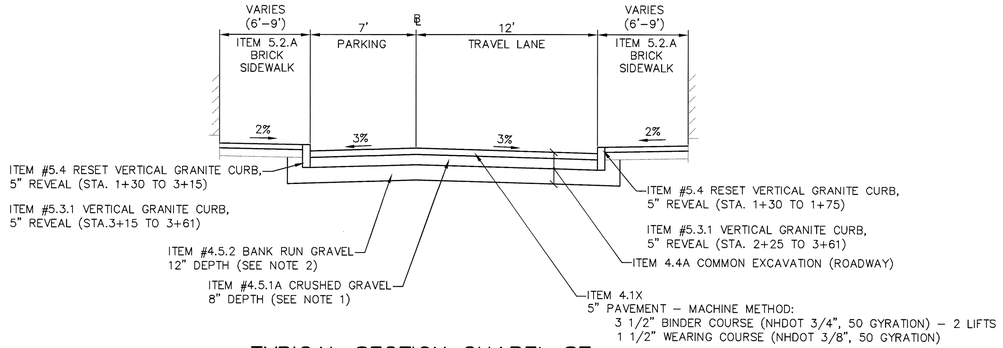


TYPICAL SECTION SHEAFE ST.

SCALE: 1"=5' (STA 30+95 TO 33+70)

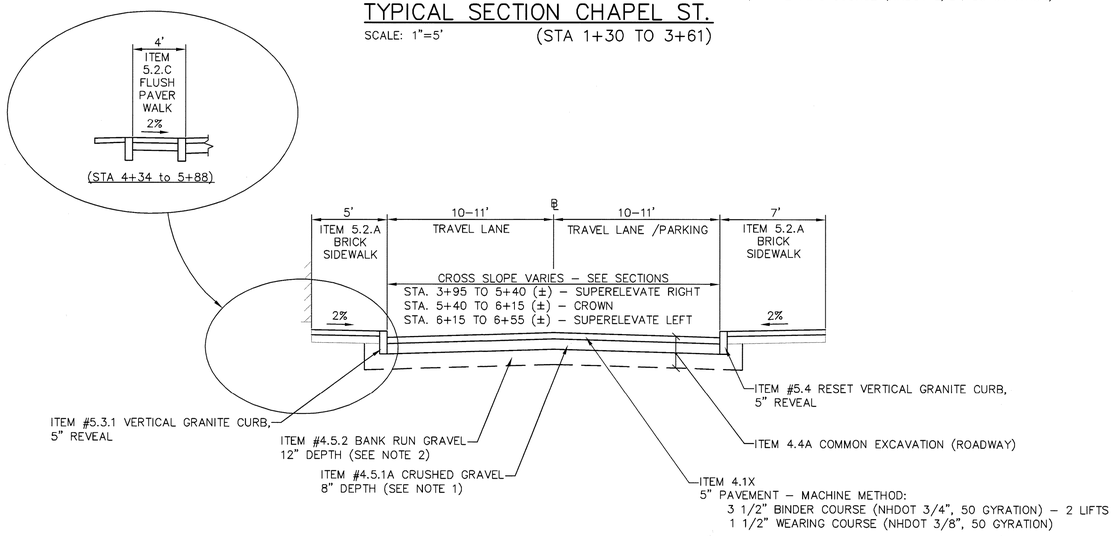
NOTES:

1. WHEN CRUSHED GRAVEL IS SPECIFIED FOR ROAD RECONSTRUCTION, THE ENGINEER MAY APPROVE USE OF ALTERNATIVE AGGREGATE BASE COURSE MATERIALS IN LIEU OF CRUSHED GRAVEL PROVIDED THE FOLLOWING REQUIREMENTS ARE MET:
   A. A MINIMUM 1' OF FREE DRAINING MATERIAL (SAND OR GRAVEL) IS PROVIDED BELOW THE CRUSHED GRAVEL COURSE.
   B. THE APPROVED MATERIAL SHALL BE SUPPLIED FROM A HOMOGENOUS STOCKPILE AND BE APPLIED ACROSS THE ENTIRE CROSS SECTION AT THE DEPTH SPECIFIED. SHORT OR DISCONTINUOUS SECTIONS WILL NOT BE PERMITTED.
   C. TRANSITIONS BETWEEN MATERIALS (CRUSHED GRAVEL AND ALTERNATE BASE COURSE) SHALL BE MADE AT A 50:1 TAPER.
   D. THE RECLAIMED STABILIZED BASE MATERIAL MEETS THE PROJECT SPECIFICATIONS (SECTION 02557 OR NHDOT SECTION 306). APPROVAL WILL BE BASED ON VERIFICATION BY SIEVE ANALYSIS TESTS WHEN ORDERED BY THE ENGINEER/OWNER. RECLAIMED STABILIZED BASE MATERIAL MAY ALSO BE APPROVED IN LIEU OF CRUSHED GRAVEL FOR SIDEWALKS AND DRIVEWAYS.
   E. CRUSHED STONE MEETING THE REQUIREMENTS OF NHDOT ITEM 304.4 (FINE GRADATION) MAY BE SUBSTITUTED FOR CRUSHED GRAVEL.
2. REFER TO ROADWAY PLANS (SHEETS R1–R3) FOR LIMITS OF FULL DEPTH ROAD RECONSTRUCTION. FINAL LIMITS WILL BE DETERMINED BY THE ENGINEER BASED ON FIELD CONDITIONS OBSERVED AND THE PROJECT QA/QC TESTING PROGRAM (SEE SPECIFICATION SECTION 02229). WHEN THE FIELD TEST RESULTS FOR THE EXISTING SUBBASE MATERIAL SUBSTANTIALLY CONFORM TO THE BANK RUN GRAVEL REQUIREMENTS (SECTION 02229) THE ENGINEER MAY ACCEPT THE EXISTING MATERIAL IN PLACE AS THE BANK RUN GRAVEL COURSE.
3. GRAVEL AND EXCAVATION LIMITS FOR ROAD BOX EXTEND ONE (1) FOOT BEYOND FACE OF CURB (TYPICAL ALL SECTIONS).
4. EXCAVATION OF PAVEMENT, DRIVEWAYS AND SIDEWALKS, OUTSIDE ROAD BOX WILL NOT BE MEASURED FOR PAYMENT, REGARDLESS OF MATERIAL WHETHER BRICK, CONCRETE OR PAVEMENT. ALL OTHER EXCAVATION, EXCEPT EXPLORATORY EXCAVATION WILL BE SUBSIDIARY AND NOT MEASURED FOR PAYMENT.
5. THE CONTRACTOR SHALL SEQUENCE HIS WORK TO MINIMIZE THE NEED FOR TEMPORARY TRENCH PAVEMENT REPAIRS. PAVEMENT SHOULD NOT BE DISTURBED UNLESS THE CONTRACTOR CAN COMPLETE ENTIRE ROAD CONSTRUCTION (AS SHOWN ON TYPICAL SECTIONS, THIS DRAWING). AREAS TO RECEIVE TEMPORARY PAVEMENT SHALL BE APPROVED IN ADVANCE TO BE CONSIDERED FOR PAYMENT, AND THE CONTRACTOR WILL NEED TO CONSIDER THIS IN PREPARATION AT BID.
6. PROVIDE 5" REVEAL AT CURBED LOCATIONS, EXCEPT AT TIP–DOWNS OR OTHER LOCATIONS DESIGNATED BY ENGINEER.



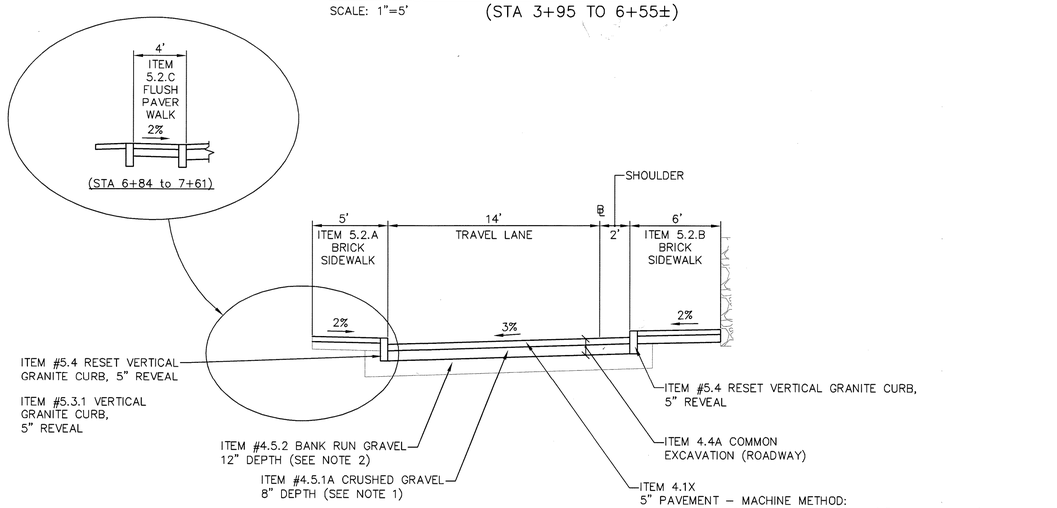
TYPICAL SECTION CHAPEL ST.

SCALE: 1"=5' (STA 1+30 TO 3+61)



TYPICAL SECTION CHAPEL ST.

SCALE: 1"=5' (STA 3+95 TO 6+55±)



TYPICAL SECTION CHAPEL ST.

SCALE: 1"=5' (STA 6+55± TO 8+50)

ISSUE FOR APPROVAL Date 3/13/15 By BTD
CONSTRUCTION Date 7/27/15 By
RECORD DRAWING Date – By –

NO.	REVISIONS	APP'D

Drawn/Chk RMG/TJB
Designed BTD
Checked PDM
Approved –
Date 03/25/15
Book No. –
Project No. 1902
Dwg. ID 1902-TYPXSEC
Scale AS SHOWN

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603–436–6192 Fax. 603–431–7393

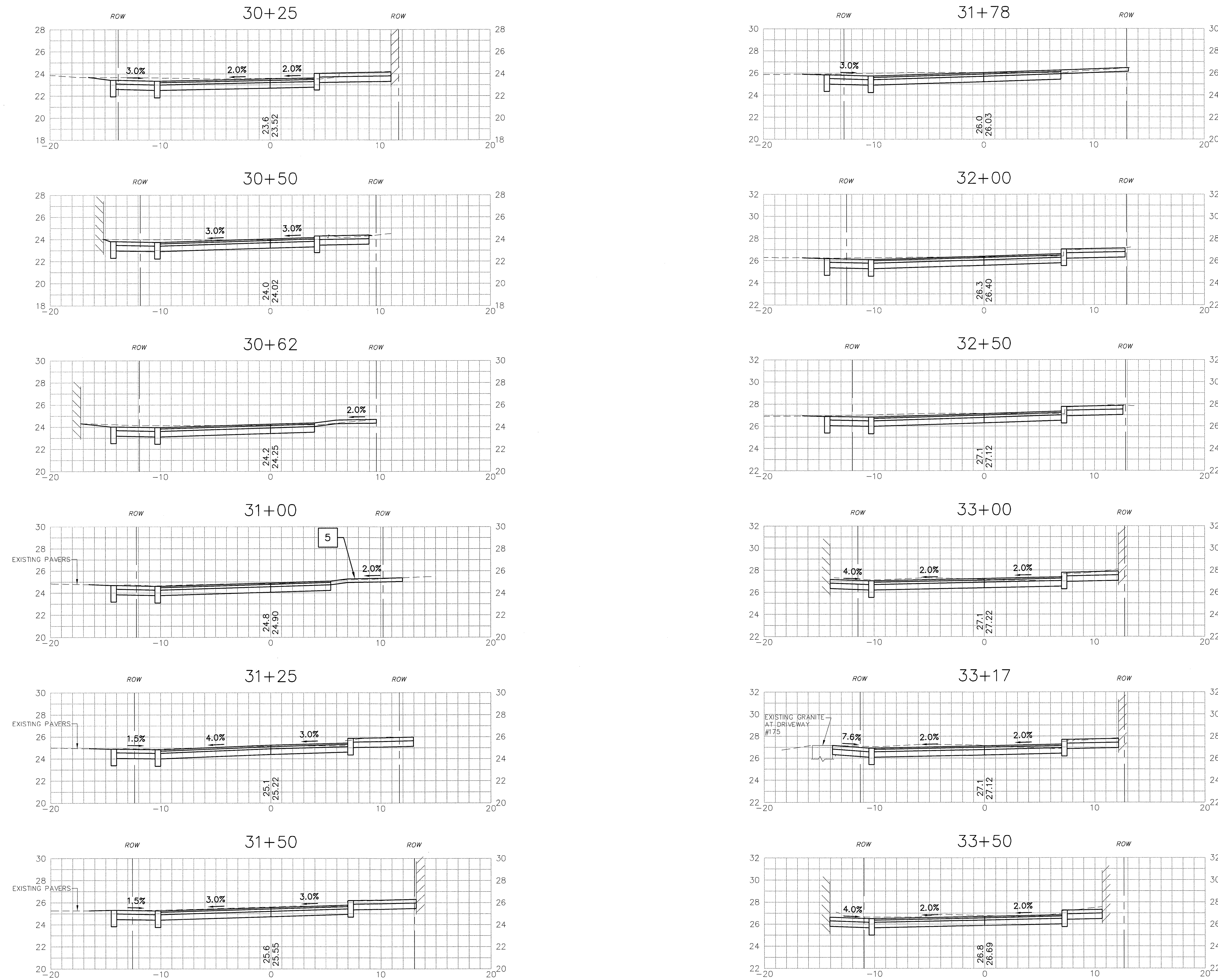
TYPICAL ROAD SECTIONS

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO X–1

SHEET 15 OF 25



SCALE: 1 INCH = 5 FT.

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CONSTRUCTION	3/25/15	
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Project No. 1902
Dwg. ID 1902base
Scale AS SHOWN

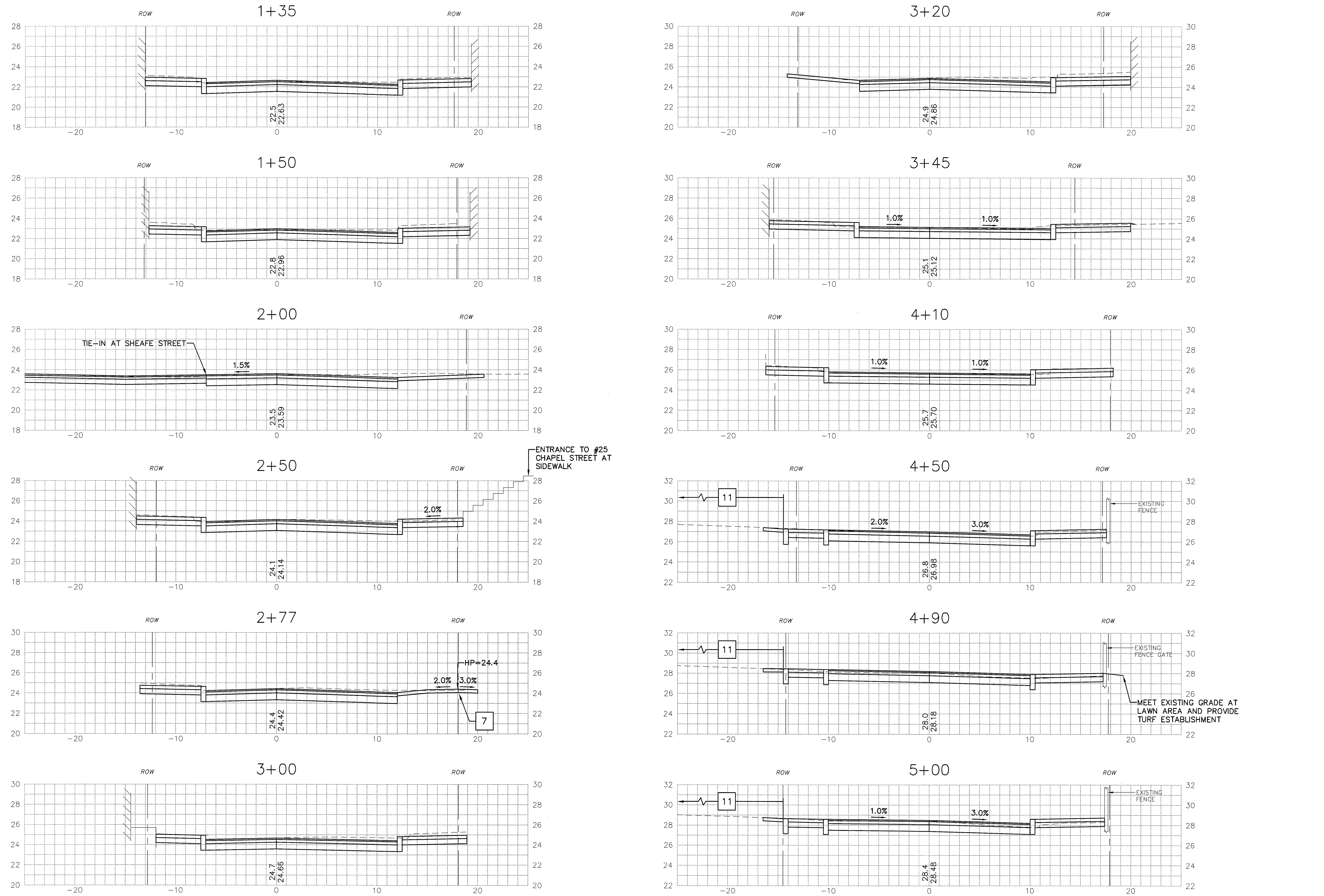
UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

SHEAFE STREET CROSS SECTIONS

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO X-2



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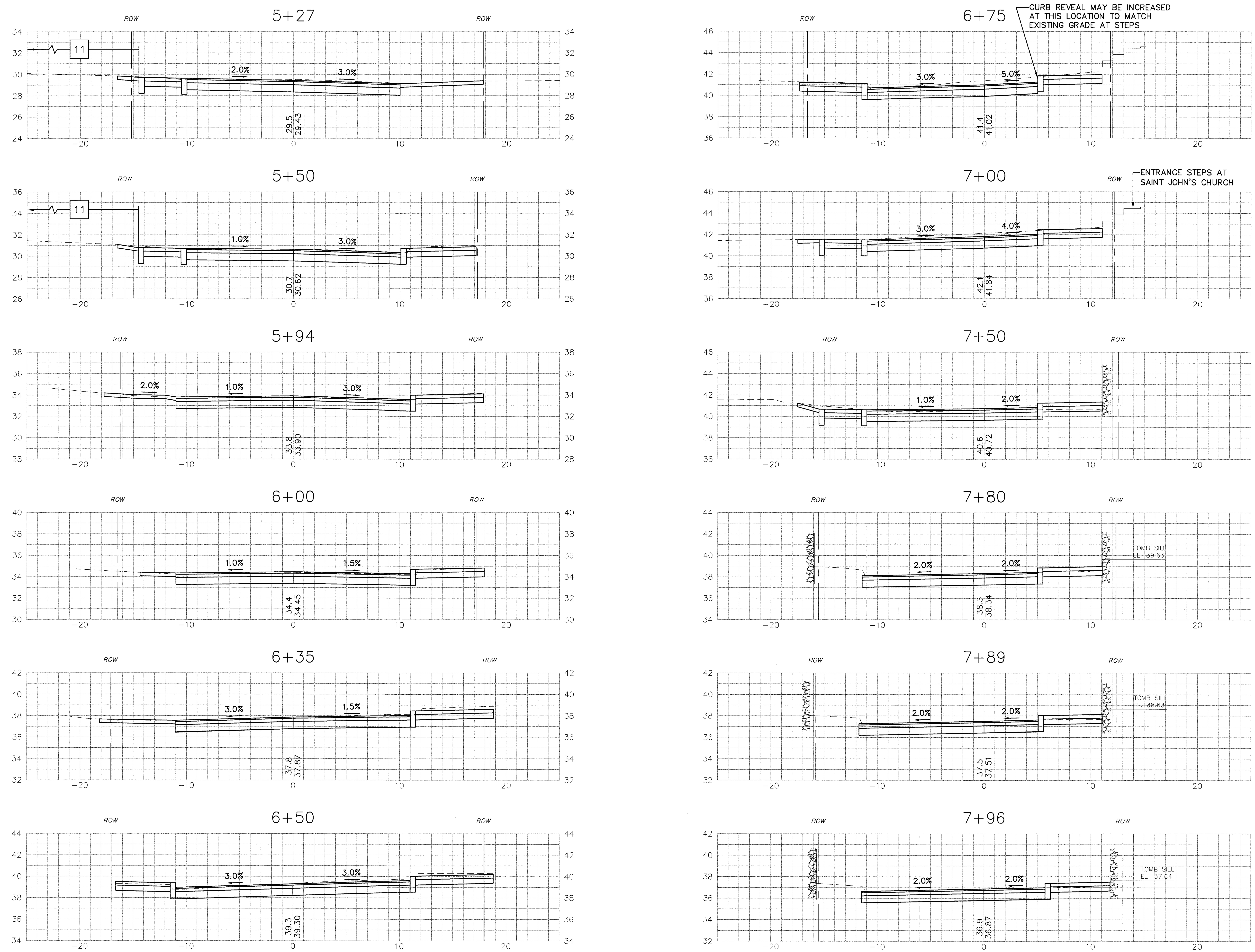
CHAPEL STREET CROSS SECTIONS

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO X-3



SCALE: 1 INCH = 5 FT.

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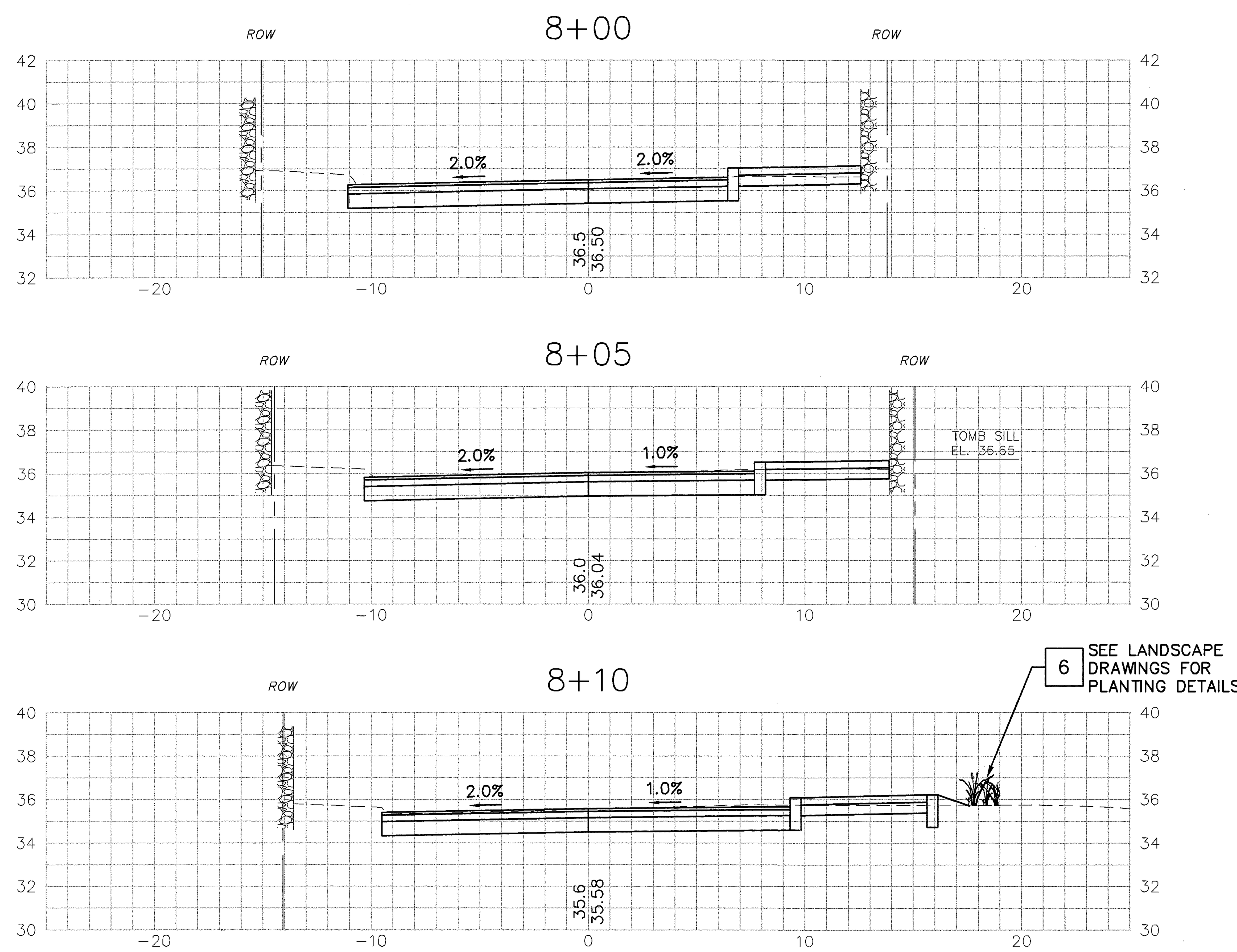
CHAPEL STREET CROSS SECTIONS

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO X-4

SHEET 18 OF 25



SCALE: 1 INCH = 5 FT.

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CONSTRUCTION	Date – 3/25/15	By [signature]
RECORD DRAWING	Date –	By –

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CHAPEL STREET CROSS SECTIONS

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

DWG NO X-5

STANDARD MANHOLE NOTES:

1. GENERAL: SEWER MANHOLES, INCLUDING ALL COMPONENT PARTS, SHALL BE ASSEMBLED OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H–20 LOADING) WITHOUT FAILURE, AND TO PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2. BARRELS AND CONE SECTIONS: SHALL BE PRECAST REINFORCED CONCRETE.

3. PRECAST CONCRETE: BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C478.

4. LEAKAGE TEST: SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS. INVERT AND SHELF TO BE PRIOR TO BACKFILL PLACED AFTER TESTING.

5. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO AN ELEVATION OF 1" ABOVE THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.

6. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF **HEAVY DUTY DESIGN, MANUFACTURED IN USA BY PAMREX**, AND PROVIDE A 32–INCH CLEAR OPENING. A 3–INCH (MINIMUM HEIGHT) LETTER "S" FOR SEWERS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.

7. BEDDING: INSTALL 6" (MIN) SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33, STONE SIZE NO. 67.
   - 100% PASSING 1 INCH SCREEN
   - 90–100% PASSING 3/4 INCH SCREEN
   - 20–55% PASSING 3/8 INCH SCREEN
   - 0–10% PASSING #4 SIEVE
   - 0–5% PASSING #8 SIEVE

8. TRENCH STABILIZATION: WHERE THE MATERIAL BELOW MANHOLE STRUCTURE IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL DOUBLE LAYER OF TENSAR TX160 (OR EQUAL) GEOGRID (PAY AS ITEM 1.8B – LFx2) BETWEEN 12" LIFTS OF SCREENED GRAVEL (ITEM 6.3 – FIRST 6" SUBSIDIARY TO ITEM 1.5.X)

9. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER HAVING AN ECCENTRIC ENTRANCE AND CAPABLE OF SUPPORTING H–20 LOADS MAY BE USED.

10. FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:
RCP AND CI PIPE (ALL SIZES): 48"
AC AND VC PIPE (≤ 12" DIA.): 18"
AC AND VC PIPE (> 12" DIA.): 36"
DI PIPE – NONE REQUIRED
PVC (≤ 15" DIA.): NONE REQUIRED
PVC (> 15" DIA.): 48"
ABS (ASTM D2680) (ALL SIZES): SAME AS VC ABOVE.

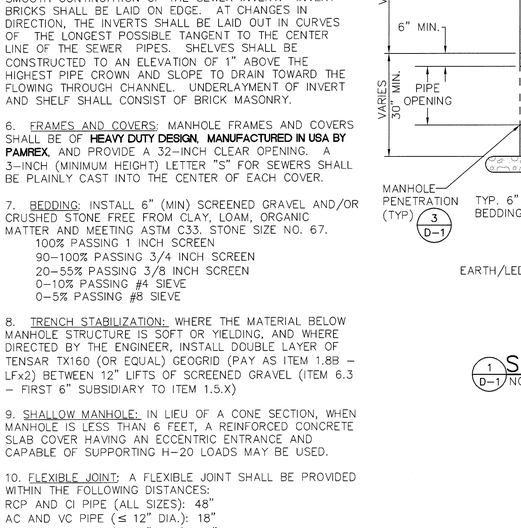
11. SPECIFICATIONS: ADDITIONAL CONSTRUCTION SPECIFICATIONS ARE INCLUDED IN THE CONTRACT DOCUMENTS. THESE STANDARD MANHOLE DRAWINGS ARE NOT COMPLETE WITHOUT THESE SPECIFICATIONS.

JOINTING AND SEALING NOTES

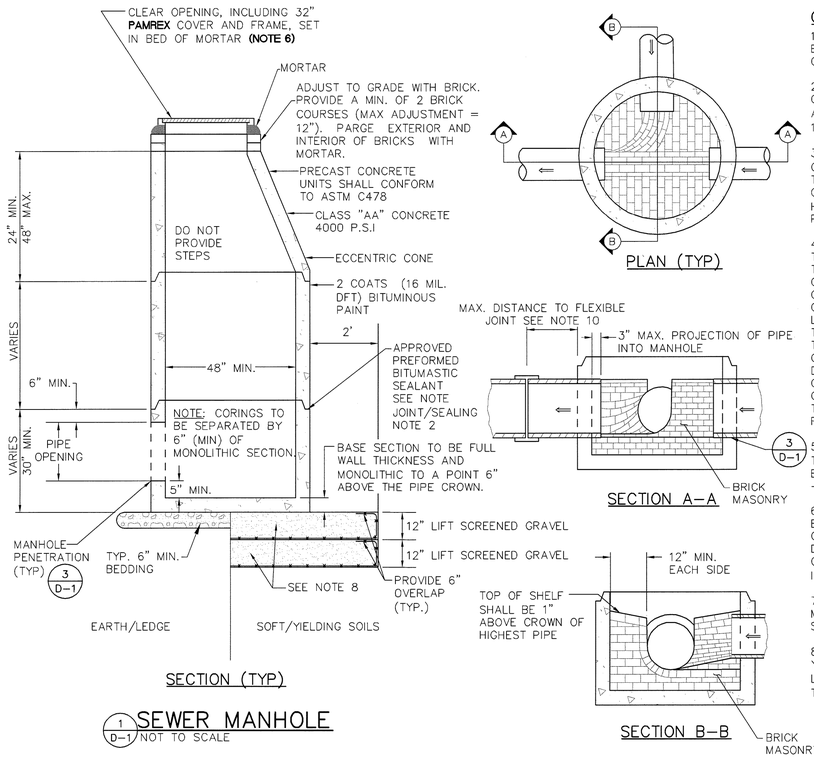
1. PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL, WILL DEPEND UPON AN ELASTOMERIC SEALANT FOR WATERTIGHTNESS.

2. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY. APPROVED BITUMASTIC SEALANTS: RAM–NEK E Z KENT SEAL NO.2

3. ALL GASKETS, SEALANTS, MORTAR, ETC., SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS WRITTEN INSTRUCTIONS.



3 D–1 MANHOLE PENETRATIONS
NOT TO SCALE



SECTION (TYP)

1 D–1 SEWER MANHOLE
NOT TO SCALE

PLAN (TYP)

SECTION A–A

SECTION B–B

GRAVITY SEWER TRENCH NOTES:

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.

2. BEDDING: SEE NOTE 7 OF STANDARD MANHOLE NOTES. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, INSTALL ADDITIONAL SCREENED GRAVEL OR CRUSHED STONE (1/2 INCH TO 1–1/2 INCH) AND/OR GEOGRID FABRIC (ITEM 1.8B) PER NOTE 8 BELOW.

3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 90–100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR CAST–IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.

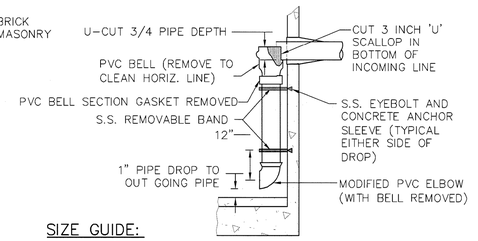
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR SOFT CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN CROSS–COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.

5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.

6. W = MAXIMUM ALLOWABLE TRENCH PAYMENT WIDTH FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)

7. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

8. TRENCH STABILIZATION: WHERE TRENCH BOTTOM IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL SINGLE LAYER OF GEOGRID (TX160 OR EQUAL) ACROSS THE ENTIRE WIDTH OF TRENCH BOTTOM. PAY AS ITEM 1.8B (L.F.).



SIZE GUIDE:

1–8" OR 10" DROP: 4'–0" DIA. M.H.
2–8" OR 10" DROP: 5'–0" DIA. M.H.
1–12" DROP: 5'–0" DIA. M.H.
1–15" DROP: 5'–0" DIA. M.H.

5 D–1 DROP MANHOLE
NOT TO SCALE

SERVICE CONNECTION NOTES:

1. SEE DETAILS FOR SERVICE CONNECTION REQUIREMENTS.

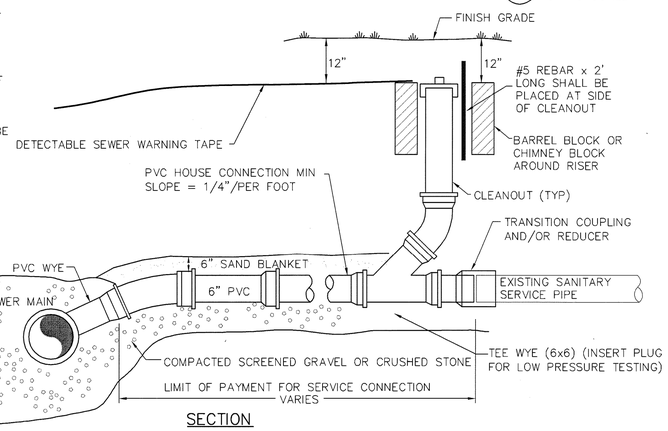
2. SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.

3. CLEANOUTS SHALL BE INSTALLED AT EACH SERVICE CONNECTION.

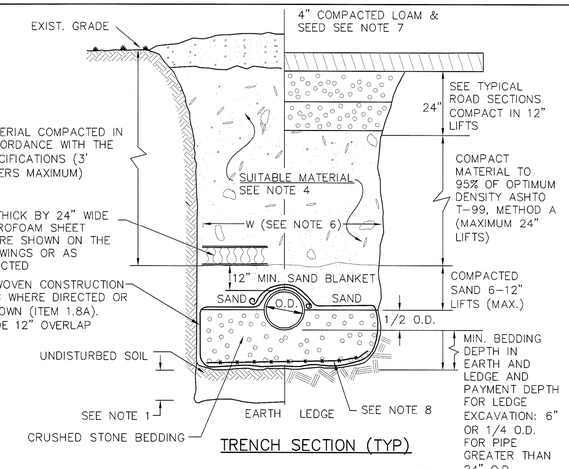
4. REBAR SHALL BE PLACED AT SIDE OF CLEANOUT.

5. CLEANOUT SHALL BE USED TO PLUG AND TEST ALL NEW LATERALS WITH MINIMAL INTERRUPTION TO OPERATION OF HOMEOWNER SANITARY SYSTEM.

6. CLEANOUT RISER PIPE AND FITTINGS SHALL BE INCIDENTAL AND SHALL NOT BE CONSIDERED FOR PAYMENT.

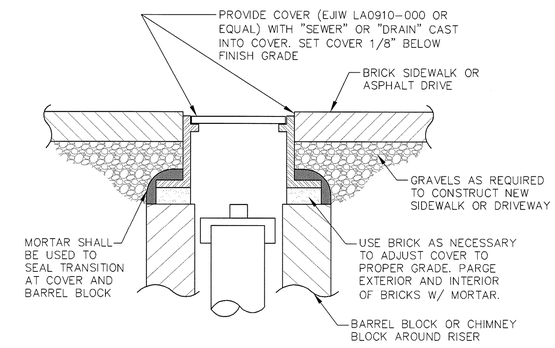


6 D–1 SERVICE CONNECTION
NOT TO SCALE

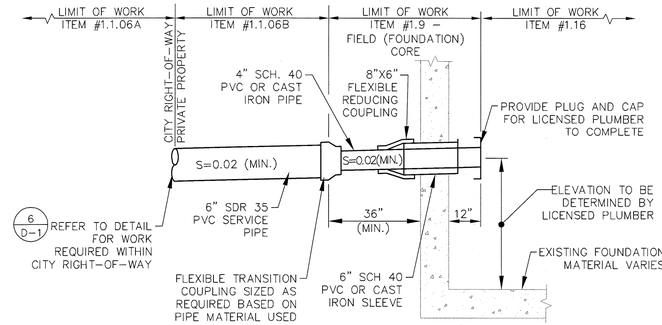


TRENCH SECTION (TYP)

2 D–1 TRENCH – GRAVITY SEWER
NOT TO SCALE



7 D–1 CAST IRON COVER FOR SERVICE CLEANOUT
NOT TO SCALE



8 D–1 SEWER SERVICE BEYOND ROW
NOT TO SCALE
ITEM 1.1.06B, 1.9, & 1.16

ISSUE FOR	APPROVAL	CONSTRUCTION	RECORD DRAWING
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SEWER DETAILS

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603–436–6192 Fax. 603–431–4733

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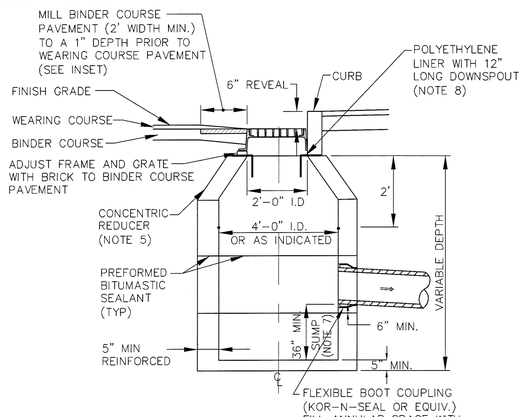
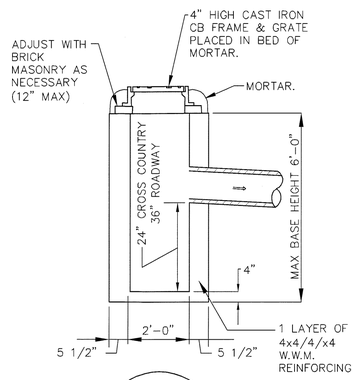
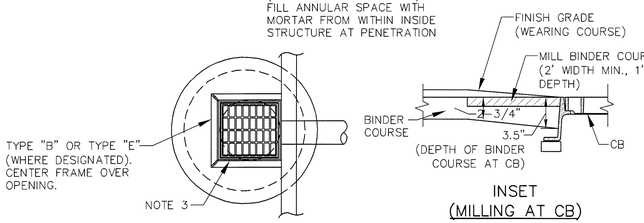
SHEET 20 OF 25





DROP INLET DETAIL

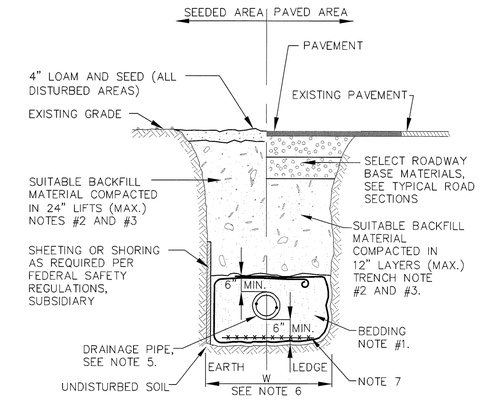


INSET
(MILLING AT CB)

NOTES FOR DRAINAGE STRUCTURES (CB'S AND DI'S):

1. BARRELS AND SLAB SECTIONS SHALL BE PRECAST REINFORCED CLASS "AA" CONCRETE (4000 PSI).
2. PRECAST CONCRETE BARREL SECTIONS, SLABS, AND BASES SHALL CONFORM TO ASTM C478.
3. PROVIDE NH STANDARD CAST IRON FRAME AND GRATE. TYPE "B" OR TYPE "E" (WHERE DESIGNATED ON PLANS). USE BLIND FLANGES AT CURBSIDE LOCATIONS. ALL CASTINGS SHALL BE MANUFACTURED IN THE USA.
4. BEDDING: SHALL BE CRUSHED GRAVEL (ITEM 304.3).
5. 8" THICK SLAB TOPS MAY BE USED WHERE PIPE COVER IS LESS THAN 3.5 FEET. SLAB TOP COVERS SHALL BE REINFORCED CONCRETE CAPABLE OF SUPPORTING H-20 LOADS.
6. ENTIRE STRUCTURE SHALL BE CAPABLE OF WITHSTANDING AN H – 20 LOAD WITHOUT FAILURE. DETAILS OF REINFORCEMENT TO BE FURNISHED BY MANUFACTURER.
7. WHERE SUMP IS OMITTED PROVIDE MASONRY INVERT PER DETAIL. (6 / D-2)
8. POLYETHYLENE LINER SHALL BE PRE-FABRICATED AND INSTALLED AS FOLLOWS (SUBSIDIARY TO ITEM 2.6X):
   A. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.
   B. PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT BETWEEN FRAME ASSEMBLY AND POLYETHYLENE SHEET.
   C. POLYETHYLENE SHEET MAY BE TRIMMED A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME ASSEMBLY.
   D. THE CENTER OF THE FRAME AND GRATE ASSEMBLY MAY BE SHIFTED A MAXIMUM OF 6" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.
   E. DO NOT INSTALL LINERS IN CATCH BASIN STRUCTURES <4' IN DIAMETER AND/OR OUTSIDE PAVEMENT LIMITS.

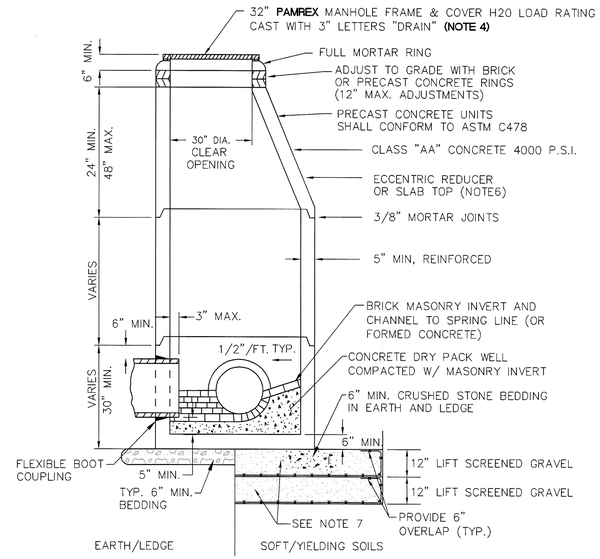
1 / D-2 CATCH BASIN AND DROP INLET DETAIL
NOT TO SCALE



TRENCH NOTES – STORM DRAIN

1. BEDDING: BEDDING FOR PIPES SHALL CONSIST OF PREPARING THE BOTTOM OF THE TRENCH TO SUPPORT THE ENTIRE LENGTH OF THE PIPE AT A UNIFORM SLOPE AND ALIGNMENT. CRUSHED GRAVEL (NHDOT ITEM 304.3) OR CRUSHED STONE SHALL BE USED TO BED THE PIPE TO THE ELEVATION SHOWN ON THE DRAWINGS.
2. COMPACTION: ALL BACKFILL SHALL BE COMPACTED AT OR NEAR OPTIMUM MOISTURE CONTENT BY PNEUMATIC TAMPERS, VIBRATORY COMPACTORS OR OTHER APPROVED MEANS. BACKFILL BENEATH PAVED SURFACES SHALL BE COMPACTED TO NOT LESS THAN 95 PERCENT OF AASHTO T99, METHOD C.
3. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ROCKS OVER 6 INCHES IN LARGEST DIMENSION; FROZEN EARTH AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN SEEDED AREAS, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, ROCKS UNDER 12", FROZEN EARTH OR CLAY, IF HE/SHE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE WILL BE PRESERVED.
4. BASE COURSE AND PAVEMENT: SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – DIVISIONS 300 AND 400 RESPECTIVELY.
5. DRAINAGE PIPE: PIPE MATERIALS SHALL BE EITHER POLYVINYL CHLORIDE (PVC) OR CORRUGATED POLYETHYLENE (CPE). THE OWNER RESERVES THE RIGHT TO DETERMINE WHICH PIPE MATERIALS ARE USED FOR THE PROJECT.
6. W=MAXIMUM ALLOWABLE TRENCH WIDTH: FOR ROCK EXCAVATION, FOR ORDERED EXCAVATION BELOW GRADE AND HANDLING OF EXCAVATED CONTAMINATED SOILS. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.)
7. TRENCH STABILIZATION: WHERE TRENCH BOTTOM IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL SINGLE LAYER OF GEOGRID (TX160 OR EQUAL) ACROSS THE ENTIRE WIDTH OF TRENCH BOTTOM. PAY AS ITEM 2.8B (L.F.).

4 / D-2 TRENCH DETAIL – STORM DRAIN
NOT TO SCALE



STANDARD DRAIN MANHOLE NOTES:

1. BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE.
2. PRECAST CONCRETE BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C478.
3. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT (OR FORMED CONCRETE), CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE INVERT. INVERT BRICKS SHALL BE LAID ON EDGE. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST POSSIBLE TANGENT TO THE CENTER LINE OF THE PIPES. SHELVES SHALL BE CONSTRUCTED TO AN ELEVATION OF 1/2 THE PIPE DIA. AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL.
4. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF **HEAVY DUTY DESIGN, MANUFACTURED IN USA BY PAMREX**, AND PROVIDE A 32-INCH CLEAR OPENING. WORD "DRAIN", IN 3-INCH LETTERS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
5. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33. STONE SIZE NO. 67.

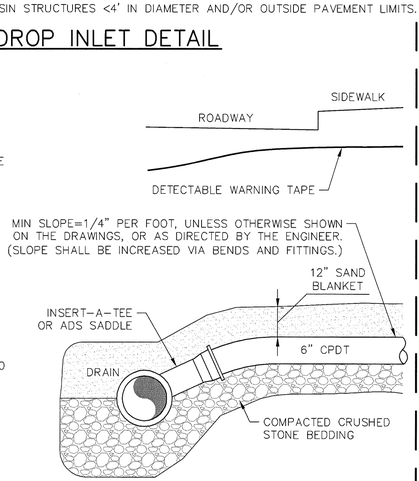
   100% PASSING 1 INCH SCREEN
   90–100% PASSING 3/4 INCH SCREEN
   20– 55% PASSING 3/8 INCH SCREEN
   0–10% PASSING #4 SIEVE
   0– 5% PASSING #8 SIEVE

   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1–1/2 INCH TO 1/2 INCH OR USE OF GEOGRID FABRIC (ITEM 2.8B) MAY BE REQUIRED.
6. SLAB TOP COVERS: MAY BE APPROVED IN LIEU OF A CONE SECTION, WHEN MANHOLE IS LESS THAN 5 FEET AND FOR LARGE DIAMETER MANHOLES. SLAB TOP COVERS SHALL BE REINFORCED CONCRETE HAVING AN ECCENTRIC ENTRANCE AND CAPABLE OF SUPPORTING H-20 LOADS.
7. TRENCH STABILIZATION: WHERE THE MATERIAL BELOW MANHOLE STRUCTURE IS SOFT OR YIELDING, AND WHERE DIRECTED BY THE ENGINEER, INSTALL DOUBLE LAYER OF TENSAR TX160 (OR EQUAL) GEOGRID (PAY AS ITEM 2.8B – LFx2) BETWEEN 12" LIFTS OF SCREENED GRAVEL (ITEM 6.3 – FIRST 6" SUBSIDIARY TO ITEM 2.6X)

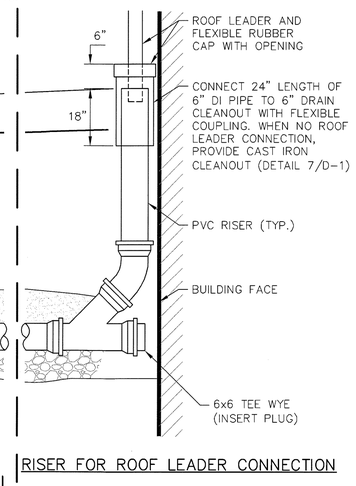
6 / D-2 TYPICAL DRAINAGE MANHOLE
NOT TO SCALE

NOTES:

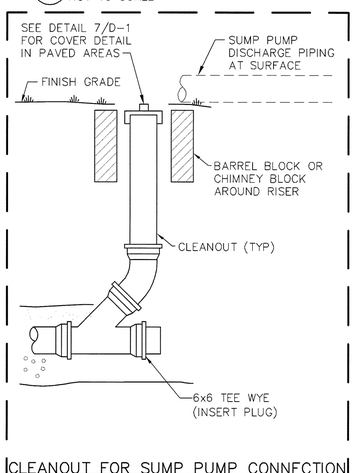
1. SERVICE LATERALS WILL BE PROVIDED AT EACH DOWNSPOUT AS WELL AS A SEPARATE CLEANOUT FOR EACH PROPERTY TO FACILITATE PRIVATE SUMP PUMP /DRAIN SERVICE CONNECTIONS. CLEANOUTS SHALL BE INSTALLED AT THE PROPERTY LINE FOR EACH SERVICE LATERAL.
2. REBAR OR 2X4 SHALL BE PLACED AT SIDE OF CLEANOUT.
3. CLEANOUT RISER PIPE AND FITTINGS ARE INCIDENTAL AND WILL NOT BE CONSIDERED FOR PAYMENT.
4. SERVICES SHALL BE ORIENTED @ 10:30 OR 1:30 (TYP). UNDER NO CIRCUMSTANCES SHALL SERVICES BE LOCATED BETWEEN 3:00 AND 9:00.
5. LOCATE ROOF LEADER CONNECTIONS AT EXISTING DOWNSPOUTS. AT ADJACENT BUILDING CORNERS, TWO DOWNSPOUTS MAY BE CONNECTED TO ONE LATERAL USING APPROPRIATE WYE (AND OTHER) FITTING(S).



2 / D-2 DRAIN LATERAL AND ROOF LEADER CONNECTION
NOT TO SCALE



RISER FOR ROOF LEADER CONNECTION



CLEANOUT FOR SUMP PUMP CONNECTION

NO.	REVISIONS	APP'D

ISSUE FOR APPROVAL By BTD Date 3/13/15
CONSTRUCTION By BTD Date 3/25/15
RECORD DRAWING By - Date -

Drawn/Chk RMG/TJB
Designed BTD
Checked PDM
Approved -
Date 03/25/15
Book No. -
Project No. 1902
Dwg. ID 1902-details
Scale AS SHOWN

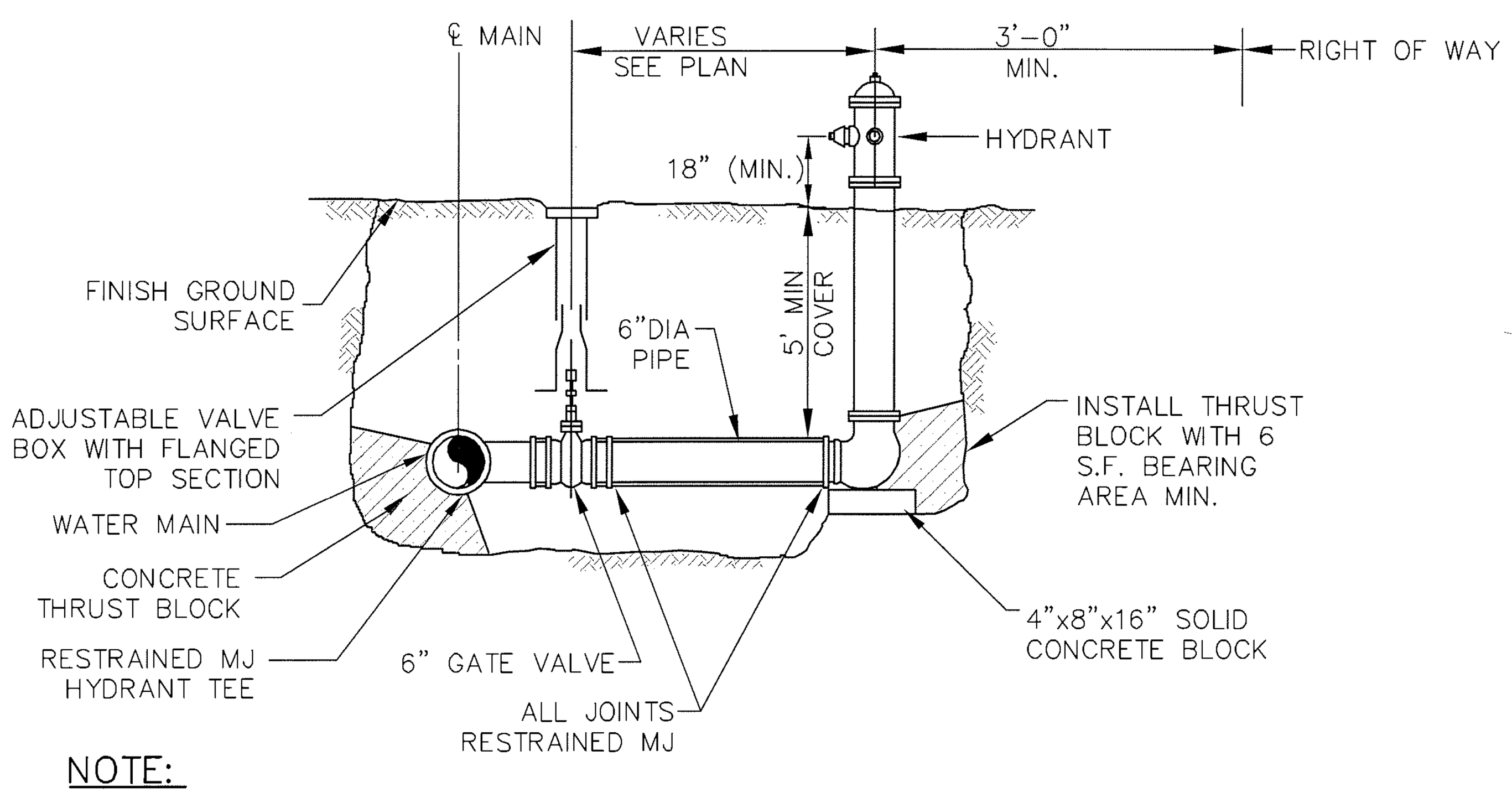
UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

DRAINAGE DETAILS

SHEAFE & CHAPEL STREET IMPROVEMENTS

CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

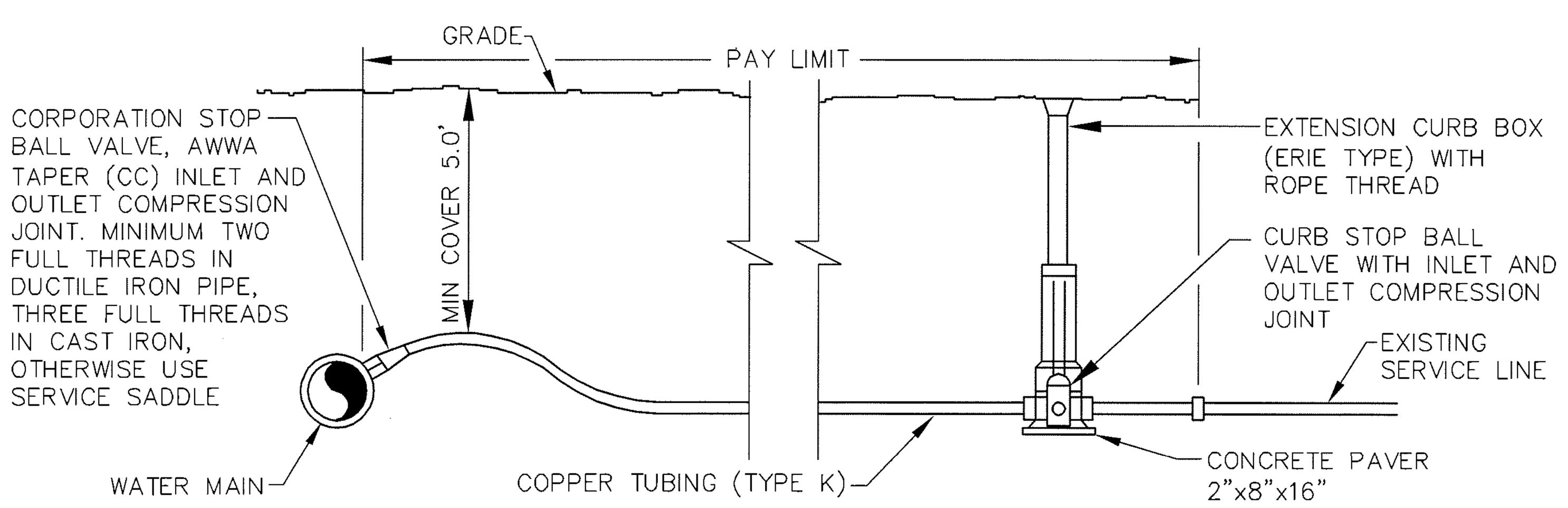
DWG NO D-2
SHEET 21 OF 25



NOTE:

1. HYDRANTS SHALL BE DELIVERED FROM FACTORY W/O DRAIN HOLES.
2. HYDRANT ASSEMBLY INCLUDES MJ HYDRANT TEE 6" DI BRANCH PIPING, 6" GATE VALVE AND FINISH PAINTING.
3. HYDRANT SHALL BE KENNEDY K-811 GUARDIAN (OPEN RIGHT), PER CITY OF PORTSMOUTH STANDARDS.
4. LOCATE HYDRANTS A MINIMUM OF 18" BEHIND CURBING UNLESS OTHERWISE DIRECTED. REVIEW HYDRANT LOCATIONS WITH PROJECT REPRESENTATIVE PRIOR TO WATER MAIN INSTALLATIONS.

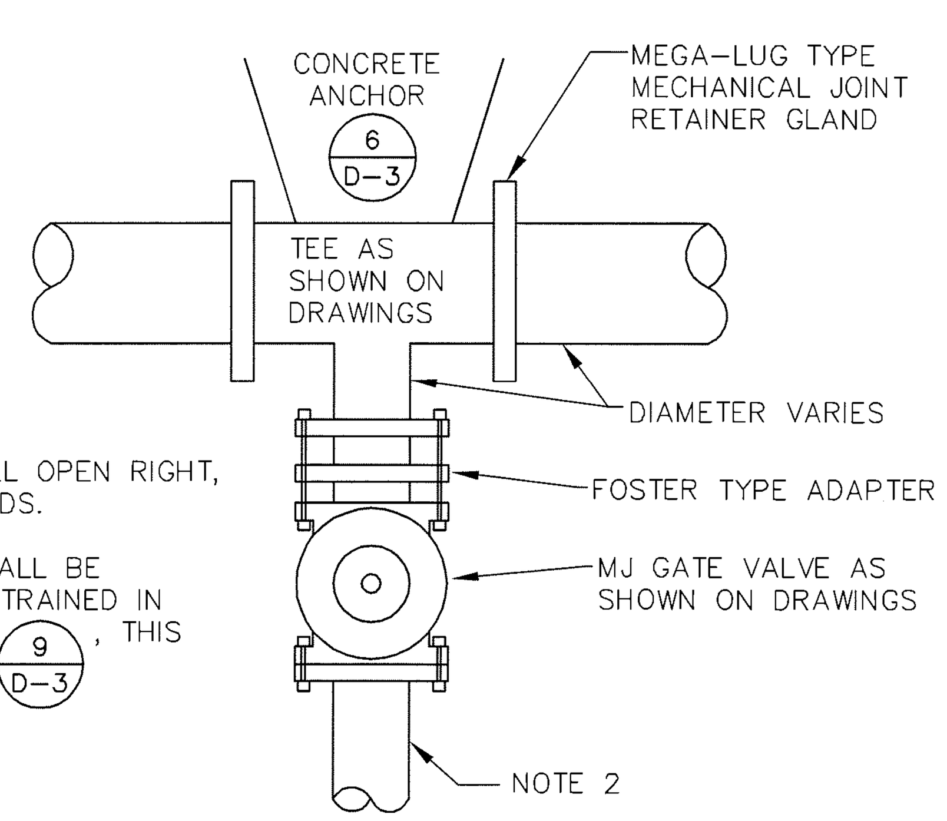
(1 / D-3) TYPICAL HYDRANT ASSEMBLY SECTION
NOT TO SCALE



NOTES:

1. PROVIDE NEW LINE USING CONTINUOUS LENGTHS OF COPPER. NO COUPLING ALLOWED IN ROADWAY WITHOUT APPROVAL OF ENGINEER.
2. TAPS TO BE MADE AT APPROX. 2:00 AND 10:00.
3. PROVIDE FOR SERVICE LINE CONTRACTION AND EXPANSION BY INSTALLING "S" IN SERVICE LINE NEAR MAIN.
4. IF SERVICE IS INSTALLED WITH LESS THAN 5' COVER, INSULATE OVER LINE.
5. REMOVE EXISTING CURB STOP (SALVAGE AS IDENTIFIED IN SECT. 01611).
6. CONNECT CURB STOP TO EXISTING SERVICE LINE AT PROPERTY LINE OR AT LOCATION APPROVED BY THE ENGINEER (NO COUPLING WITHOUT APPROVAL OF ENGINEER) AFTER PRESSURE TESTING AND DISINFECTION.
7. SHUT OFF EXISTING CORPORATION AND REMOVE OR ABANDON EXISTING SERVICE LINE.
8. CURB BOX SHALL BE SET IN THE GRASS AREA BETWEEN CURB AND SIDEWALK UNLESS DIRECTED OTHERWISE.
9. 2" SERVICE CONNECTIONS SHALL USE A STAINLESS STEEL SERVICE SADDLE.

(4 / D-3) TYPICAL SERVICE CONNECTION
NOT TO SCALE



NOTE:

1. GATE VALVES SHALL OPEN RIGHT, PER CITY STANDARDS.
2. BRANCH PIPING SHALL BE MECHANICALLY RESTRAINED IN ACCORDANCE WITH (9 / D-3), THIS SHEET

(5 / D-3) TEE & GATE VALVE ASSEMBLY DETAIL (TYP.)
NOT TO SCALE

HORIZONTAL BENDS:

Nominal Pipe Diameter	Bend Angle 90°	45°	22.5°	11.25°
4"	6'	3'	2'	1'
6"	9'	4'	2'	2'
8"	11'	5'	3'	2'
10"	13'	6'	3'	2'
12"	16'	7'	3'	2'
16"	20'	9'	4'	2'

REDUCERS:

Nom. Diameter of Large Pipe	Nominal Diameter of Small Pipe (Note 4) 4"	6"	8"	10"	12"
8"	17'	10'	-	-	-
10"	23'	17'	10'	-	-
12"	29'	24'	18'	10'	-
16"	39'	36'	31'	28'	18'

DEAD ENDS:

Nom. Pipe Diameter	Restarined Length (ft)
4"	13'
6"	18'
8"	23'
10"	28'
12"	33'
16"	43'

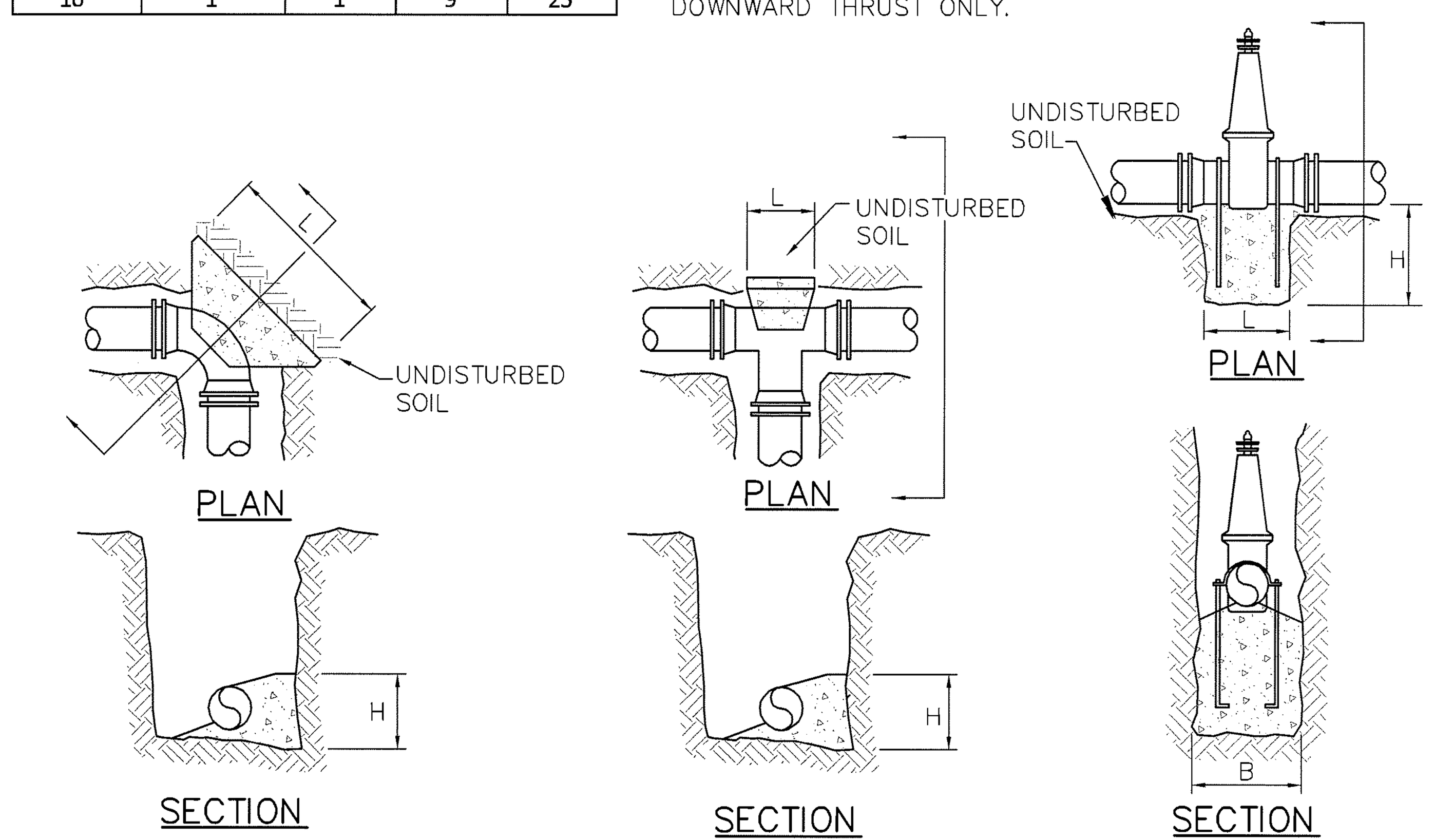
TEES:

Nominal Pipe	Nominal Branch Diameter (Note 5) 8"	10"	12"	16"
8"	6'	-	-	-
10"	8'	11'	-	-
12"	1'	7'	16'	-
16"	1'	1'	9'	25'

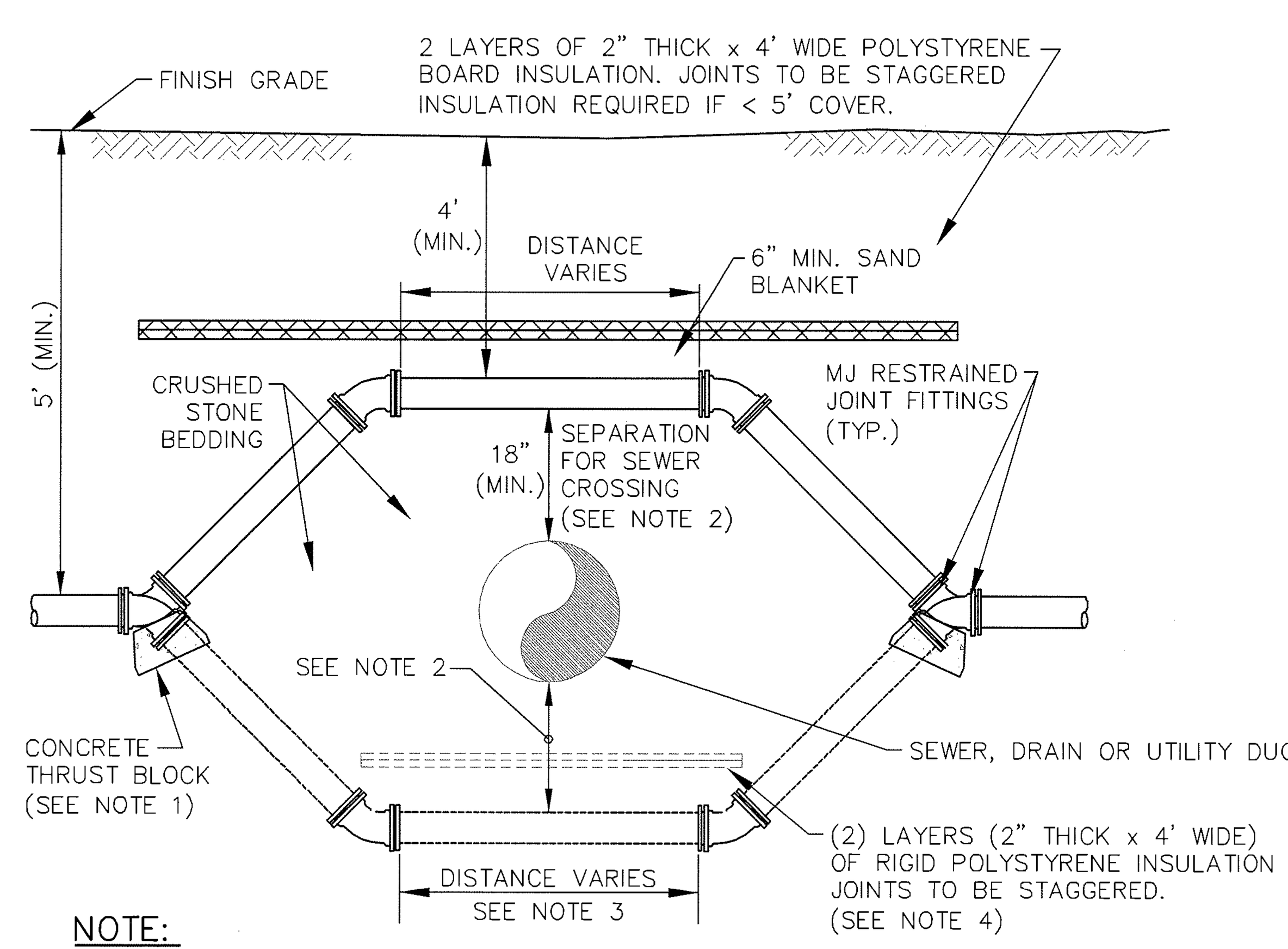
NOTES:

1. CITY OF PORTSMOUTH WATER DEPARTMENT REQUIRES INSTALLATION OF MECHANICALLY RESTRAINED JOINTS AND CONCRETE ANCHORS FOR THRUST RESTRAINT AT FITTINGS, BENDS, TEES, ETC.
2. ALL FITTINGS SHALL HAVE MECHANICAL RETAINING GLANDS AT ALL ENDS AND A MINIMUM OF ONE JOINT SHALL BE RESTRAINED BEYOND EACH SIDE OF FITTING.
3. PIPE EXTENDING FROM ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED TO THE MINIMUM LENGTHS SHOWN.
4. ALL MINIMUM LENGTHS SHOWN ABOVE WERE CALCULATED USING THE EBAA IRON RESTRAINT LENGTH CALCULATOR VERSION 6.3 BASED ON THE FOLLOWING CRITERIA: DUCTILE IRON PIPE, TYPE 4 TRENCH, 5 FOOT DEPTH OF BURY, A TEST PRESSURE OF 150 PSI AND SOILS CONSISTING OF WELL GRADED SANDS AND GRAVELLY SANDS WITH LITTLE OR NO FINES.
5. ENGINEER RESERVES THE RIGHT TO MODIFY RESTRAINT LENGTHS REQUIRED BASED ON VARYING TRENCH CONDITIONS, DEPTH OF BURY OR PIPE MATERIALS.
6. FOR REDUCERS, RESTRAIN LENGTH SHOWN IS FOR THE LARGER PIPE.
7. MECHANICALLY RESTRAIN ONE JOINT ON EITHER SIDE OF THE NOMINAL PIPE OF TEE AT A MINIMUM DISTANCE OF 5'.

BASIS: SOIL BEARING CAPACITY OF 2000 PSF AND 5 FEET COVER IN GRANULAR SOIL. HEIGHT OF BLOCK MUST BE LESS THAN 1/2 DEPTH OF TRENCH. 6 MIL THICK POLYETHYLENE SHALL BE PLACED AROUND FITTINGS PRIOR TO CONCRETE PLACEMENT. USE FOR HORIZONTAL OR DOWNWARD THRUST ONLY.



(6 / D-3) WATER SYSTEM THRUST RESTRAINT
NOT TO SCALE

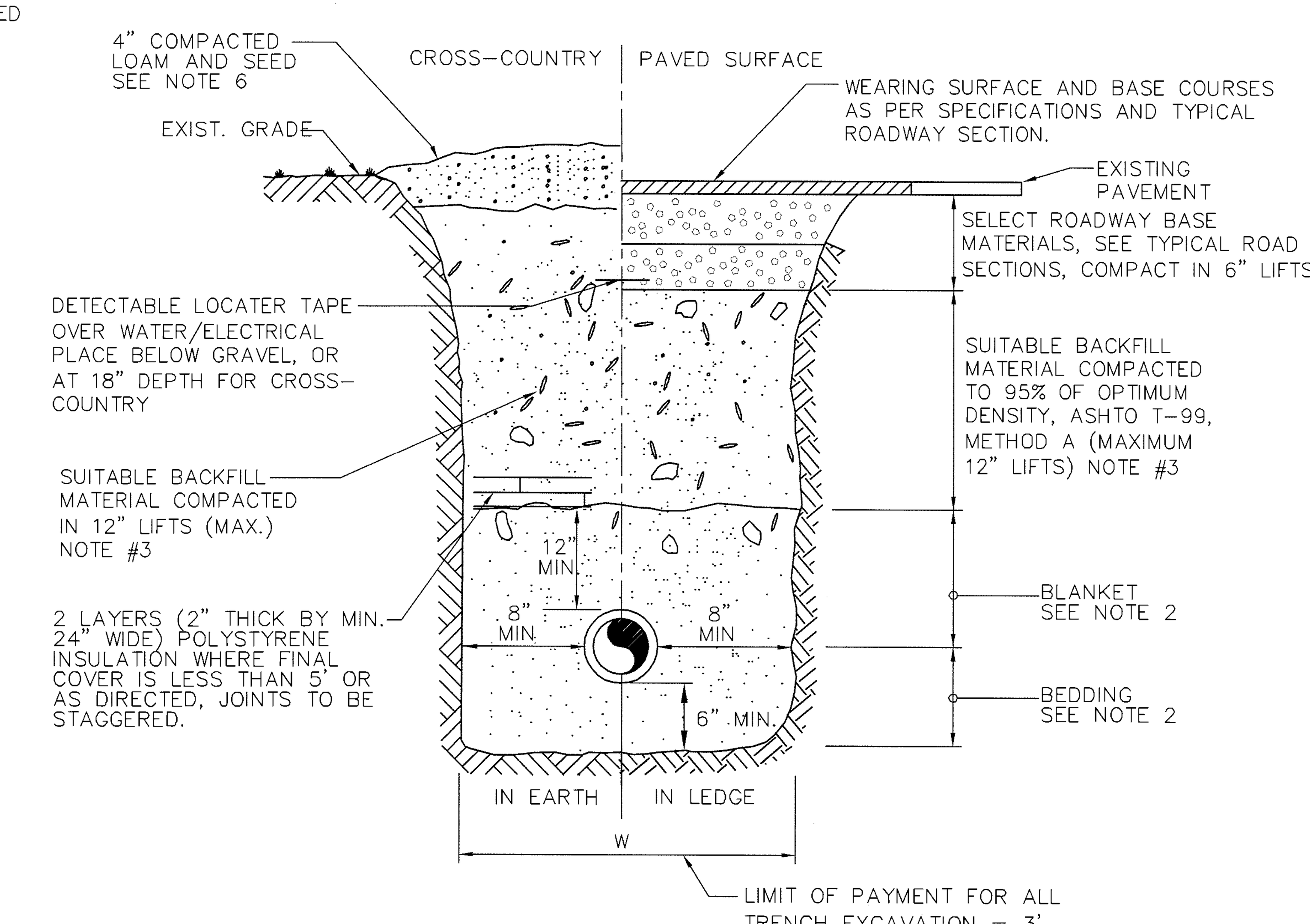


NOTE:

1. INSTALL (4) FOUR 45° MJ BENDS WITH RESTRAINED JOINT FITTINGS.
2. VERTICAL SEPARATION DEPTH BETWEEN WATER AND SEWER SHALL BE AT LEAST 18", WITH WATER ABOVE SEWER, PER NHDES ENV-Wq 704.19. VERTICAL SEPARATION OF LESS THAN 18" (OR WATER BELOW SEWER) ALLOWED ONLY WITH WAIVER FROM NHDES. PROVIDE 12" SEPARATION FOR DRAIN OR OTHER UTILITY CROSSINGS.
3. CENTER CROSSING PIPE BETWEEN BELLS. SEWER PIPE JOINT SHALL BE A MINIMUM OF OF 6 FT. HORIZONTALLY FROM THE WATER MAIN.
4. PROVIDE INSULATION IF DRAIN CROSSES OVER WATER MAIN.

(7 / D-3) WATER MAIN CONFLICT – CROSSING DETAIL
NOT TO SCALE

MINIMUM CONCRETE ANCHOR DIMENSIONS								
BENDS, TEES AND LINE VALVES AT 250 PSI								
PIPE SIZE INCHES	TEE OR PLUG FT. H	TEE OR PLUG FT. L	ALL BENDS FT. H	ALL BENDS FT. L	ALL LINE VALVES FT. H	ALL LINE VALVES FT. L	ALL LINE VALVES FT. B	PIPE SIZE INCHES
6	1.5	3.0	2.0	3.5	1.5	3.0	2.5	6
8	2.0	4.0	2.5	5.0	2.0	4.0	3.0	8
10	2.5	5.0	3.0	6.0	3.0	4.0	3.0	10
12	3.0	6.0	3.0	8.0	3.0	5.0	4.0	12
16	3.0	6.5	3.0	10.0	3.0	4.5	4.0	16



STANDARD TRENCH NOTES

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWINGS.

2. BEDDING AND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER (SECTION 02228). BLANKET MAY BE OMITTED FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE, PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.

3. BACKFILL MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.

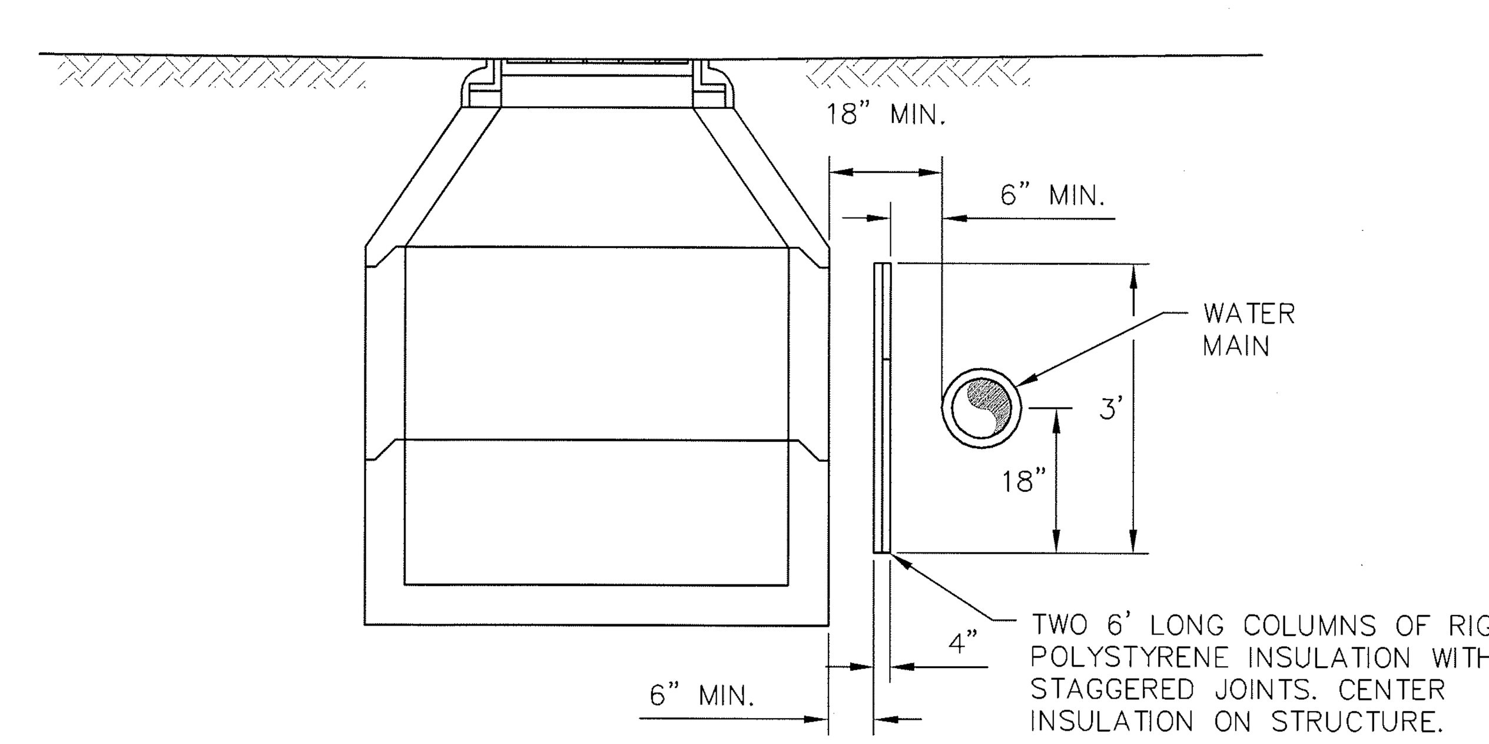
IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF ENGINEER IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE PIPE LINE, FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WILL BE PRESERVED.

4. MINIMUM COVER: NOT LESS THAN 5 FEET, 7 MAX, EXCEPT TO AVOID SUBSURFACE STRUCTURES.

6. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

7. DRIVEWAYS: CRUSHED GRAVEL IN DRIVEWAYS SHALL MATCH EXISTING WITH A MINIMUM OF 6". EXISTING GRAVEL SHALL BE REMOVED AND REPLACED AND SHALL NOT BE MEASURED FOR PAYMENT.

(8 / D-3) TYPICAL TRENCH DETAIL
NOT TO SCALE



(9 / D-3) WATER MAIN INSULATION AT STRUCTURE
NOT TO SCALE

ISSUE FOR	
APPROVAL	Date 3/13/15 By BTD
CONSTRUCTION	Date 3/25/15 By KAP
RECORD DRAWING	Date – By –

NO.	REVISIONS	APP'D

Drawn/Chk. RMG/TJB
Designed BTD
Checked PDM
Approved –
Date 03/25/15
Book No. –
Project No. 1902
Dwg. ID 1902-details
Scale AS SHOWN

UNDERWOOD engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
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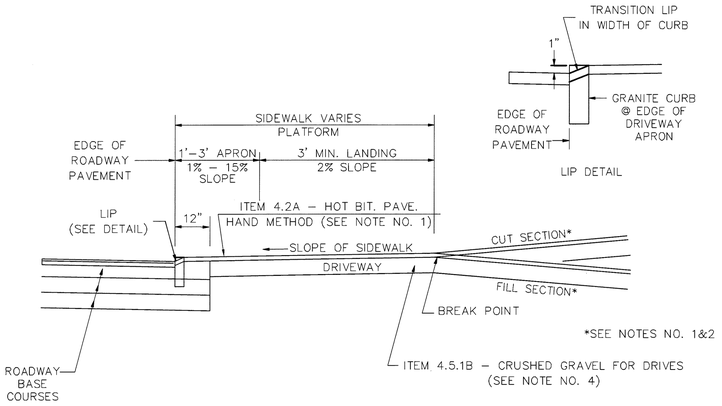
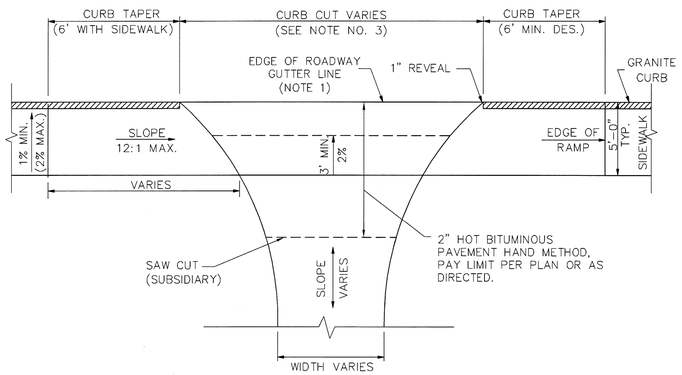
WATER DETAILS
SHEAFE & CHAPEL STREET IMPROVEMENTS
CITY OF PORTSMOUTH
PORTSMOUTH, NEW HAMPSHIRE

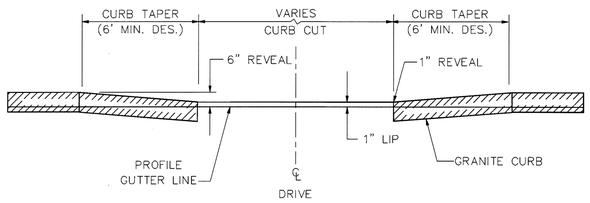
DWG NO D-3



1 D-4 TYPICAL URBAN CURBED DRIVE IN CUT/FILL SECTION

NOT TO SCALE



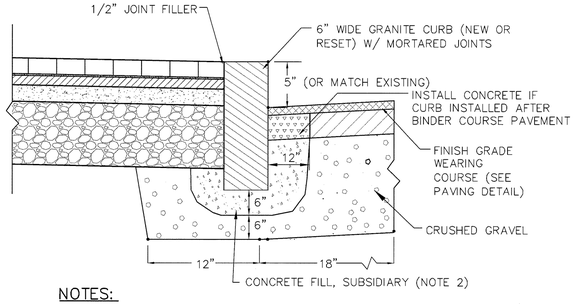


2 D-4 DRIVEWAY APRON/CURB CUT

NOT TO SCALE

DRIVEWAY NOTES

1. PAVEMENT FOR RESIDENTIAL DRIVES SHALL BE 2" (HAND METHOD) SINGLE COURSE BITUMINOUS PAVEMENT (3/8" MIX 50 GYRATION).
2. GRAVEL SUBBASE FOR RESIDENTIAL DRIVES SHALL BE 6" CRUSHED GRAVEL (PAVEMENT REMOVAL AND EXCAVATION IS SUBSIDIARY).
3. DRIVEWAY CURB CUTS SHALL MATCH EXISTING APRON WIDTHS UNLESS OTHERWISE DIRECTED. ALL PAVEMENT MATCHES AT DRIVEWAY SHALL BE SAWCUT AND KEYED FOR SMOOTH TRANSITION (SUBSIDIARY).
4. FOR UNPAVED DRIVES, THE PAVED APRON NORMALLY ENDS AT THE RADIUS TANGENT POINT OR 2' BEYOND THE BACK OF SIDEWALK, WHICHEVER IS GREATER.
5. CURBING CAN BE FLARED TO FIT DRIVE RADII IF APPROPRIATE OR ENDED AS DETAILED ABOVE.



NOTES:

1. CURB DAMAGED OR IMPACTED BY CONSTRUCTION OPERATIONS IS TO BE REPLACED AT THE CONTRACTOR'S OWN EXPENSE, UNLESS OTHERWISE NOTED ON PLAN.
2. CLASS B CONCRETE FILL SHALL BE PLACED IN VOIDS IN FRONT, BEHIND, AND BELOW CURBING PRIOR TO INSTALLATION OF GRAVEL BACKING AND FINISH GRADE WEARING COURSE PAVEMENT.
3. RESTORATION OF WALLS, LANDSCAPING, STEPS, WALKWAYS, TURF ESTABLISHMENT, ETC., LOCATED ALONG THE BACK OF WALKS IS SUBSIDIARY TO SIDEWALK CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE SPECIAL CARE DURING EXCAVATION AND CONSIDER CONSTRUCTION IMPACTS IN PREPARATION OF THEIR BID. GRADES MAY BE ADJUSTED TO MINIMIZE IMPACTS TO PRIVATE PROPERTY WHERE NECESSARY, PENDING ENGINEER'S APPROVAL. FINE GRADING AND TURF ESTABLISHMENT BEHIND SIDEWALKS WILL BE SUBSIDIARY.
4. INSTALL PLASTIC EDGING WHERE BRICK ADJOINS LOAM OR PLANTED MATERIALS, SUBSIDIARY TO ITEM 5.2.B.
5. CURB TIP DOWNS SHALL BE INSTALLED WHERE SIDEWALKS INTERSECT DRIVEWAY APRONS AND CROSSWALKS. TIP DOWNS AT DRIVEWAYS AND CROSS WALKS SHALL BE REVIEWED ON THE GROUND WITH THE ENGINEER AND OWNERS REPRESENTATIVE BEFORE CURB INSTALLATIONS.

3 D-4 VERTICAL GRANITE CURB

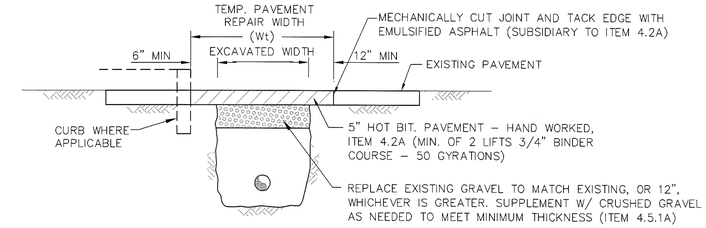
NOT TO SCALE

MINIMUM TRENCH PAVEMENT WIDTHS

PIPE I.D.	Wt (INCHES)	Wp (INCHES)
1–21 INCHES	84	108
24–30 INCHES	96	120
> 30 INCHES	108	132

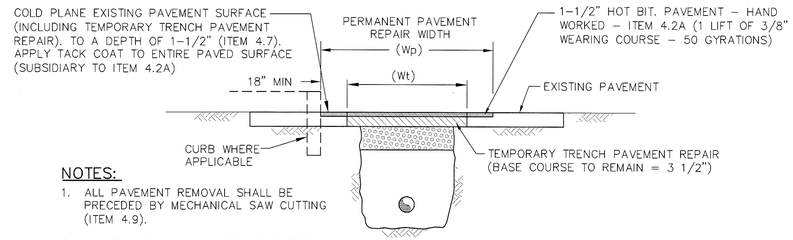
NOTE:

THE DIMENSIONS SHOWN SHALL BE CONSIDERED MAXIMUM PAVEMENT PAYMENT WIDTHS FOR 0–10' DEEP CONSTRUCTION. Wt AND Wp SHALL BE INCREASED BY 4'–0" FOR TRENCHES 10' TO 15' AND BY 8'–0" FOR TRENCHES 15' TO 20' IN DEPTH.



6 D-4 TEMPORARY TRENCH PAVEMENT REPAIR

NOT TO SCALE

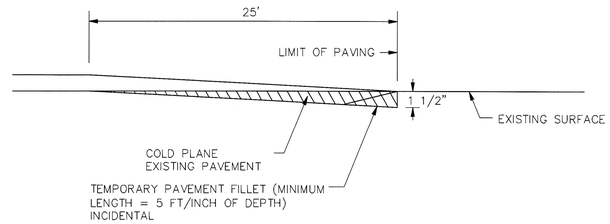


NOTES:

1. ALL PAVEMENT REMOVAL SHALL BE PRECEDED BY MECHANICAL SAW CUTTING (ITEM 4.9).
2. ALL TEMPORARY, DAMAGED OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
3. SEE TABLE IN "TEMPORARY TRENCH PAVEMENT REPAIRS" FOR MINIMUM TRENCH WIDTHS.

7 D-4 PERMANENT TRENCH PAVEMENT REPAIR

NOT TO SCALE



NOTE:

THE LENGTH OF THE TAPER MAY BE ADJUSTED AS ORDERED TO PROVIDE FOR VARYING FIELD CONDITIONS OR CHANGES IN SINGLE COURSE DEPTH.

8 D-4 OVERLAY PAVEMENT MATCH

NOT TO SCALE

NO.	REVISIONS	APP'D

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Project No. 1902
Dwg. ID 1902-details
Scale AS SHOWN

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ROADWAY DETAILS
SHEAFE & CHAPEL STREET IMPROVEMENTS
CITY OF PORTSMOUTH
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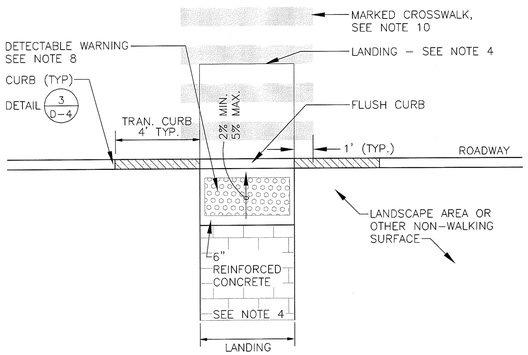


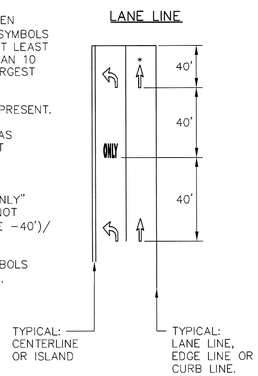
1 D-5 CURB RAMP– TYPE T
NOT TO SCALE

CURB RAMP NOTES

1. CURB RAMP AND FLARES SHALL BE CONSTRUCTED USING 6" THICK REINFORCED CONCRETE (4000 PSI, CLASS A), ITEM 5.1.6. SUBBASE SHALL CONSIST OF 6" THICK OF CRUSHED GRAVEL (INCIDENTAL).
2. RAMP WIDTH EQUALS WIDTH OF SIDEWALK, 3' MIN. 5' WIDTH IS RECOMMENDED TO MATCH WIDTH OF PROPOSED SIDEWALK.
3. MAX. SLOPE OF CURB RAMP SHALL BE 1:12.
4. LANDING SHALL HAVE A MAX. SLOPE OF 2% IN ANY DIRECTION. LANDINGS SHALL BE 5' LONG (MIN.) BY WIDTH OF SIDEWALK (3' MIN.). A 5' WIDTH SHALL BE PROVIDED WHERE SPACE PERMITS, TO MATCH WIDTH OF PROPOSED SIDEWALK.
5. ACCESSIBLE ROUTE SIDEWALK SHALL HAVE A MAXIMUM GRADE OF 1:20 (5%) AND TIE INTO EXISTING SIDEWALK GRADES WITHIN 15' OF THE RAMP LANDING. IF EXISTING GRADE CANNOT BE MET, A MAXIMUM GRADE OF 1:12 (8.33%) (CONSIDERED A RAMP) WILL BE ALLOWED FOR A MAXIMUM LENGTH OF 30'. IF A GRADE GREATER THAN 5% IS USED, A LANDING AS DESCRIBED IN NOTE 4 SHALL BE CONSTRUCTED AT THE TOP OF THE RAMP. GRADES GREATER THAN 1:12 ARE NOT PERMITTED.
6. TRANSITIONS FROM RAMPS TO WALKS, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
7. INTERCEPT DRAINAGE ALONG THE CURB BEFORE CURB RAMP. CATCH BASINS, MANHOLES, ETC. SHALL NOT BE LOCATED AT BASE OF CURB RAMP OR IN LANDING.
8. DETECTABLE WARNING PANELS (TRUNCATED DOMES) SHALL BE SET IN POURED CONCRETE FOR THE CURB RAMP WITH 3" OF CONCRETE AROUND THE PERIMETER OF THE PANEL ASSEMBLY. ALIGN PANELS ON A SQUARE GRID IN ROWS PERPENDICULAR TO DIRECTION OF TRAVEL. COLOR SHALL BE BRICK RED WHEN INSTALLED ON CONCRETE SIDEWALK AREAS AND LIGHT GRAY WHEN INSTALLED ON BRICK PAVER SIDEWALK AREAS.
9. PROVIDE ANY ADDITIONAL STATE AND LOCAL CURB RAMP REQUIREMENTS.
10. PROVIDE MARKED CROSSWALKS AT LOCATIONS SHOWN. (4 D-5)
11. DASHED LINE WITH 6.0 LABEL INDICATES LIMIT OF CURB RAMP FOR 6" REVEAL PROPOSED CURB.

GENERAL NOTES:

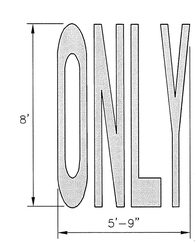
1. WORDS AND SYMBOLS SHALL BE CENTERED LATERALLY WITHIN THE LANE. THE LONGITUDINAL DIMENSION SHALL BE PARALLEL TO THE LANE.
2. LONGITUDINAL SPACING BETWEEN SUCCESSIVE WORDS AND/OR SYMBOLS IN TURN LANES SHOULD BE AT LEAST 4 TIMES AND NO GREATER THAN 10 TIMES THE HEIGHT OF THE LARGEST CHARACTER.
3. THE STOP LINE MAY NOT BE PRESENT.
4. STRAIGHT THROUGH ARROWS AS REQUIRED, SEE THE PAVEMENT MARKING PLANS FOR THE APPROPRIATE LAYOUT.
5. TO COMPLETE ARROW AND "ONLY" LAYOUT FOR LANE LENGTHS NOT SHOWN: (LENGTH OF LANE LINE – 40')/ NUMBER OF INCREMENTS.
6. WORDS, LANE LINES AND SYMBOLS SHALL BE THERMOPLASTIC (T).



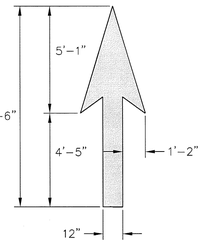
7 D-5 WORD AND SYMBOL LAYOUT
NOT TO SCALE UE

GENERAL NOTES:

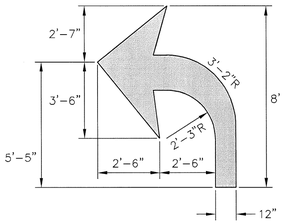
1. ALL WORDS AND SYMBOLS SHALL BE RETROREFLECTIVE WHITE AND SHALL CONFORM TO THE LATEST VERSION OF THE MUTCD.
2. MULTI-WORD MESSAGES SHALL READ "UP"; THAT IS, THE FIRST WORD SHALL BE NEAREST THE APPROACHING DRIVER.
3. THE WORD "ONLY" SHALL NOT BE USED WITH THROUGH OR COMBINATION ARROWS, AND SHALL NOT BE USED ADJACENT TO A BROKEN LANE LINE. A WORD/SYMBOL SHALL PRECEDED THE WORD "ONLY".
4. PREFORMED WORDS AND SYMBOLS SHALL BE PRE-CUT BY THE MANUFACTURER.
5. WRONG-WAY ARROWS SHALL NOT BE SUBSTITUTED FOR THROUGH ARROWS.
6. ALL STOP BARS, WORDS, SYMBOLS AND ARROWS SHALL BE THERMOPLASTIC.



ONLY
PAY QUANTITY = 22.3 FT²

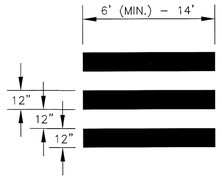


THROUGH (STRAIGHT ARROW)
PAY QUANTITY = 12.5 FT²



TURN ARROW
(RIGHT TURN OPPOSITE IN KIND)
PAY QUANTITY = 17.0 FT²

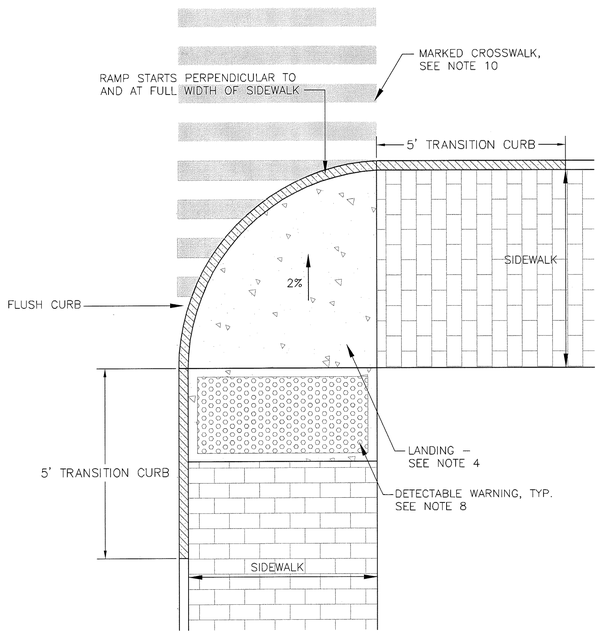
6 D-5 THERMOPLASTIC PAVEMENT MARKING – WORD AND SYMBOLS
NOT TO SCALE UE



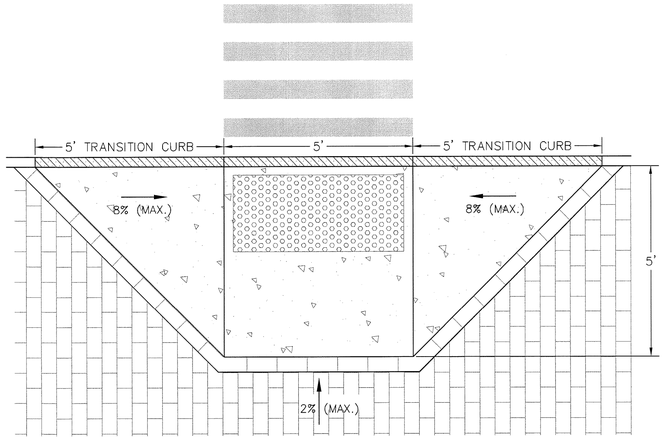
MARKED CROSSWALK NOTES:

1. CROSSWALKS SHALL BE THERMOPLASTIC AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH NHDOT SPECIFICATIONS, ITEM 632.3112.
2. CROSSWALKS SHALL EXTEND 2' FOOT PAST THE EDGE OF THE RAMP AS SHOWN UNLESS OTHERWISE DIRECTED.
3. WIDTH OF LINES SHALL BE 12" ± 1/4 INCH MAX.
4. SPACES BETWEEN LINES SHALL BE 12" ± 1/4 INCH MAX.

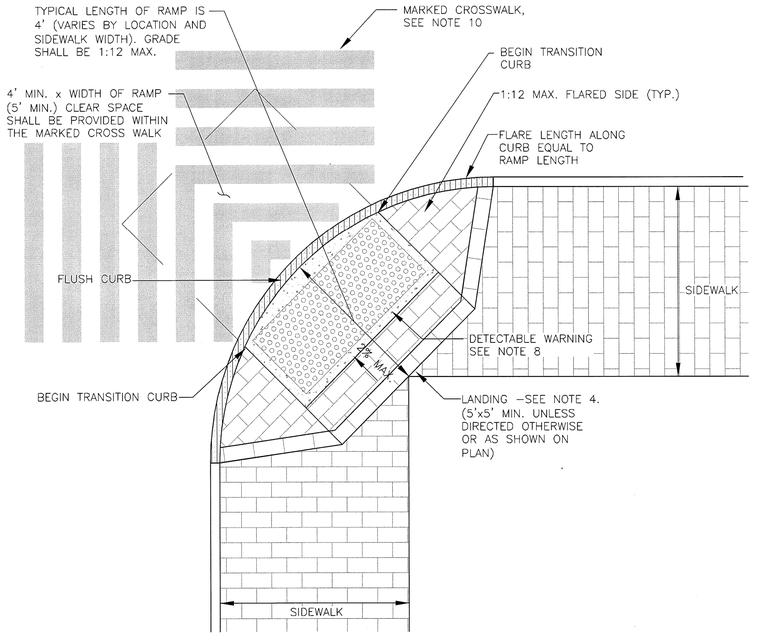
4 D-5 MARKED CROSSWALK
NOT TO SCALE



2 D-5 CORNER CURB RAMP–SINGLE CROSSWALK
NOT TO SCALE



3 D-5 MID BLOCK – SINGLE CROSSWALK
NOT TO SCALE



5 D-5 CORNER CURB RAMP – DIAGONAL
NOT TO SCALE

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CURB RAMP DETAILS
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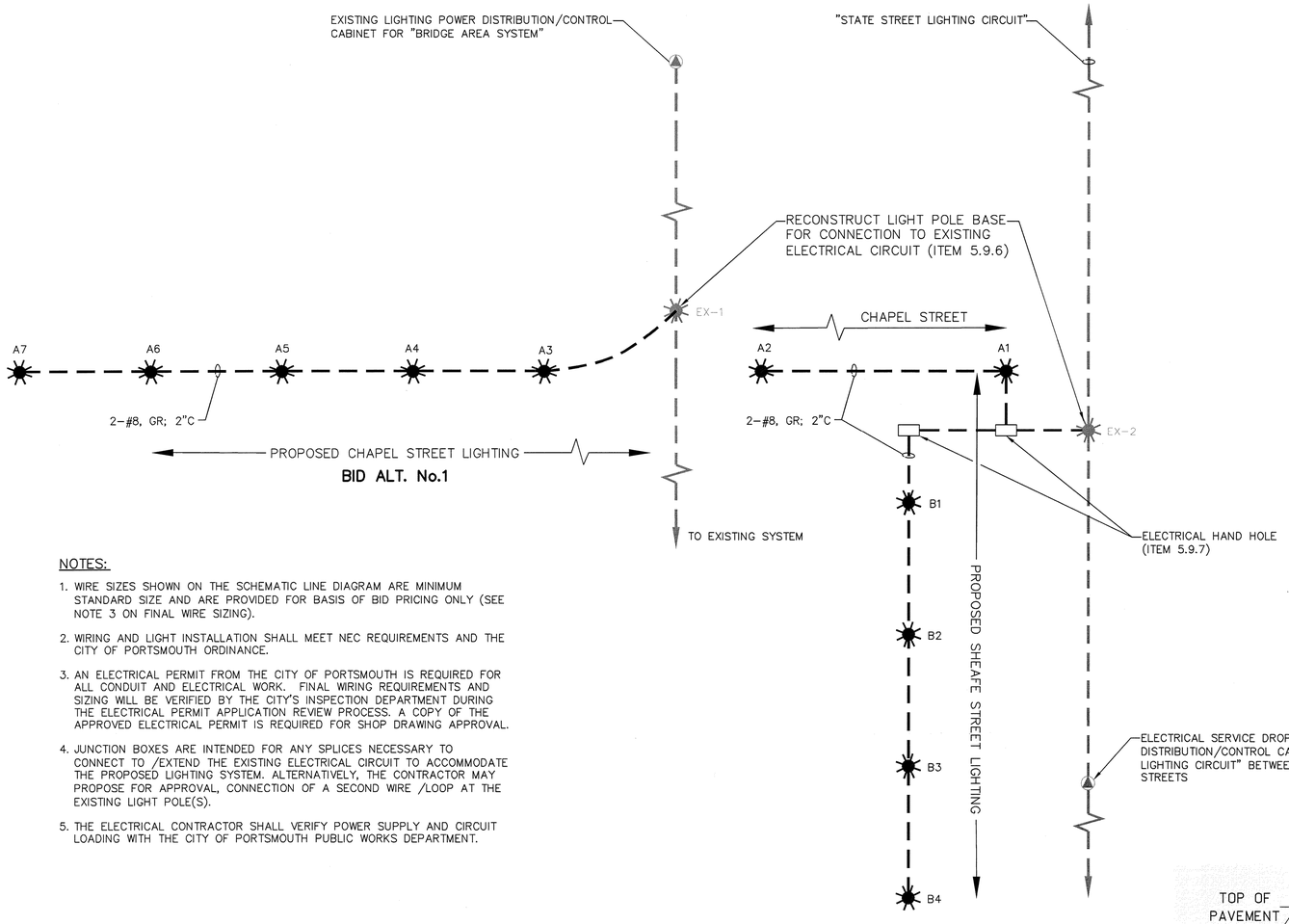
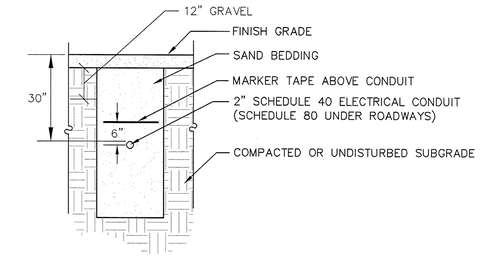
DWG NO D-5
SHEET 24 OF 25



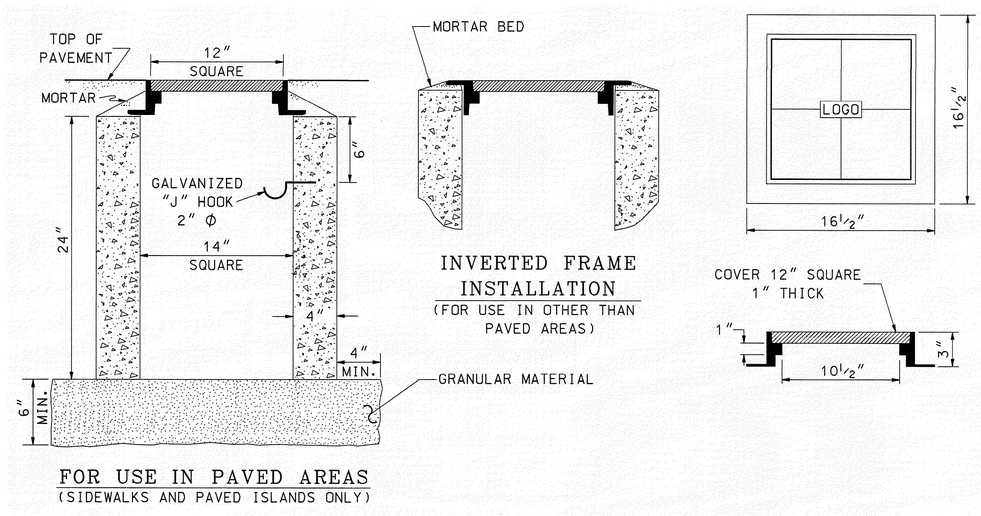
NOTES:

1. WIRE SIZES SHOWN ON THE SCHEMATIC LINE DIAGRAM ARE MINIMUM STANDARD SIZE AND ARE PROVIDED FOR BASIS OF BID PRICING ONLY (SEE NOTE 3 ON FINAL WIRE SIZING).
2. WIRING AND LIGHT INSTALLATION SHALL MEET NEC REQUIREMENTS AND THE CITY OF PORTSMOUTH ORDINANCE.
3. AN ELECTRICAL PERMIT FROM THE CITY OF PORTSMOUTH IS REQUIRED FOR ALL CONDUIT AND ELECTRICAL WORK. FINAL WIRING REQUIREMENTS AND SIZING WILL BE VERIFIED BY THE CITY'S INSPECTION DEPARTMENT DURING THE ELECTRICAL PERMIT APPLICATION REVIEW PROCESS. A COPY OF THE APPROVED ELECTRICAL PERMIT IS REQUIRED FOR SHOP DRAWING APPROVAL.
4. JUNCTION BOXES ARE INTENDED FOR ANY SPLICES NECESSARY TO CONNECT TO /EXTEND THE EXISTING ELECTRICAL CIRCUIT TO ACCOMMODATE THE PROPOSED LIGHTING SYSTEM. ALTERNATIVELY, THE CONTRACTOR MAY PROPOSE FOR APPROVAL, CONNECTION OF A SECOND WIRE /LOOP AT THE EXISTING LIGHT POLE(S).
5. THE ELECTRICAL CONTRACTOR SHALL VERIFY POWER SUPPLY AND CIRCUIT LOADING WITH THE CITY OF PORTSMOUTH PUBLIC WORKS DEPARTMENT.

1 / E-1 LIGHTING SYSTEM SCHEMATIC LINE DIAGRAM
NOT TO SCALE



2 / E-1 ELECTRICAL TRENCH
NOT TO SCALE



3 / E-1 CONCRETE PULL BOX, 14" X 14"
NOT TO SCALE

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ELECTRICAL DETAILS

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PORTSMOUTH, NEW HAMPSHIRE

DWG NO E-1
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