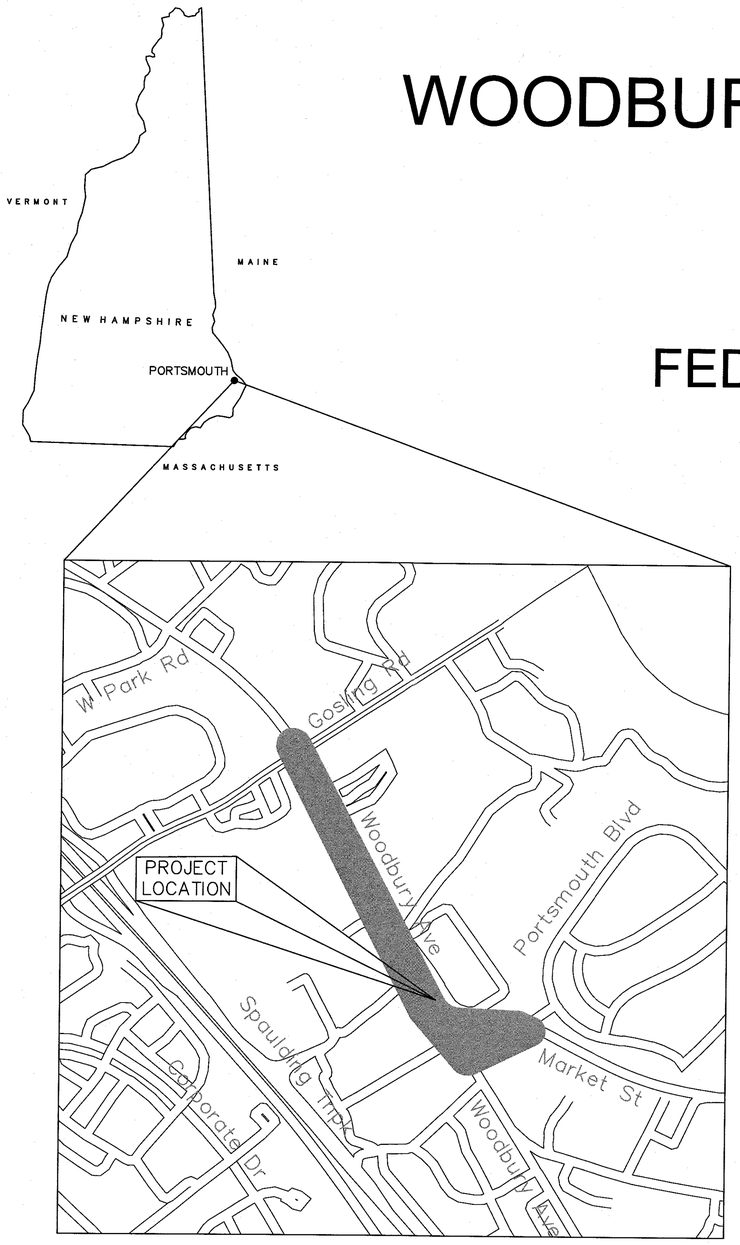
CITY OF PORTSMOUTH
NEW HAMPSHIRE

PS&E DESIGN DRAWINGS FOR

WOODBURY AVENUE SIGNAL INTERCONNECT PROJECT (LPA)

NHDOT PROJECT NO. 29781
FEDERAL AID PROJECT NO. X-A004(304)

APRIL 17, 2017

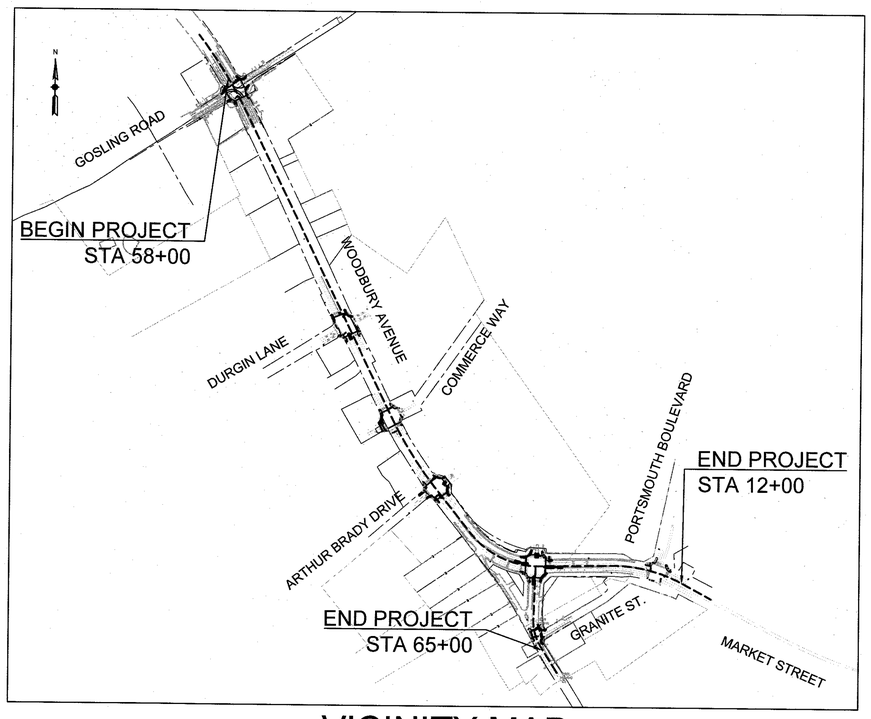


LOCATION PLAN

800 0 800 1600 2400

SCALE: 1" = 800'

INDEX



VICINITY MAP

450 0 450 900 1350

SCALE: 1" = 450'

TEC, Inc.

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(978) 794-1792

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Hampton, NH 03842
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www.TheEngineeringCorp.com

DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	AS SHOWN

PREPARED FOR

City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
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ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

DRAWING TITLE

Title Sheet & Index

PROJECT NO.
T0543

TEC CAD FILE
T0543_Title Sheets.dwg

DRAWING NO.
C1

STATE OF NEW HAMPSHIRE – KEVIN R. DANDRADE No. 10424 LICENSED PROFESSIONAL ENGINEER – 4/24/17

GENERAL NOTES

1. FOR STANDARD PLANS SEE STANDARD "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" DATED 2016 AND PUBLISHED BY NHDOT.
2. CONTRACTOR SHALL NOTIFY DIG-SAFE (1-888-344-7233) AND THE LOCAL MUNICIPAL WATER & SEWER DEPT. AT LEAST 72 HOURS BEFORE EXCAVATING.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS. CONTRACTOR SHALL LEAVE NO UNSECURED OPEN EXCAVATIONS.
4. HANDICAP ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT, AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
5. WORK WITHIN THE LOCAL RIGHT-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS AND THE LATEST EDITION OF THE "NHDOT - STANDARD PLANS FOR CONSTRUCTION (2010)".
6. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALK, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
7. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE CURRENT EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) (2009 OR LATER) AND THE "NHDOT - STANDARD PLANS FOR CONSTRUCTION (2010)".
8. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE CITY.
9. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
10. CONTRACTOR SHALL REASONABLY PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
11. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
12. ALL PRIVATELY OWNED UTILITY STRUCTURES (GAS GATES, ELECTRIC/TELEPHONE MANHOLES, ETC.) SHALL BE ADJUSTED TO FINISHED GRADE BY THE PRIVATE UTILITY COMPANY, UNLESS DIRECTED OTHERWISE. THE CONTRACTOR SHALL COORDINATE PAYMENT FROM PRIVATE UTILITY COMPANIES FOR ADJUSTMENT OF PRIVATE UTILITY STRUCTURES DONE BY THE CONTRACTOR.
13. CATCH BASIN FRAMES AND GRATES SHALL BE IN CONFORMANCE WITH CITY OF PORTSMOUTH AND NHDOT STANDARDS.
14. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
15. ALL DISTURBED AREAS OUTSIDE THE CURBLINE SHALL BE STABILIZED WITH 4" LOAM AND SEED, UNLESS OTHERWISE NOTED.
16. THE TERM "MEET EXIST" MEANS TO MEET BOTH THE EXISTING ALIGNMENT AND ELEVATION.
17. SILTATION CONTROL MEASURES SHALL BE INSTALLED AT ALL CATCH BASINS WITHIN THE PROJECT AREA TO PREVENT SILTATION OF THE CITY'S EXISTING AND PROPOSED STORM DRAINAGE SYSTEM.
18. CONTRACTOR SHALL BE AWARE OF OVERHEAD UTILITIES AND MAKE THE NECESSARY ARRANGEMENTS TO PERFORM ANY WORK NEAR THE OVERHEAD UTILITIES, INCLUDING INSULATION OF THE OVERHEAD WIRES, PRIOR TO THE START OF CONSTRUCTION.
19. EXISTING UTILITY POLES IN CLOSE PROXIMITY TO CONSTRUCTION MAY REQUIRE TEMPORARY SUPPORT BY THE UTILITY COMPANY. INCLUDE COST UNDER THE PRICES BID FOR VARIOUS ITEMS OF WORK.
20. TAKE ALL NECESSARY MEASURES AND PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE, AND STRENGTH, TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH DAY'S WORK.
21. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UNDERGROUND UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR ITS REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION THE CONTRACTOR SHALL CONTACT DIGSAFE TO VERIFY AND DETERMINE THE EXACT LOCATION, SIZES, AND ELEVATION OF EXISTING UTILITIES.
22. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT. FAILURE TO PROVIDE OR PERFORM THE ABOVE PRIOR TO PERFORMING ANY WORK SHALL NOT BE GROUNDS FOR EXTRA PAYMENTS TO THE CONTRACTOR.
23. AT ALL LOCATIONS WHERE EXISTING CURBING OR PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE. BLEND NEW PAVEMENT, CURBS, AND EARTHWORK SMOOTHLY INTO EXISTING BY MATCHING LINES, GRADES, AND JOINTS.

GENERAL NOTES

24. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES, AS REQUIRED.
25. ALL UTILITY COVERS, GRATES, ETC. SHALL BE ADJUSTED TO BE FLUSH WITH THE PAVEMENT FINISH GRADE UNLESS OTHERWISE NOTED.
26. INSTALL ALL UTILITIES (INCLUDING CONCRETE PADS) PER UTILITY COMPANY AND CITY OF PORTSMOUTH/NHDOT STANDARDS.
27. CONTRACTOR SHALL PROTECT ALL UNDERGROUND DRAINAGE, SEWER AND UTILITY FACILITIES FROM EXCESSIVE VEHICULAR LOADS DURING CONSTRUCTION. ANY DAMAGE TO THESE FACILITIES RESULTING FROM CONSTRUCTION LOADS WILL BE RESTORED TO ORIGINAL CONDITION (AT NO ADDITIONAL COST TO THE OWNER) BY THE CONTRACTOR.
28. STOCKPILED TOPSOIL SHALL BE PLACED NEATLY IN AN AREA APPROVED BY THE OWNER/REPRESENTATIVE.
29. THE CONTRACTOR SHALL SCHEDULE THEIR WORK TO ALLOW THE FINISHED SUBGRADE ELEVATIONS TO DRAIN PROPERLY WITHOUT PUDDLING. SPECIFICALLY, ALLOW WATER TO ESCAPE WHERE PROPOSED CURB MAY RETAIN RUNOFF PRIOR TO APPLICATION OF THE FINISH SUBGRADE AND/OR SURFACE PAVING.
30. THE FOLLOWING INTERSECTIONS WERE DESIGNED BASED ON A SURVEY PERFORMED BY EASTERLY SURVEY DATED FEBRUARY 2016: WOODBURY AVE/GOSLING ROAD, WOODBURY AVE/MARKET STREET, WOODBURY AVE/GRANITE STREET.
31. THE FOLLOWING INTERSECTIONS WERE DESIGNED BASED ON THE CITY OF PORTSMOUTH GIS; RIGHT OF WAY AND ROADWAY CURB LINES ARE APPROXIMATE ONLY:WOODBURY AVE/DURGIN LANE, WOODBURY AVE/COMMERCE WAY, WOODBURY AVE/ARTHUR BRADY DRIVE, MARKET STREET/PORTSMOUTH BLVD.
32. PROPOSED PAVEMENT MARKINGS AND ASSOCIATED MARKING ERADICATION MAY BE REMOVED FROM THE CONTRACT DEPENDENT ON THE TIMING OF THE CITY OF PORTSMOUTH WOODBURY AVENUE OVERLAY PROJECT CONCURRENT WITH THE WOODBURY AVENUE SIGNAL INTERCONNECT PROJECT. THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS AT THE TIME OF PAVEMENT MARKING APPLICATION.
33. ALL ITEMS LISTED AS "R&S" SHALL BE REMOVED AND STACKED AT THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS YARD LOCATED AT 680 PEVERLY HILL ROAD UNLESS OTHERWISE NOTED.
34. CONTRACTOR SHALL SUPPLY THE CITY OF PORTSMOUTH WITH A LAPTOP TO PROVIDE REMOTE COMMUNICATION WITH THE TRAFFIC SIGNAL SYSTEM.
35. ALL STRAIGHT AND CURVED GRANITE CURB AS PART OF ACCESSIBLE RAMP TRANSITIONS SHALL BE NEW CURB.
36. CONTRACTOR MAY USE "RESET AND CUT GRANITE CURB" FOR CURVED GRANITE CURB SECTIONS IF IN ABOVE AVERAGE CONDITION AND AT DISCRETION OF THE ENGINEER, AS NOTED IN "STRAIGHT OR CURVED GRANITE CURB STANDARD DETAIL" ON SHEET D1. ESTIMATE HAS ASSUMED ALL CURVED GRANITE CURB AS NEW.

TRAFFIC SIGNAL SYMBOLS

EXISTING	PROPOSED	
		CONTROLLER CABINET, FOUNDATION
		CONTROLLER CABINET, FOUNDATION, CONC. PAD
		MAST ARM (IN LENGTH NOTED)
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		PEDESTRIAN SIGNAL HEAD
		MAST ARM OR TS POLE MOUNTED SIGN
		EMERGENCY PRE-EMPTION RECEIVER
		EMERGENCY PRE-EMPTION CONFIRMATION STROBE
		PEDESTRIAN PUSH BUTTON
		INTERCONNECT ANTENNA
		TRAFFIC SIGN (1 POST)
		TRAFFIC SIGN (2 POST)
		PULL BOX 12"x14" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	
CW	CW	CROSSWALK, 12" WHITE LINE (WIDTH NOTED)
SL	SL	STOP LINE, 12" WHITE LINE 4' BEHIND CW (TYP.)
SSLW	SSLW	SINGLE SOLID WHITE LINE
SSLY	SSLY	SINGLE SOLID YELLOW LINE
DSLY	DSLY	DOUBLE SOLID YELLOW CENTER LINE

GENERAL SYMBOLS

EXISTING	PROPOSED	
		CATCH BASIN
		DRAIN MANHOLE
S		SEWER MANHOLE
E		ELECTRIC MANHOLE
T		TELEPHONE MANHOLE
		MANHOLE
HH	HH	HANDHOLE
B		BOLLARD
WG		WATER GATE
		FIRE HYDRANT
GG		GAS GATE
		STREET SIGN
		LIGHT POLE
		WALL MOUNTED LIGHT
		UTILITY POLE
		GUY POLE
		GUY WIRE
MW	MW	MONITORING WELL
TP-3		TEST PIT (W/ I.D.)
	EOP	EDGE OF PAVEMENT
MCC	MCC	MONOLITHIC CONCRETE CURB
GC	VGC	GRANITE CURB (TYPE VB)
GE	GE	GRANITE EDGING
BB	BB	BITUMINOUS BERM
		GUARD RAIL
		CHAINLINK FENCE
		DRAINAGE LINE
	S	SEWER LINE
	W	WATER LINE
G	G	GAS LINE
	E	UNDERGROUND ELECTRIC LINE
	T	UNDERGROUND TELEPHONE LINE
		ELEC., TELE., CATV, CONDUIT
OHW	OHW	OVERHEAD WIRE
		STONE WALL
		TREE LINE
PC 10 N00° 00' 00"E +57.59	PC 10 +57.59	BASELINE
N00° 00' 00"E		TOWN LAYOUT
N00° 00' 00"E		PROPERTY LINE
STONE BOUND	BND	HIGHWAY/PROPERTY BOUND (TYPE NOTED)
		WHEELCHAIR RAMP
		TREE (SIZE AND TYPE NOTED)

RAMP ID

CURVE ID

ABBREVIATIONS

GENERAL

ABAN	ABANDON
AC	ACRES
ADJ	ADJUST
APPROX	APPROXIMATE
BIT.	BITUMINOUS
BLDG	BUILDING
BO	BY OTHERS
BOC	BOTTOM OF CURB
BOS	BOTTOM OF SLOPE
CC	CONCRETE CURB
CEM	CEMENT
CLF	CHAIN LINK FENCE
CONC	CONCRETE
DIA	DIAMETER
ELEV	ELEVATION
EXIST	EXISTING
FDN	FOUNDATION
GC	GRANITE CURB
GE	GRANITE EDGING
HBP	HOT BITUMINOUS PAVEMENT
HMA	HOT MIX ASPHALT
LA	LANDSCAPE AREA
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
NTS	NOT TO SCALE
PB	PULL BOX
PCC	PRECAST CONRETE CURB
PROP	PROPOSED
PVMT	PAVEMENT
R	RADIUS
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
STC	STORMCEPTOR INLET
SW	SIDEWALK
TOC	TOP OF CURB
TOS	TOP OF SLOPE
TS	TRAFFIC SIGNAL
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VGC	VERTICAL GRANITE CURB
WCR	WHEELCHAIR RAMP

UTILITIES

ACCMP	ASPHALT COATED CORRUGATED METAL PIPE
BC	BOTTOM OF CHANNEL
CB	CATCH BASIN
CAP	CORRUGATED ALUMINUM PIPE
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
CLDI	CEMENT LINED DUCTILE IRON
COND	CONDUIT
DCB	DOUBLE CATCH BASIN
DIP	DUCTILE IRON PIPE
DMH	DRAINAGE MANHOLE
ETC	ELECTRIC, TELEPHONE, & CABLE
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GV	GAS VALVE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HYD	HYDRANT
INV	INVERT ELEVATION
PVC	POLYVINYL CHLORIDE PIPE
PWW	PAVED WATER WAY
RCP	REINFORCED CONCRETE PIPE (CLASS III)
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE AND VALVE
UP	UTILITY POLE
VCP	VITRIFIED CLAY PIPE
WV	WATER VALVE

ALIGNMENT/GRADING

CC	CENTER OF CURVE
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PI	POINT OF INTERSECTION
PNT	POINT
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENT

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3	CONSTRUCTION	APRIL 17, 2017

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Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

DRAWING TITLE

Legend

PROJECT NO.
T0543

TEC CAD FILE
T0543_Title Sheets.dwg

DRAWING NO.
I1

JTC John Turner Consulting — LOG OF BORING No. B-1

PROJECT: ______ PROJECT NO.: ______
CLIENT: ______
PROJECT LOCATION: ______
LOCATION: See Boring Location Plan ELEVATION: ______
DRILLER: Soil Exploration Corporation LOGGED BY: A. Litchfield
DRILLING METHOD: 4.25" ID Hollow Stem Augers DATE: 9-9-16
DEPTH TO - WATER> INITIAL: ______ AFTER 24 HOURS: ______

Depth (feet)	Description	Graphic	Elevation (feet)	Sample No.	Blow Counts	% < #200
0 – 0.4	5" asphalt thickness					
0.4 – 3.5	Brown, silty fine to coarse sand with gravel (SM), very dense, moist; GRAVEL ROAD BASE - oxidation throughout - weathered rock fragments throughout Spoon Refusal @ 2.75 ft. bgs - top of weathered bedrock			1	17 27 27 30	
				2	50/3" - - -	
3.5 – 8.5	Auger Refusal @ 3.5 ft. bgs - begin 5-foot interval of rock coring with diamond bit - Dark gray, bedrock, fine to medium grained, severly fractured/poor quality, slight weathering; BEDROCK - RQD= 33.3%, 0% for top 3 ft. of core					
8.5	Boring terminated at 8.5 ft.					

TEST RESULTS: Plastic Limit ├─┤ Liquid Limit; Water Content - ●; Penetration - (hatched bar); scale 10 20 30 40 50

Depth scale: 0, 3, 6, 9, 12, 15, 18, 21

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Boring backfilled with soil cuttings and finished with asphalt cold patch upon completion.

Figure PAGE 1 of 1

JTC John Turner Consulting — LOG OF BORING No. B-2

PROJECT: ______ PROJECT NO.: ______
CLIENT: ______
PROJECT LOCATION: ______
LOCATION: See Boring Location Plan ELEVATION: ______
DRILLER: Soil Exploration Corporation LOGGED BY: A. Litchfield
DRILLING METHOD: 4.25" ID Hollow Stem Augers DATE: 9-9-16
DEPTH TO - WATER> INITIAL: ______ AFTER 24 HOURS: ______

Depth (feet)	Description	Graphic	Elevation (feet)	Sample No.	Blow Counts	% < #200
0 – 0.5	Light brown, silty fine to medium sand (SM), medium dense, dry; TOPSOIL - frequent rootlets			1	5 8 12 17	
0.5 – 3.5	Light brown, silty fine to coarse sand with gravel (SM), medium dense, dry; EXISTING FILL - asphalt fragment in sample			2	5 25 100/4 -	
3.5 – 12	Dark gray rock fragments; WEATHERED/FRIABLE BEDROCK					
12	Boring terminated at 12 ft. Auger Refusal @ 12 ft. bgs on top of bedrock					

TEST RESULTS: Plastic Limit ├─┤ Liquid Limit; Water Content - ●; Penetration - (hatched bar); scale 10 20 30 40 50; 125 →

Depth scale: 0, 3, 6, 9, 12, 15, 18, 21

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Boring backfilled with soil cuttings upon completion.

Figure PAGE 1 of 1

JTC John Turner Consulting — LOG OF BORING No. B-3

PROJECT: ______ PROJECT NO.: ______
CLIENT: ______
PROJECT LOCATION: ______
LOCATION: See Boring Location Plan ELEVATION: ______
DRILLER: Soil Exploration Corporation LOGGED BY: A. Litchfield
DRILLING METHOD: 4.25" ID Hollow Stem Augers DATE: 9-9-16
DEPTH TO - WATER> INITIAL: ______ AFTER 24 HOURS: ______

Depth (feet)	Description	Graphic	Elevation (feet)	Sample No.	Blow Counts	% < #200
0 – 1	Light brown, silty fine to medium sand (SM), medium dense, dry; TOPSOIL - frequent rootlets			1	4 11 15 12	
1 – 8	Brown, silty fine to medium sand (SMO), little to some gravel, medium dense, moist; EXISTING FILL - trace rootlets and organics - oxidization/mottling throughout			2	32 50/5" - -	
				3	6 8 12 15	
8 – 18	Olive brown, silty sand (SM), few gravel, dense, moist; GLACIAL TILL			4	7 11 21 26	
	- fragments of gray weathered rock			5	14 21 30 31	
	Spoon Refusal @ 17.33 ft. bgs - 3" Glacial Till then gray rock fragments in sample			6		
18	Boring terminated at 18 ft. Auger Refusal @ 18 ft. bgs on probable top of bedrock					

TEST RESULTS: Plastic Limit ├─┤ Liquid Limit; Water Content - ●; Penetration - (hatched bar); scale 10 20 30 40 50

Depth scale: 0, 3, 6, 9, 12, 15, 18, 21

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Boring backfilled with soil cuttings upon completion.

Figure PAGE 1 of 1

NOTE: BORING LOCATIONS SHOWN ON KEY PLAN ON SHEET I3.

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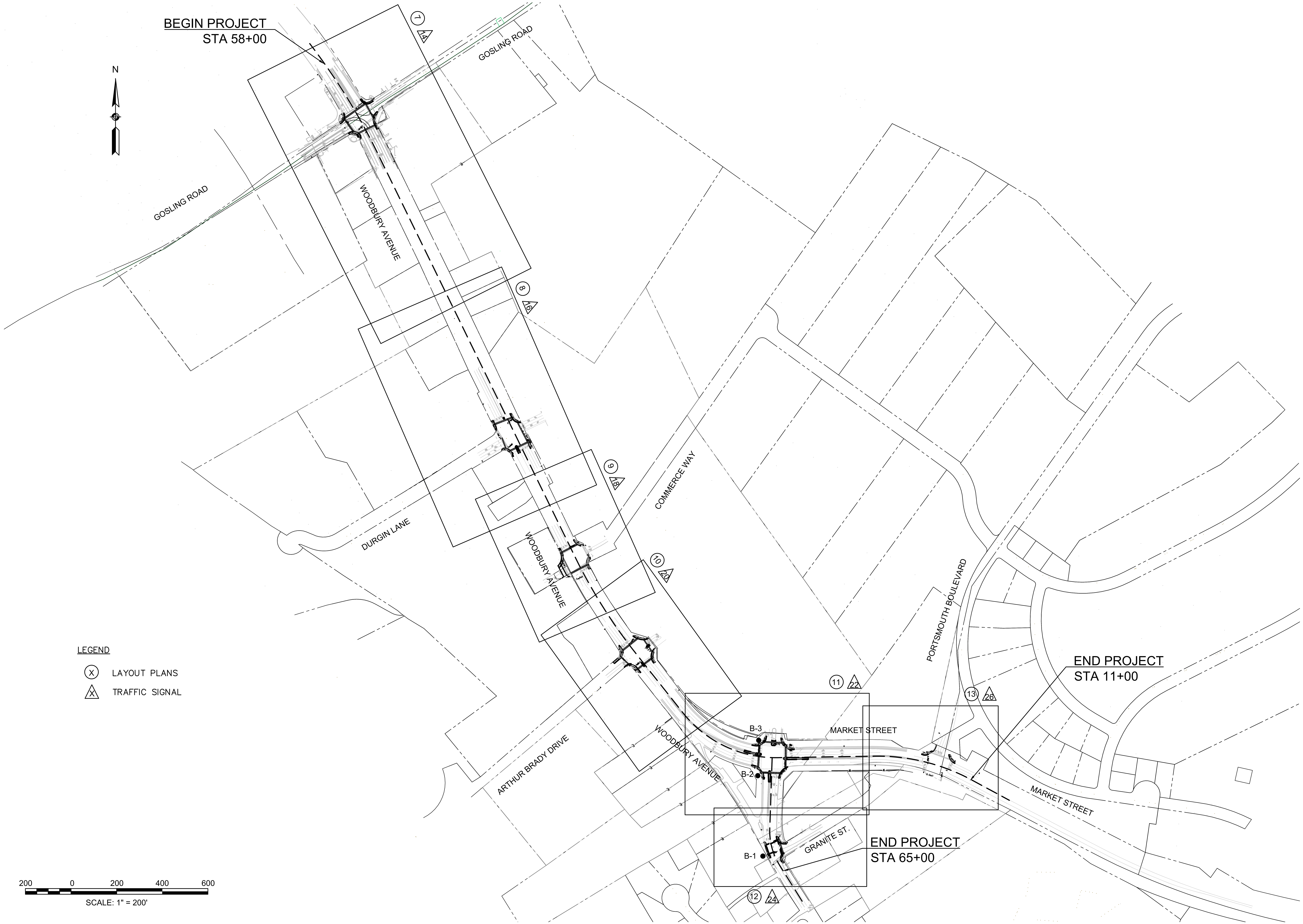
DRAWING TITLE

Soil Test Borings

PROJECT NO. T0543

TEC CAD FILE T0543_Title Sheets.dwg

DRAWING NO. I2



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Project #29781

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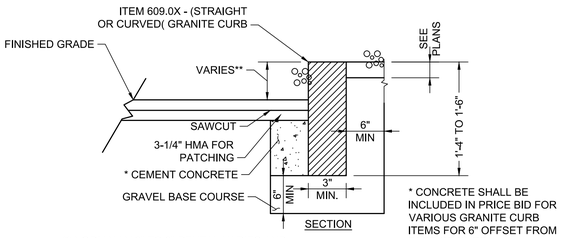
DRAWING TITLE

Key Plan

PROJECT NO.
T0543

TEC CAD FILE
T0543_Title Sheets.dwg

DRAWING NO.
I3



** NORMALLY 3" TO 6" REVEAL VARIES AND 0" AT PEDESTRIAN SIDEWALK RAMPS.

* CONCRETE SHALL BE INCLUDED IN PRICE BID FOR VARIOUS GRANITE CURB ITEMS FOR 6" OFFSET FROM FACE OF CURB.

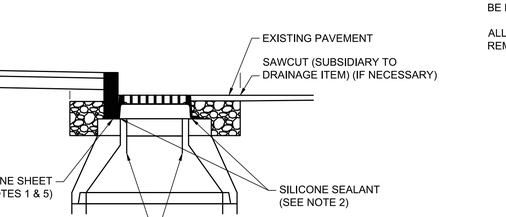
MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID OF CURVES - SEE CHART

RADIUS	MAX. LENGTH
<21'	USE CURVED CURB
21'	3'
22' - 28'	4'
29' - 35'	5'
36' - 42'	6'
43' - 49'	7'
50' - 56'	8'
57' - 60'	9'
OVER 60'	10'

NOTE: ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.

STRAIGHT OR CURVED GRANITE CURB

N.T.S.



MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID OF CURVES - SEE CHART

RADIUS FOR STONES WITH SQUARE JOINTS	MAX. LENGTH
<2'	USE CURVED CURB
2' - 15'	USE RADIAL JOINTS
16' - 28'	1' - 6"
29' - 41'	2'
42' - 55'	3'
56' - 68'	4'
69' - 82'	5'
83' - 96'	6'
97' - 110'	7'
OVER 110'	8'

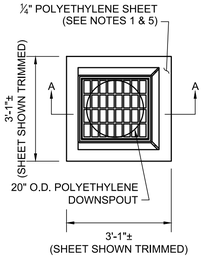
NOTE: ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.

GRANITE SLOPE CURB

N.T.S.

GENERAL NOTES:

1. POLYETHYLENE LINER (ITEM 604.0007) SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.
2. PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT (INCLUDED IN ITEM 604.0007) BETWEEN FRAME AND POLYETHYLENE SHEET (SEE SECTION A-A, PLATE 4).
3. USE ON DRAINAGE STRUCTURES 4' MIN. DIAMETER ONLY.
4. TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH 3-FLANGE FRAME AND CURB).
5. THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 6" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.
6. PLACED ONLY IN DRAINAGE STRUCTURES IN PAVEMENT.

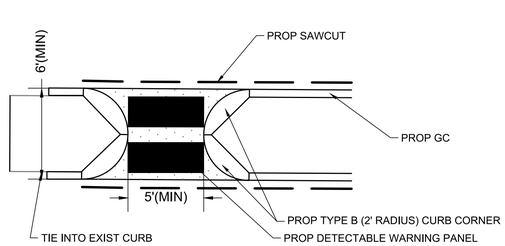


POLYETHYLENE LINER

N.T.S.

POLYETHYLENE LINER

N.T.S.



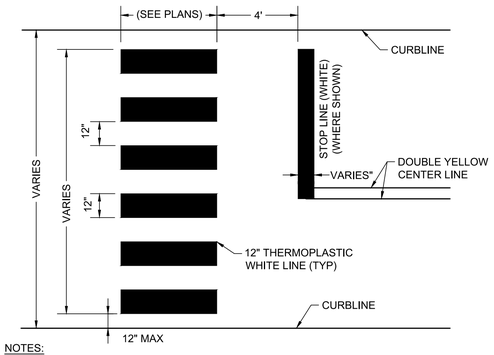
PED ISLAND CURB CORNER CROSSING

N.T.S.

GENERAL NOTES:

ALL EXISTING GRAVEL UNDERNEATH SIDEWALK AND CURBING TO BE REMOVED SHALL BE RE-USED WHEREVER POSSIBLE.

ALL EXISTING CURBING (STRAIGHT OR CURVED, VERTICAL OR SLOPE) SHALL BE REMOVED AND RESET WHEREVER POSSIBLE.

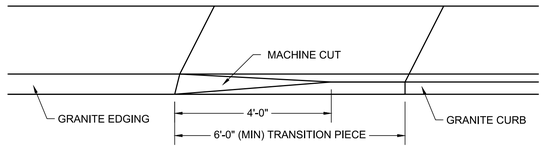


NOTES:

1. ALL LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES, TWO - 12" LINES, ETC.) WILL BE ACCEPTED.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY THE ENGINEER PRIOR TO APPLICATION.
3. CROSSWALK BARS SHALL BE PLACED OUTSIDE THE VEHICULAR WHEEL PATH WHEREVER POSSIBLE.

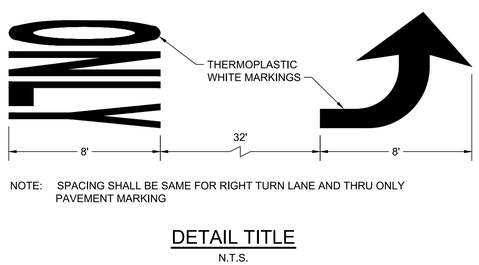
CROSSWALK PAVEMENT MARKING

N.T.S.



GRANITE CURB SPLAYED END

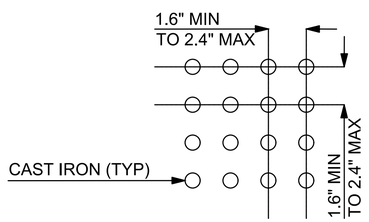
N.T.S.



NOTE: SPACING SHALL BE SAME FOR RIGHT TURN LANE AND THRU ONLY PAVEMENT MARKING

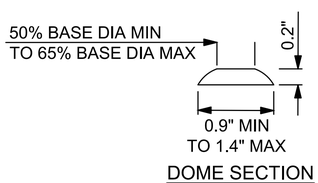
DETAIL TITLE

N.T.S.



DOME SPACING

N.T.S.



DOME SECTION

N.T.S.

GENERAL NOTES:

1. THE MAXIMUM RUNNING SLOPE OF ANY SIDEWALK CURB RAMP IS 12:1. THE MAXIMUM CROSS SLOPE IS 2%. THE SLOPE OF THE LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.

   RAMP RUNNING SLOPE EXCEPTION: A GREATER THAN 8.33% RAMP RUNNING GRADE IS ALLOWED WHERE THE ROADWAY AND THE SIDEWALK(S) ARE PARALLEL AND VERY CLOSE TOGETHER, WITH THE SAME GRADE, AND USING A GRADE OF 8.33% WOULD RESULT IN A RAMP LENGTH LONGER THAN 15'. IN THOSE CIRCUMSTANCES, USE A MAXIMUM RAMP LENGTH OF 15' AND THE ALLOWABLE RUNNING SLOPE OF THE RAMP(S) IS GREATER THAN 8.33%.
2. TRANSITIONS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. ROADWAY SHOULDER SLOPES ADJOINING SIDEWALK CURB RAMPS SHALL BE A MAXIMUM OF 5% (FULL WIDTH) FOR A DISTANCE OF 2' FROM THE ROADWAY CURBLINE.
3. INTERCEPT DRAINAGE ALONG THE CURB IN ADVANCE OF SIDEWALK CURB RAMPS OR LANDINGS. CATCH BASINS, MANHOLES, ETC. SHALL NOT BE LOCATED IN, OR AT THE BASE OF, SIDEWALK CURB RAMPS OR LANDINGS.
4. THE BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING, EXCLUSIVE OF THE FLARED SIDES, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.
5. THE SURFACE OF A PERPENDICULAR SIDEWALK CURB RAMP OR THE LANDING OF A PARALLEL SIDEWALK CURB RAMP SHALL CONTRAST VISUALLY WITH THE ADJOINING SIDEWALK SURFACE, EITHER ASPHALT/LIGHT-COLORED CONCRETE OR LIGHT-COLORED CONCRETE/DARK-STAINED CONCRETE. THE CONCRETE SURFACE SHALL BE SLIP RESISTANT.
6. DETECTABLE WARNING PANELS, MADE OF CAST IRON, SHALL BE THE FULL WIDTH OF THE LANDING, BLENDED TRANSITION, OR CURB RAMP THEY ARE A PART OF AND SHALL BE A MINIMUM OF 2' IN DEPTH. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP, BLENDED TRANSITION, OR LANDING AND THE STREET.
7. ALL TEMPORARY TRAFFIC CONTROL SHALL CONFORM TO NHDOT MAINTENANCE OF TRAFFIC STANDARDS AS OUTLINED IN SECTION 692 - MOBILIZATION OF THE 2010 NHDOT STANDARD SPECIFICATIONS.

TRANSITION RAMPS:

BLENDED TRANSITIONS HAVE A RUNNING SLOPE GREATER THAN 2% BUT LESS THAN 5%. CURB RAMPS HAVE A RUNNING SLOPE OF 5% MINIMUM TO 8.33% MAXIMUM. SIDEWALK, BLENDED TRANSITIONS, AND CURB RAMPS HAVE A MAXIMUM CROSS SLOPE OF 2%.

ALL GRADE BREAKS BETWEEN LANDINGS, RAMPS, AND BLENDED TRANSITIONS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.

PROVIDE DETECTABLE WARNING SURFACES ANYTIME THAT A CURB RAMP, BLENDED TRANSITION, OR LANDING CONNECTS TO A STREET. PLACEMENT FOR DETECTABLE WARNING SURFACES ARE AS FOLLOWS:

PERPENDICULAR CURB RAMPS:

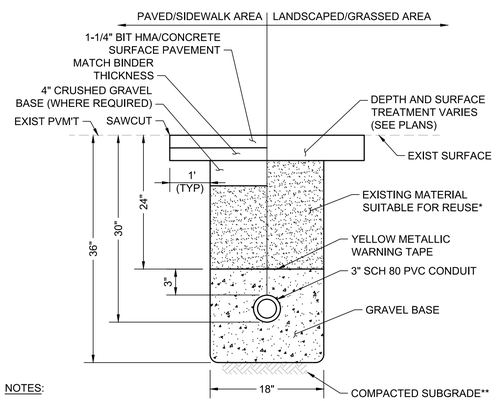
WHERE BOTH ENDS OF THE BOTTOM GRADE ARE LESS THAN 5'-0" FROM THE BACK OF THE CURB, LOCATE THE DETECTABLE WARNING PANELS ON THE RAMP SURFACE AT THE BOTTOM OF THE RAMP. WHERE EITHER END OF THE BOTTOM GRADE IS GREATER THAN 5'-0" FROM THE BACK OF THE CURB, LOCATE THE DETECTABLE WARNINGS AT THE BOTTOM OF THE LANDING.

PARALLEL CURB RAMPS:

LOCATE THE DETECTABLE WARNING SURFACES AT THE BACK OF THE CURB ALONG THE EDGE OF THE LANDING.

FOR BLENDED TRANSITIONS AND LANDINGS:

LOCATE THE DETECTABLE WARNING SURFACES AT THE BACK OF THE CURB.



NOTES:

* EXISTING MATERIAL OBTAINED FROM EXCAVATION THAT IS DETERMINED TO BE SUITABLE, AND APPROVED BY THE ENGINEER SHALL BE USED. BACKFILL SHALL BE PLACED IN LAYERS NO MORE THAN 6" IN DEPTH AND THOROUGHLY COMPACTED. BACKFILLING TO A POINT 2' OVER THE PIPE SHALL CONTAIN NO STONES LARGER THAN 3".

** SOFT OR UNSUITABLE MATERIAL EXISTING BELOW THE REQUIRED BEDDING GRADE SHALL BE REMOVED AS DIRECTED AND REPLACED WITH SAND, GRAVEL, CRUSHED STONE OR OTHER SUITABLE MATERIAL AND THOROUGHLY COMPACTED.

CONDUIT TRENCH

N.T.S.

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www.TheEngineeringCorp.com

DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 20'

PREPARED FOR

City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
2	FINAL DESIGN	MARCH 3, 2017
3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

DRAWING TITLE

Construction Details

PROJECT NO.
T0543

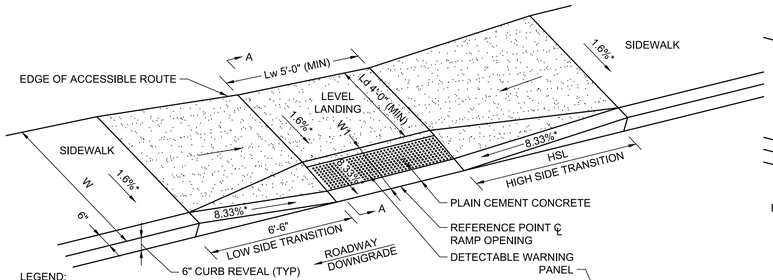
TEC CAD FILE
T0543_Construction Details.dwg

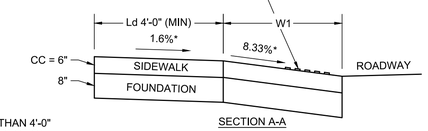
DRAWING NO.
D1

SHEET 5 OF 28

WHEELCHAIR RAMP TYPE A

N.T.S.





LEGEND:

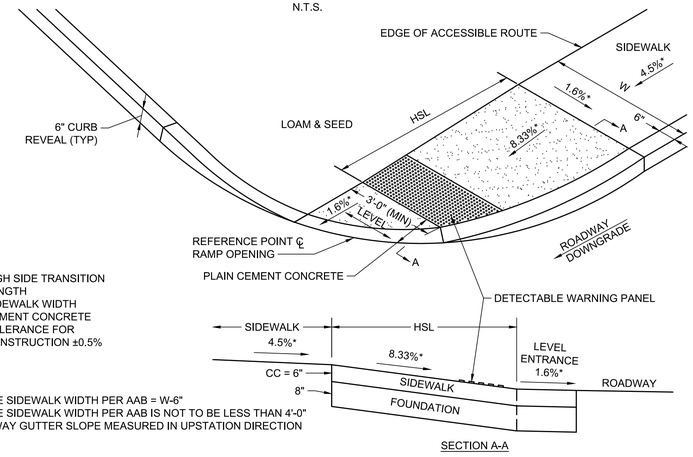
HSL = HIGH SIDE TRANSITION LENGTH
W = SIDEWALK WIDTH
W1 = PERPENDICULAR RAMP LENGTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:

1. USABLE SIDEWALK WIDTH PER AAB = W-6"
2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
3. ROADWAY GUTTER SLOPE MEASURED IN UPSTATION DIRECTION

WHEELCHAIR RAMP TYPE C

N.T.S.



LEGEND:

HSL = HIGH SIDE TRANSITION LENGTH
W = SIDEWALK WIDTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:

1. USABLE SIDEWALK WIDTH PER AAB = W-6"
2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
3. ROADWAY GUTTER SLOPE MEASURED IN UPSTATION DIRECTION

WHEELCHAIR RAMP TYPE D

N.T.S.

LEGEND:

HSL = HIGH SIDE TRANSITION LENGTH
W = SIDEWALK WIDTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:

1. USABLE SIDEWALK WIDTH PER AAB = W-6"
2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
3. ROADWAY GUTTER SLOPE MEASURED IN UPSTATION DIRECTION

WHEELCHAIR RAMP TYPE B

N.T.S.

WOODBURY AVE / GRANITE ST									
RAMP #	STATION	OFFSET	ROADWAY GUTTER SLOPE*	LEFT SIDE			RIGHT SIDE		
				TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH
36	64+52	22 LT	-0.90%	3'-5"	3"	5'-0"	6'-0"	6"	5'-0"
37	64+40	39 LT	-0.80%	-	-	-	3'-0"	3"	5'-0"
38	63+81	40 LT	+2.90%	6'-0"	6"	5'-0"	9'-5"	6"	5'-0"
39	63+69	27 RT	+2.10%	-	-	-	9'-5"	6"	5'-0"
* NOTE: ROADWAY GUTTER SLOPE MEASURED LOOKING TOWARD UPSTREAM STATION.									

MARKET ST / PORTSMOUTH BLVD									
RAMP #	STATION	OFFSET	ROADWAY GUTTER SLOPE*	LEFT SIDE			RIGHT SIDE		
				TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH
41	13+92	46 RT	+1.10%	7'-11"	6"	6'-0"	-	-	-
42	13+03	42 RT	+0.20%	6'-10"	6"	6'-0"	6'-0"	6"	6'-0"
* NOTE: ROADWAY GUTTER SLOPE MEASURED LOOKING TOWARD UPSTREAM STATION.									

WOODBURY AVE / MARKET BASKET DRIVEWAY / MARKET ST									
RAMP #	STATION	OFFSET	ROADWAY GUTTER SLOPE*	LEFT SIDE			RIGHT SIDE		
				TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH
28	20+44	68 LT	+2.00%	6'-0"	6"	6'-0"	7'-11"	6"	6'-0"
29	20+22	46 LT	+0.40%	6'-10"	6"	6'-0"	-	-	-
30	20+19	46 RT	-4.60%	3'-0"	3"	6'-0"	15'-0"	6"	6'-0"
31	20+34	65 RT	-6.60%	6'-0"	6"	6'-0"	7'-6"	3"	6'-0"
32	21+21	67 RT	+3.10%	6'-0"	6"	6'-0"	5'-10"	3"	6'-0"
33	21+43	49 RT	+1.60%	7'-11"	6"	6'-0"	3'-0"	3"	6'-0"
34	21+35	49 LT	-2.10%	9'-5"	6"	6'-0"	6'-0"	6"	6'-0"
35	21+16	68 LT	-3.30%	11'-8"	6"	6'-0"	6'-0"	6"	6'-0"
* NOTE: ROADWAY GUTTER SLOPE MEASURED LOOKING TOWARD UPSTREAM STATION.									

WOODBURY AVE / GOSLING AVE									
RAMP #	STATION	OFFSET	ROADWAY GUTTER SLOPE*	LEFT SIDE			RIGHT SIDE		
				TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH
1	54+68	50 LT	-1.30%	6'-0"	6"	6'-0"	4'-0"	3"	6'-0"
2	54+52	35 LT	-1.40%	3'-0"	3"	6'-0"	4'-0"	3"	6'-0"
3	54+29	38 LT	-1.50%	6'-0"	3"	5'-6"	-	-	-
4	54+48	47 RT	-1.50%	4'-0"	3"	6'-0"	6'-10"	6"	6'-0"
5	54+80	56 RT	-0.40%	6'-0"	6"	6'-0"	4'-6"	3"	6'-0"
6	55+49	56 RT	-0.90%	6'-0"	6"	6'-0"	6'-10"	6"	6'-0"
7	55+39	58 LT	-0.90%	6'-10"	6"	6'-0"	6'-0"	6"	6'-0"
* NOTE: ROADWAY GUTTER SLOPE MEASURED LOOKING TOWARD UPSTREAM STATION.									

WOODBURY AVE / BJ'S DRIVEWAY									
RAMP #	STATION	OFFSET	ROADWAY GUTTER SLOPE*	LEFT SIDE			RIGHT SIDE		
				TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH
8	39+24	64 LT	-2.90%	6'-0"	6"	5'-0"	4'-9"	3"	5'-0"
9	39+07	52 LT	-3.80%	11'-8"	6"	5'-0"	3'-0"	3"	5'-0"
10	39+07	39 RT	-8.50%	-	-	-	15'-0"	6"	6'-0"
11	40+07	33 RT	+2.10%	4'-0"	3"	6'-0"	-	-	-
12	40+35	21 RT	-4.30%	6'-0"	6"	6'-0"	7'-6"	3"	6'-0"
13	40+42	61 LT	-3.70%	5'-10"	3"	6'-0"	6'-0"	6"	6'-0"
14	40+19	66 LT	-6.70%	-	-	-	3'-0"	3"	6'-0"
* NOTE: ROADWAY GUTTER SLOPE MEASURED LOOKING TOWARD UPSTREAM STATION.									

WOODBURY AVE / COMMERCE WAY									
RAMP #	STATION	OFFSET	ROADWAY GUTTER SLOPE*	LEFT SIDE			RIGHT SIDE		
				TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH
15	33+09	67 LT	+2.60%	6'-0"	6"	5'-0"	9'-5"	6"	5'-0"
16	33+09	30 RT	+4.20%	7'-6"	3"	6'-0"	6'-0"	6"	6'-0"
17	34+10	35 RT	+6.60%	15'-0"	6"	5'-0"	6'-0"	6"	5'-0"
18	34+08	44 LT	+0.60%	6'-0"	6"	6'-0"	6'-10"	6"	6'-0"
19	33+65	63 LT	+1.00%	-	-	-	6'-10"	6"	6'-0"
* NOTE: ROADWAY GUTTER SLOPE MEASURED LOOKING TOWARD UPSTREAM STATION.									

WOODBURY AVE / COMMERCE WAY									
RAMP #	STATION	OFFSET	ROADWAY GUTTER SLOPE*	LEFT SIDE			RIGHT SIDE		
				TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH
20	28+44	53 LT	+2.30%	6'-0"	6"	6'-0"	-	-	-
21	28+05	36 LT	+1.00%	6'-0"	6"	6'-0"	6'-10"	6"	6'-0"
22	28+04	41 RT	+1.60%	4'-0"	3"	6'-0"	6'-0"	6"	6'-0"
23	28+23	61 RT	+1.60%	-	-	-	3'-0"	3"	6'-0"
24	28+92	65 RT	+1.50%	4'-0"	3"	6'-0"	-	-	-
25	29+11	47 RT	+1.50%	7'-11"	6"	6'-0"	3'-0"	3"	6'-0"
26	29+09	39 LT	+3.90%	3'-0"	3"	6'-0"	11'-8"	6"	6'-0"
27	28+90	60 LT	+3.90%	6'-0"	6"	6'-0"	5'-10"	3"	6'-0"
* NOTE: ROADWAY GUTTER SLOPE MEASURED LOOKING TOWARD UPSTREAM STATION.									

TEC, Inc.

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(603) 601-8154

www.TheEngineeringCorp.com

DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 20'

PREPARED FOR

City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
2	FINAL DESIGN	MARCH 3, 2017
3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

DRAWING TITLE

Accessible Ramp

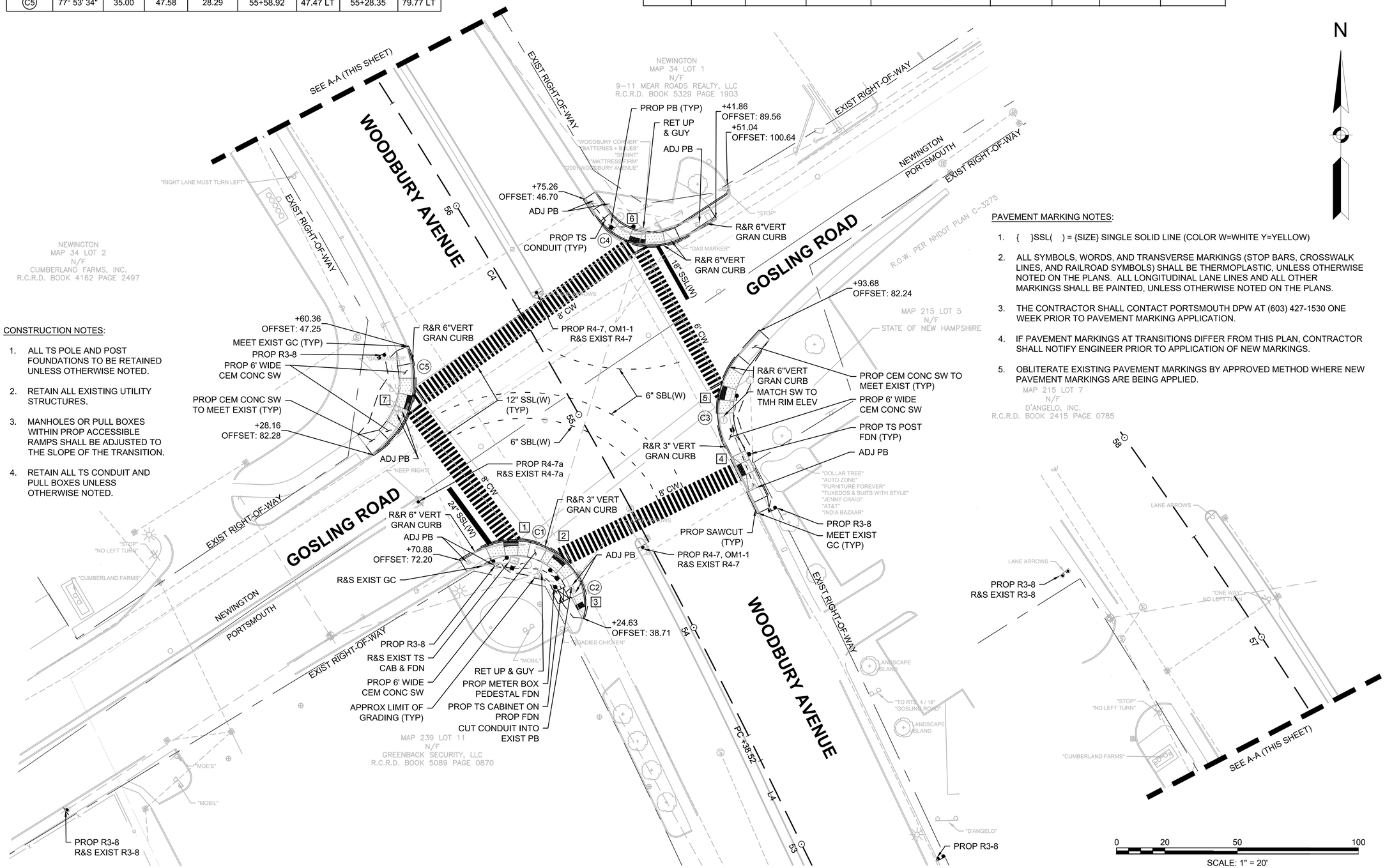
PROJECT NO.
T0543

TEC CAD FILE
T0543_Construction Details.dwg

DRAWING NO.
D2

CURVE TABLE								
CURVE #	DELTA	RADIUS	LENGTH	TANGENT	PC STATION	OFFSET	PT STATION	OFFSET
C1	92° 39' 15"	30.00	48.51	31.42	54+71.17	63.70 LT	54+40.43	32.55 LT
C2	44° 50' 05"	20.00	15.65	8.25	54+39.28	32.55 LT	54+24.99	38.36 LT
C3	61° 43' 35"	35.69	38.44	21.33	54+60.68	46.77 RT	54+97.25	80.11 RT
C4	88° 51' 04"	28.00	43.42	27.44	55+41.23	75.82 RT	55+67.28	47.05 RT
C5	77° 53' 34"	35.00	47.58	28.29	55+58.92	47.47 LT	55+28.35	79.77 LT

WOODBURY AVENUE CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	10+00.00	214787.6640	1220151.5273		N61°36'45"W 187.09'	11+87.09	214876.6129	1219986.9342
C1	11+87.09	214876.6129	1219986.9342	R=870.00' Δ=29°17'28" L=444.77' T=227.36'		16+31.86	214981.1207	1219559.5889



CONSTRUCTION NOTES:

1. ALL TS POLE AND POST FOUNDATIONS TO BE RETAINED UNLESS OTHERWISE NOTED.
2. RETAIN ALL EXISTING UTILITY STRUCTURES.
3. MANHOLES OR PULL BOXES WITHIN PROP ACCESSIBLE RAMPS SHALL BE ADJUSTED TO THE SLOPE OF THE TRANSITION.
4. RETAIN ALL TS CONDUIT AND PULL BOXES UNLESS OTHERWISE NOTED.

PAVEMENT MARKING NOTES:

1. { }SSL( ) = {SIZE} SINGLE SOLID LINE (COLOR W=WHITE Y=YELLOW)
2. ALL SYMBOLS, WORDS, AND TRANSVERSE MARKINGS (STOP BARS, CROSSWALK LINES, AND RAILROAD SYMBOLS) SHALL BE THERMOPLASTIC, UNLESS OTHERWISE NOTED ON THE PLANS. ALL LONGITUDINAL LANE LINES AND ALL OTHER MARKINGS SHALL BE PAINTED, UNLESS OTHERWISE NOTED ON THE PLANS.
3. THE CONTRACTOR SHALL CONTACT PORTSMOUTH DPW AT (603) 427-1530 ONE WEEK PRIOR TO PAVEMENT MARKING APPLICATION.
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5. OBLITERATE EXISTING PAVEMENT MARKINGS BY APPROVED METHOD WHERE NEW PAVEMENT MARKINGS ARE BEING APPLIED.

TEC, Inc.

65 Glenn Street
Lawrence, MA 01843
(978) 794-1792

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

www.TheEngineeringCorp.com

DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 20'

PREPARED FOR

City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
2	FINAL DESIGN	MARCH 3, 2017
3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

DRAWING TITLE

General Layout Plan Woodbury Ave @ Gosling St

PROJECT NO.
T0543

TEC CAD FILE
T0543_General Layout Plan.dwg

DRAWING NO.
G1

SHEET 7 OF 28

CURVE TABLE	
CURVE #	RADIUS
C6	± 35.00
C7	± 43.00
C8	± 35.00
C9	± 36.00
C11	± 3.75
C13	± 1.75

NOTE: CURVE RADII ARE APPROXIMATED BASED ON GIS. CONTRACTOR SHALL CONFIRM ACTUAL RADII IN THE FIELD.

PAVEMENT MARKING NOTES:

1. { }SSL( ) = {SIZE} SINGLE SOLID LINE (COLOR W=WHITE Y=YELLOW)
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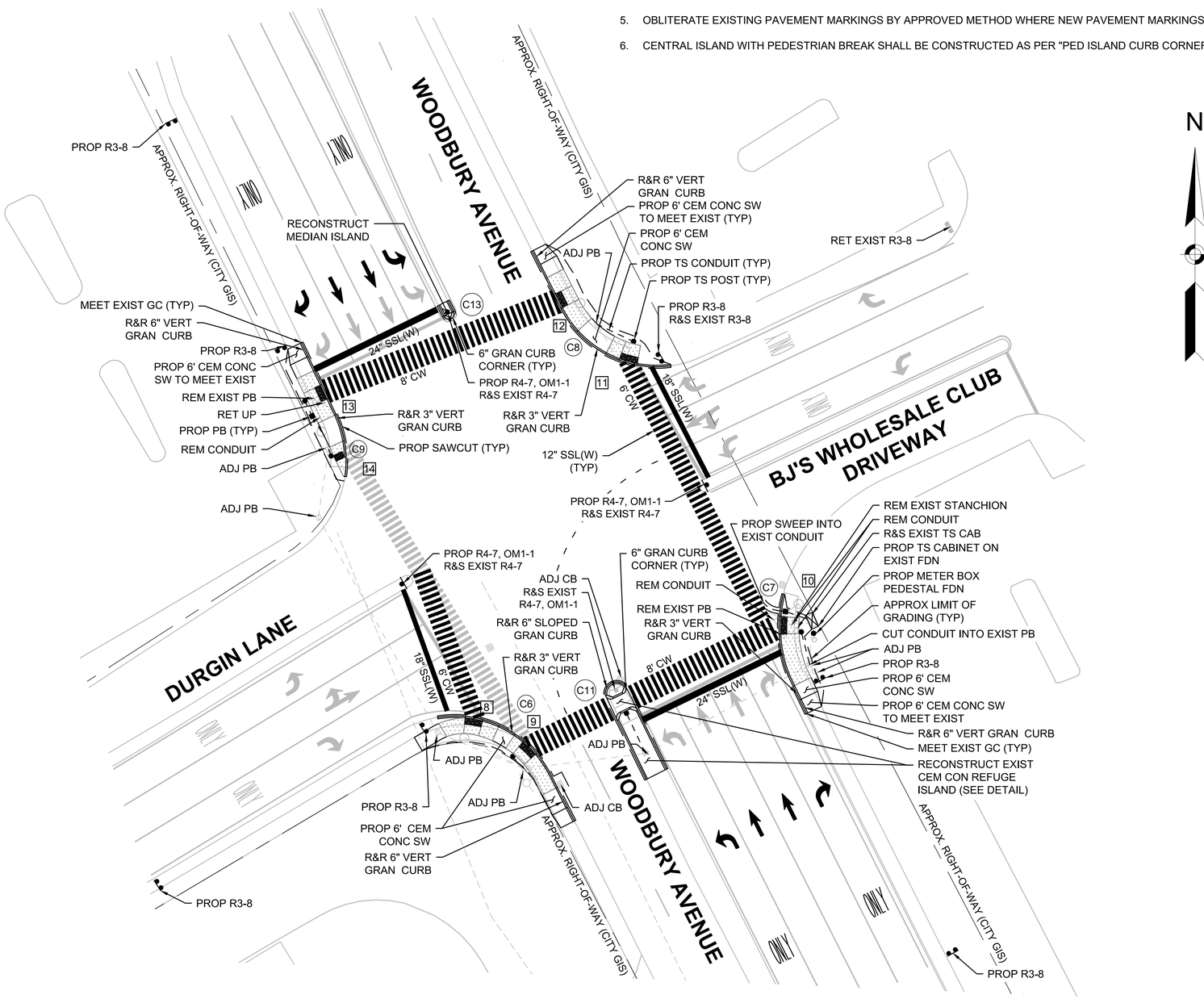

CONSTRUCTION NOTES:

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N

0 20 50 100

SCALE: 1" = 20'

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PREPARED FOR

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7 Hazen Drive
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ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect
Project #29781

PROJECT LOCATION

Portsmouth,
New Hampshire

DRAWING TITLE

General Layout Plan
Woodbury Ave @ Durgin Lane

PROJECT NO.
T0543

TEC CAD FILE
T0543_General Layout Plan.dwg

DRAWING NO.
G2

SHEET 8 OF 28

CURVE TABLE	
CURVE #	RADIUS
C14	± 54.00
C16	± 40.00
C17	± 50.00

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PAVEMENT MARKING NOTES:

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   { }DSL( ) = {SIZE} DOUBLE SOLID LINE (COLOR W=WHITE Y=YELLOW)
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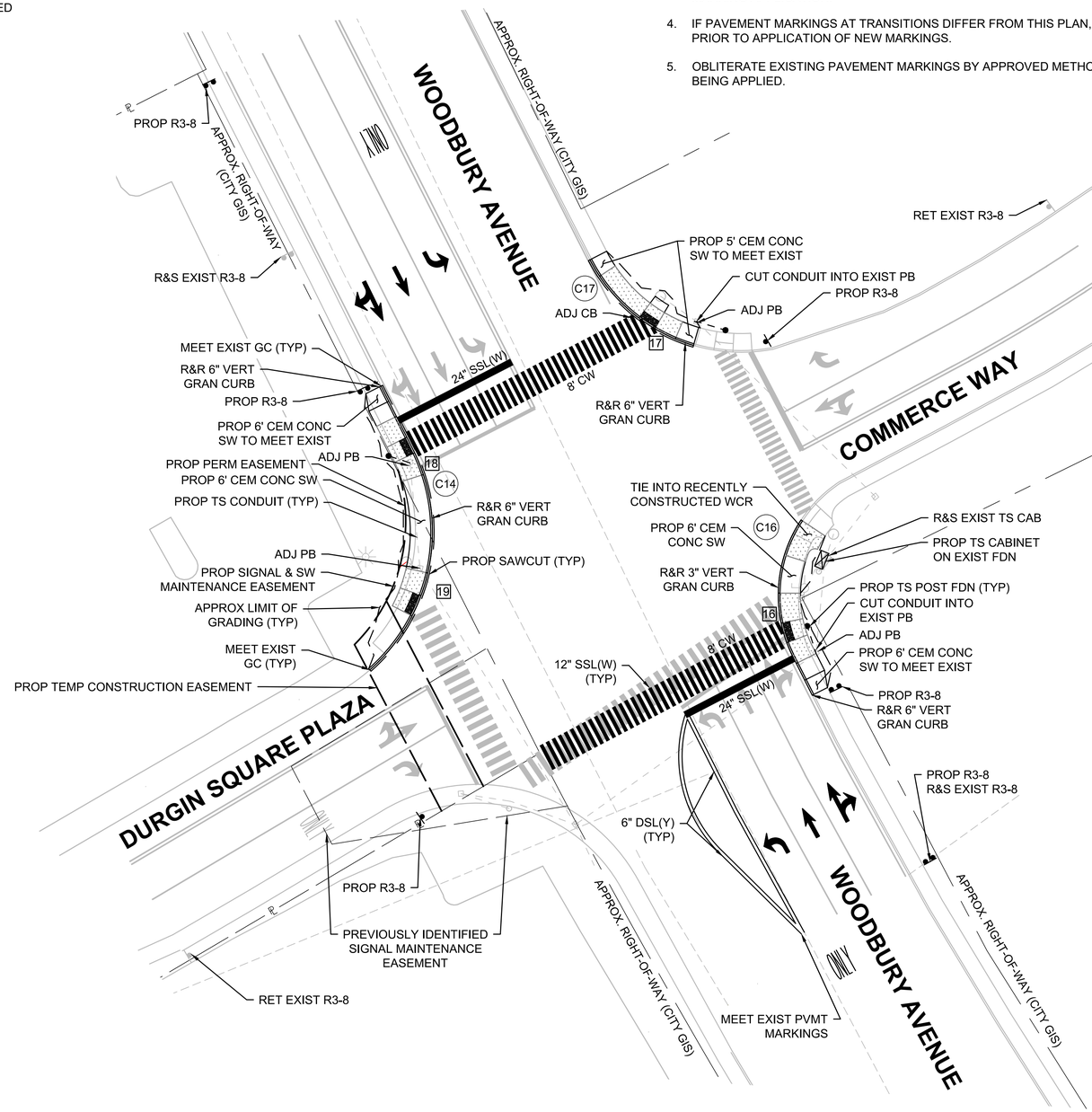

N

0 20 50 100

SCALE: 1" = 20'

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NHDOT
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ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect
Project #29781

PROJECT LOCATION

Portsmouth,
New Hampshire

DRAWING TITLE

General Layout Plan
Woodbury Ave @ Commerce Way

PROJECT NO.
T0543

TEC CAD FILE
T0543_General Layout Plan.dwg

DRAWING NO.
G3

SHEET 9 OF 28

CURVE TABLE	
CURVE #	RADIUS
C18	± 32.00
C19	± 45.00
C20	± 58.00
C21	± 80.00
C22	± 30.00

NOTE: CURVE RADII ARE APPROXIMATED BASED ON GIS. CONTRACTOR SHALL CONFIRM ACTUAL RADII IN THE FIELD.

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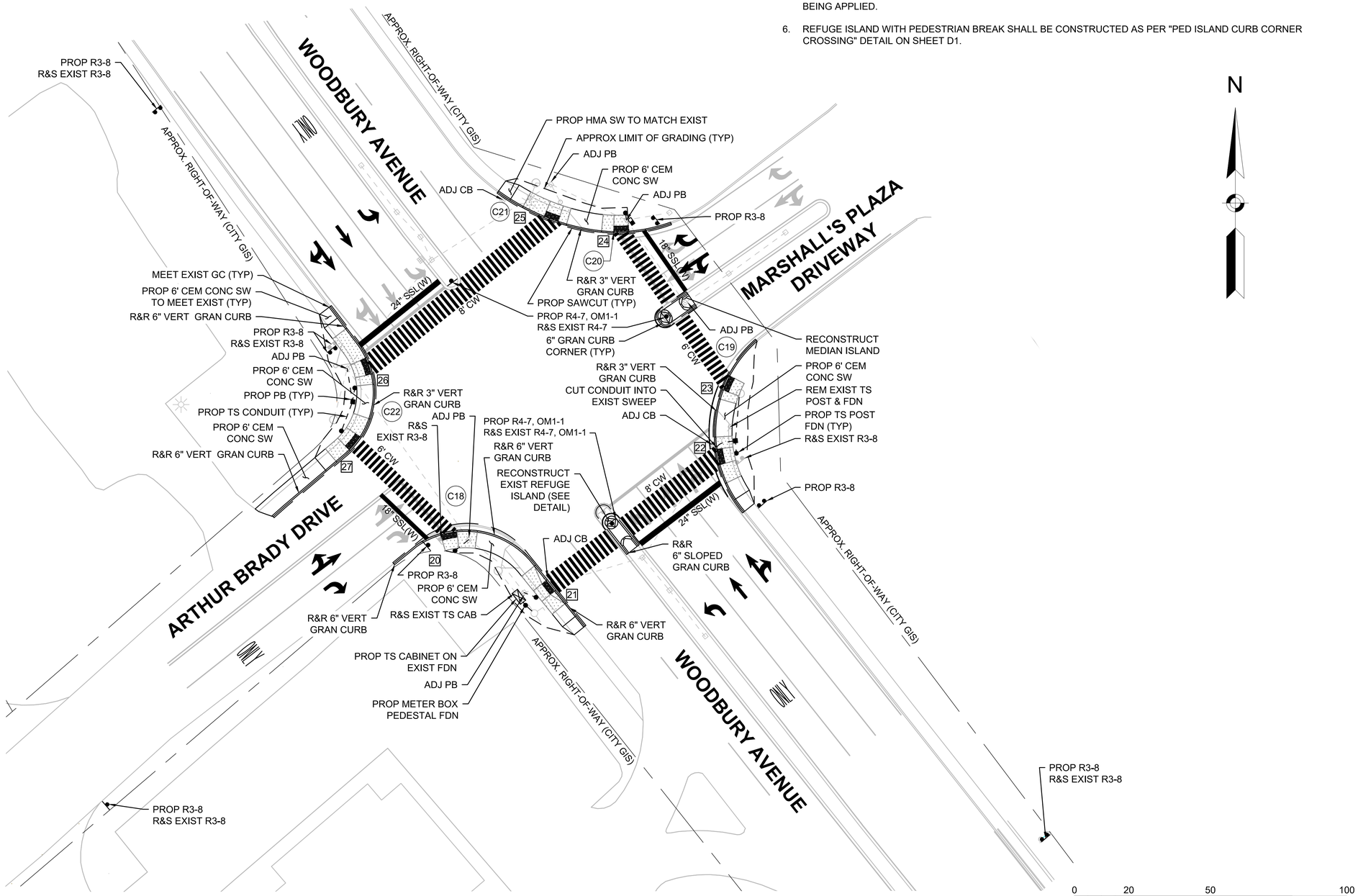

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SCALE	1" = 20'

PREPARED FOR

City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

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3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect
Project #29781

PROJECT LOCATION

Portsmouth,
New Hampshire

DRAWING TITLE

General Layout Plan
Woodbury Ave @
Arthur Brady Dr

PROJECT NO.
T0543

TEC CAD FILE
T0543_General Layout Plan.dwg

DRAWING NO.
G4

SHEET 10 OF 28

CURVE TABLE								
CURVE #	DELTA	RADIUS	LENGTH	TANGENT	PC STATION	OFFSET	PT STATION	OFFSET
C25	78° 19' 38"	50.00	68.35	40.73	21+50.50	43.78 LT	21+10.48	88.03 LT
C26	64° 03' 52"	58.00	64.85	36.29	20+91.61	59.61 LT	20+84.44	59.61 LT
C27	89° 19' 40"	50.00	77.95	49.42	21+51.43	89.55 LT	20+12.83	41.64 LT
C28	93° 49' 22"	42.00	68.78	44.90	20+38.89	85.03 RT	19+89.09	35.42 RT

NOTE: CURVE RADII ARE APPROXIMATED BASED ON GIS. CONTRACTOR SHALL CONFIRM ACTUAL RADII IN THE FIELD.

WOODBURY AVENUE CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L2	16+31.86	214981.1207	1219559.5889		S89°05'47"W 423.44'	20+55.29	214974.4438	1219136.2038
C2	20+55.29	214974.4438	1219136.2038	R=520.00' Δ=52°29'18" L=476.37' T=256.37'		25+31.66	215171.2750	1218720.5688

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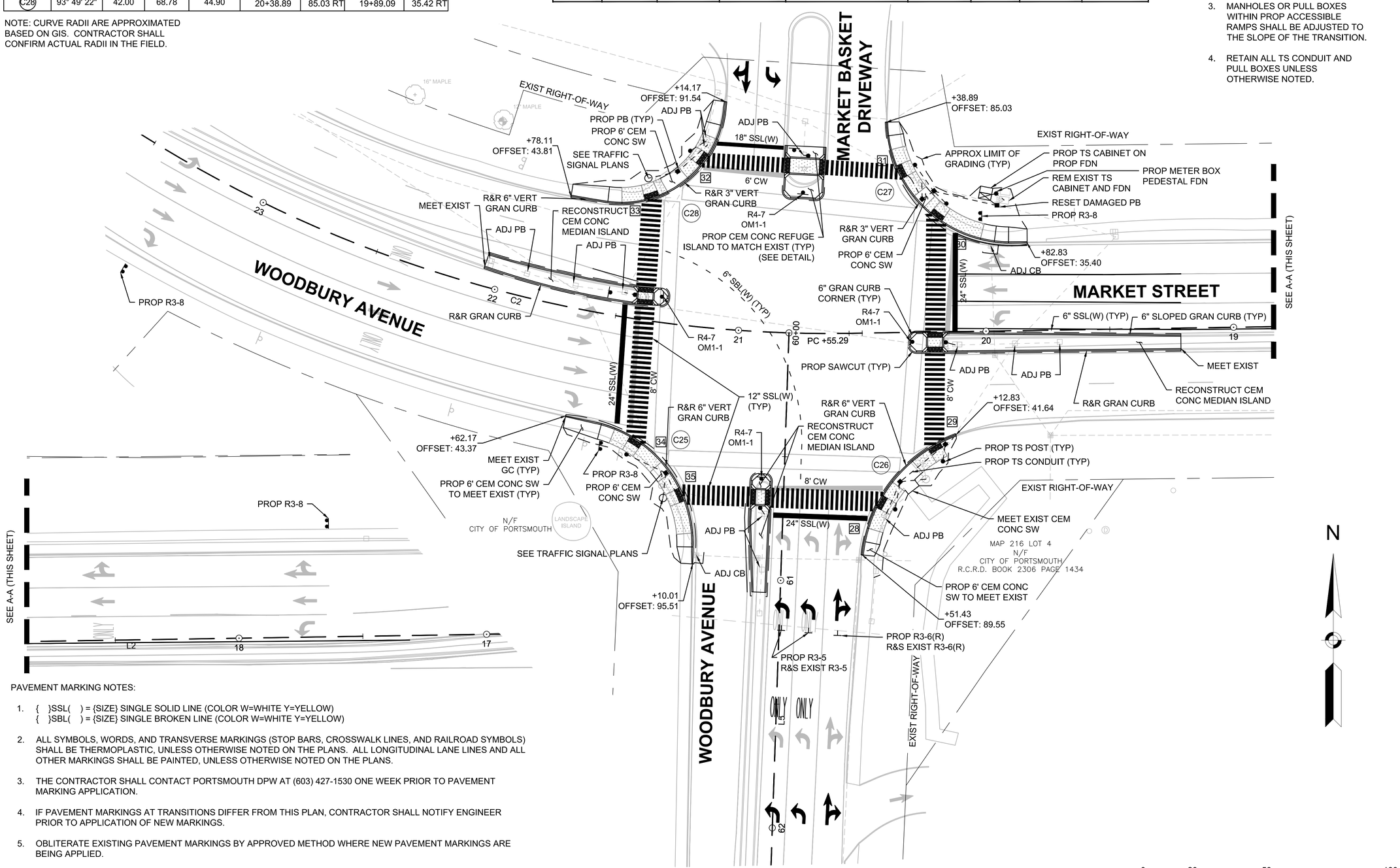

PAVEMENT MARKING NOTES:

1. { }SSL( ) = {SIZE} SINGLE SOLID LINE (COLOR W=WHITE Y=YELLOW)
   { }SBL( ) = {SIZE} SINGLE BROKEN LINE (COLOR W=WHITE Y=YELLOW)
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DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 20'

PREPARED FOR

City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
2	FINAL DESIGN	MARCH 3, 2017
3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

DRAWING TITLE

General Layout Plan Woodbury Ave @ Market St

PROJECT NO.
T0543

TEC CAD FILE
T0543_General Layout Plan.dwg

DRAWING NO.
G5

SHEET 11 OF 28

CURVE TABLE								
CURVE #	DELTA	RADIUS	LENGTH	TANGENT	PC STATION	OFFSET	PT STATION	OFFSET
C33	88° 22' 29"	5.00	7.71	4.86	63+67.53	28.11 RT	63+71.74	22.88 RT
C34	9° 38' 41"	360.00	60.60	30.37	63+71.74	22.88 RT	64+28.01	19.63 RT
C36	80° 03' 29"	25.00	34.93	21.00	64+63.87	16.94 LT	64+39.02	40.11 LT
C37	88° 20' 17"	32.00	49.34	31.09	63+91.63	54.42 LT	63+48.99	28.44 LT

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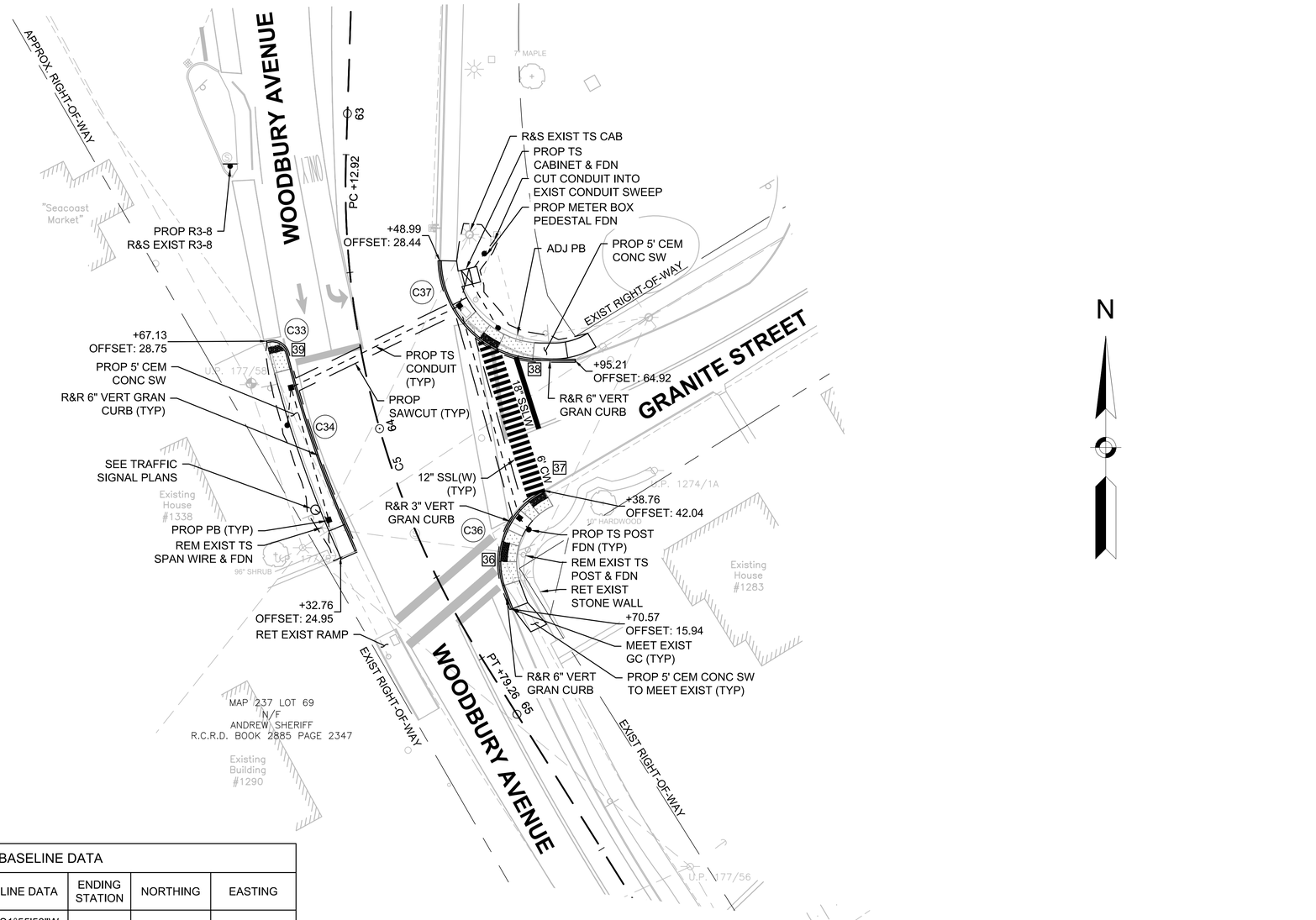

WOODBURY AVENUE 2 CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L5	60+00.00	214974.6281	1219111.9168		S1°55'50"W 312.92'	63+12.92	214661.8842	1219101.3750
C5	63+12.92	214661.8842	1219101.3750	R=280.00' Δ=34°02'12" L=166.34' T=85.70'		64+79.26	214503.6342	1219144.0380
L6	64+79.26	214503.6342	1219144.0380		S32°06'22"E 186.74'	66+66.00	214345.4504	1219243.2903

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PREPARED FOR

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Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
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REVISIONS

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Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect
Project #29781

PROJECT LOCATION

Portsmouth,
New Hampshire

DRAWING TITLE

General Layout Plan
Woodbury Ave @ Granite St

PROJECT NO.
T0543

TEC CAD FILE
T0543_General Layout Plan.dwg

DRAWING NO.
G6

SHEET 12 OF 28

MAP 217 LOT 2-1975
N/F
BRORA, LLC
R.C.R.D. BOOK 3507 PAGE 0118

CONSTRUCTION NOTES:

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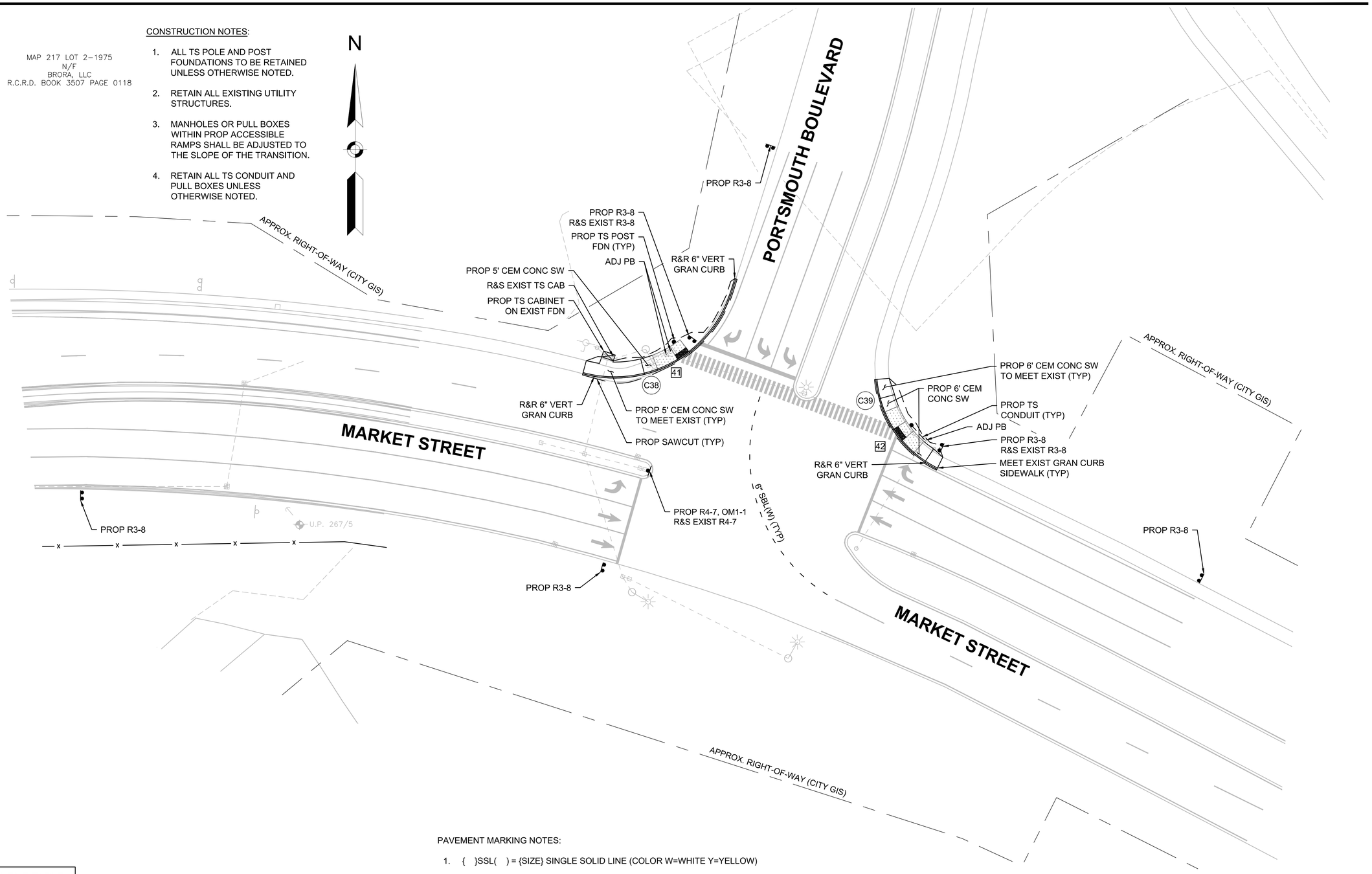

CURVE TABLE	
CURVE #	RADIUS
C38	± 50.00
C39	± 45.00

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Construction

PROJECT TITLE
Woodbury Avenue Traffic Signal Interconnect
Project #29781

PROJECT LOCATION
Portsmouth,
New Hampshire

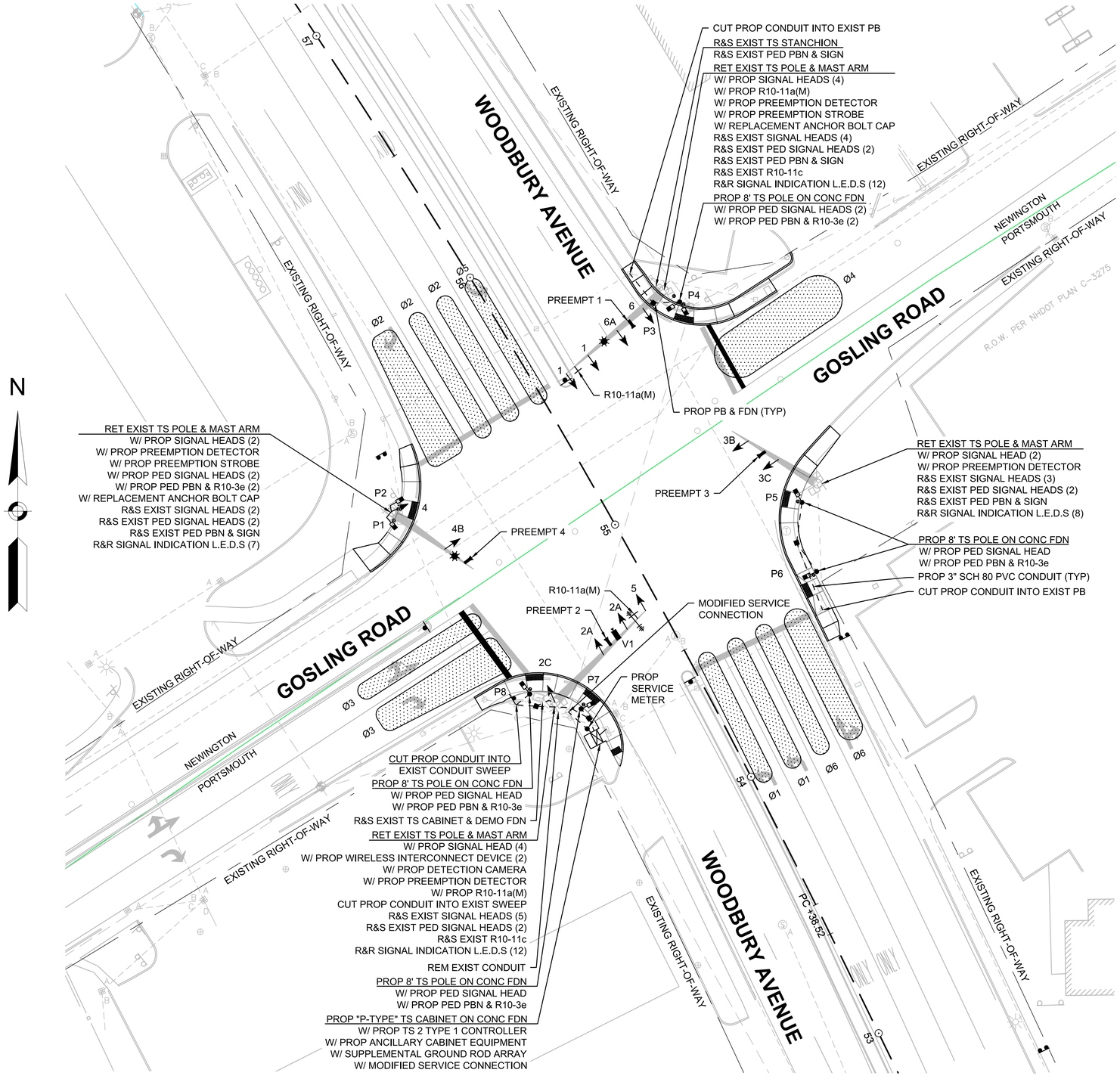
DRAWING TITLE
General Layout Plan
Market St @
Portsmouth Blvd

PROJECT NO.
T0543

TEC CAD FILE
T0543_General Layout Plan.dwg

DRAWING NO.
G7

SHEET 13 OF 28



TIME BASED SCHEDULE

	MON. - FRI.	SAT. - SUN.
PLAN 1 (AM PEAK)	0600 - 1000	-
PLAN 2 (MIDDAY)	1000 - 1530	-
PLAN 3 (PM PEAK)	1530 - 1900	-
PLAN 4 (WKD MID)	-	1000 - 1800
FREE OPERATIONS	0000 - 0600 1900 - 2400	0000 - 1000 1800 - 2400

COORDINATION CYCLE / SPLIT OFFSET SCHEDULE

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5
CYCLE LENGTH	90	110	110	90	FREE OPERATIONS
OFFSET	60	59	22	28	
SPLIT TIME Ø1	14	26	24	21	
SPLIT TIME Ø2	38	33	32	24	
SPLIT TIME Ø3	19	30	31	28	
SPLIT TIME Ø4	19	22	23	17	
SPLIT TIME Ø5	14	14	14	14	
SPLIT TIME Ø6	38	44	42	31	

COORDINATION NOTES:

1. OFFSET: BEGINNING OF Ø2&Ø6 YELLOW.
2. Ø2&Ø6 "CALL NOT ACTUATED" DURING COORDINATION.
3. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
4. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.
5. CONTRACTOR SHALL FINE-TUNE THE TIMING AND COORDINATION PARAMETERS IN THE PRESENCE OF THE ENGINEER AND CITY OF PORTSMOUTH REPRESENTATIVES FOLLOWING INSTALLATION.
6. UPON PUSH BUTTON ACTIVATION, COORDINATION WILL TERMINATE AND SERVICE PEDESTRIAN PHASE. COORDINATION WILL RESUME FOLLOWING TERMINATION OF PEDESTRIAN PHASE.

GENERAL NOTES:

1. CROSSWALKS NOT SHOWN ON TRAFFIC SIGNAL PLANS FOR VISUAL CLARITY OF TRAFFIC SIGNAL EQUIPMENT. PLEASE REFERENCE GENERAL LAYOUT PLANS FOR CROSSWALKS.

CONSTRUCTION NOTES:

1. THE CONSTRUCTION SHALL CONFORM WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, BUREAU OF HIGHWAY DESIGN SPECIFICATIONS UNLESS OTHERWISE NOTED.
2. PEDESTRIAN PUSH BUTTONS SHALL BE PERPENDICULAR TO THE CROSSWALK PATH OF TRAVEL, WITH THE ARROW PROVIDED ON THE PUSH BUTTON PARALLEL TO THE CROSSWALK PATH OF TRAVEL.
3. WHERE TWO APS PEDESTRIAN PUSH BUTTONS ARE NOT SEPARATED BY MORE THAN 10 FEET, THE AUDIBLE WALK INDICATION SHALL BE A SPEECH WALK MESSAGE.
4. ALL SIGNAL CABLING SHALL BE REPLACED IN EXISTING CONDUITS UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL EXAMINE THE EXISTING CONDUIT AND REPAIR ANY DAMAGED CONDUIT PRIOR TO RE-CABLING.
6. RETAIN ALL EXISTING TRAFFIC SIGNAL CONDUIT AND PULL BOXES UNLESS OTHERWISE NOTED.
7. EXISTING CONDUIT LAYOUT IS APPROXIMATE AND SHALL BE CONFIRMED BY THE CONTRACTOR.
8. ALL PROPOSED CONCRETE PULL BOX FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-1.
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ITEM # 616.191

0 20 50 100

SCALE: 1" = 20'

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DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
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DATE	APRIL 17, 2017
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PREPARED FOR

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3	CONSTRUCTION	APRIL 17, 2017

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Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

DRAWING TITLE

Traffic Signal Plan
Woodbury Ave @ Gosling Rd

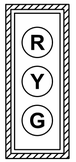
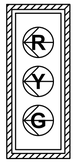
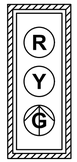
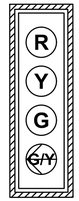
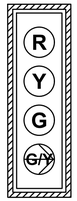
PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S1

SHEET 14 OF 28

SIGNAL HEAD DATA

PROPOSED					
4,6	1,5	2A,6A	3B,4B	2C,3C	P1-P8
					
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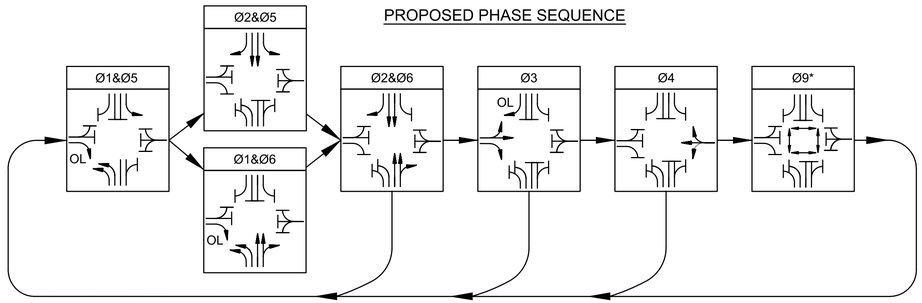
R10-3e

R10-11a(M)

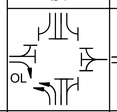
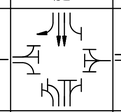
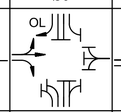
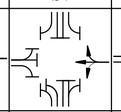
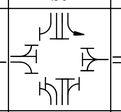
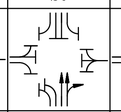
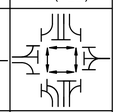
SIGNS ALSO APPEAR ON SIGN SUMMARY (SHEET T1)

PROPOSED PHASE SEQUENCE



* PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.

PROPOSED NEMA DUAL RING CONTROLLER

SIGNAL PHASING & TIMING																				
	Ø1			Ø2			Ø3			Ø4			Ø5			Ø6			Ø9 (PED)		
																					
INITIAL INTERVAL	8			10			8			8			8			10					
VEHICLE EXTENSION	3			3			3			3			3			3					
MAXIMUM 1	13			19			8			26			8			24					
MAXIMUM 2																					
YELLOW		3.5			3.5			3.5			3.5			3.5			3.5				
ALL RED			2.5			2.5			2.5			2.0			2.0			2.5			
PEDESTRIAN WALK																			7.0		
PEDESTRIAN CLEAR																					33.0
FLASH	FR			FY			FR			FR			FR			FY			OUT		
RECALL	OFF			SOFT			OFF			OFF			OFF			SOFT			OFF		
DETECTOR	NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			LOCK		
PREEMPT PRIORITY	PREEMPT 1			PREEMPT 2			PREEMPT 3			PREEMPT 4			PREEMPT 2			PREEMPT 1			-		

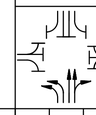
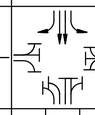
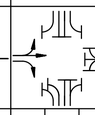
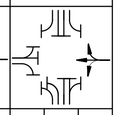
SEQUENCE & TIMING NOTES:

1. AUTOMATIC FLASHING OPERATION PER M.U.T.C.D. SECTION 4D.12.
2. PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.
3. OL = OVERLAP
4. FR = FLASH RED, FY = FLASH YELLOW
5. MAXIMUM 1 = FREE OPERATION
6. MAXIMUM 2 = DURING COORDINATION
7. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
8. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
9. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
10. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

DETECTOR SCHEDULE								
	DETECTOR					VIDEO DETECTOR CARD		
	STREET	DIRECTION	LANE	CALL Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL
CAMERA V1	GOSLING ROAD	EASTBOUND	RIGHT	Ø3	VIDEO			
	GOSLING ROAD	EASTHBOUND	LEFT-THRU	Ø3	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	RIGHT	Ø2	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	THRU	Ø2	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	LEFT	Ø5	VIDEO			
	GOSLING ROAD	WESTBOUND	LEFT-THRU-RIGHT	Ø4	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	THRU-RIGHT	Ø6	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	THRU	Ø6	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	LEFT	Ø1	VIDEO			

VIDEO DETECTOR NOTES:

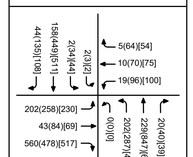
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY.

PREEMPTION PHASING AND PRIORITY												
	PREEMPT 1			PREEMPT 2			PREEMPT 3			PREEMPT 4		
												
INITIAL INTERVAL	*			*			*			*		
VEHICLE EXTENSION												
MAXIMUM 1												
MAXIMUM 2												
YELLOW		3.5			3.5			3.5			3.5	
ALL RED			2.5			2.5			2.5			2.0
PEDESTRIAN WALK												
PEDESTRIAN CLEAR												
FLASH	-			-			-			-		
RECALL	-			-			-			-		
DETECTOR	-			-			-			-		
PREEMPT CALL	Ø1&Ø6			Ø2&Ø5			Ø3			Ø4		

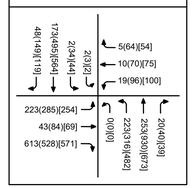
EMERGENCY PREEMPTION NOTES:

1. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR PREEMPT 1 (OR PREEMPT 2, PREEMPT 3, PREEMPT 4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE 1 (OR 2, 3, 4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PREEMPTION PHASE CLEARANCE (AS NOTED IN CHART) AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PREEMPTION PHASES AS NECESSARY.
4. NORMAL CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.
5. CONFIRMATION STROBE (RED) SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.
6. OVERLAPS SHALL NOT BE ACTIVATED DURING EMERGENCY PREEMPTION CALLS.

2017 SYSTEM DESIGN VOLUMES AM (PM) [SAT]



2027 SYSTEM DESIGN VOLUMES AM (PM) [SAT]



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PREPARED FOR

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Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

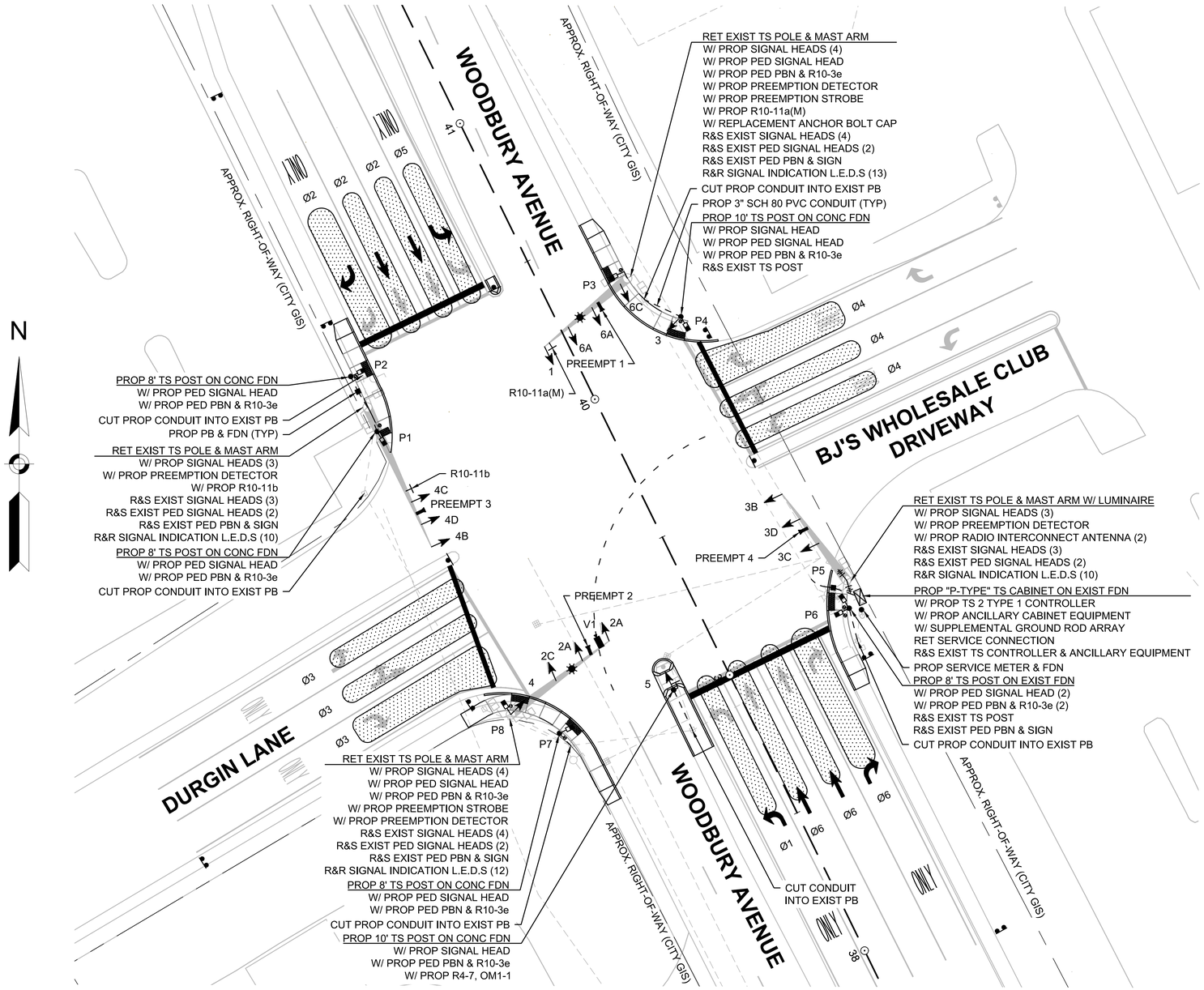
DRAWING TITLE

Traffic Signal Plan Woodbury Ave @ Gosling Rd

PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S2



TIME BASED SCHEDULE

	MON. - FRI.	SAT. - SUN.
PLAN 1 (AM PEAK)	0600 - 1000	-
PLAN 2 (MIDDAY)	1000 - 1530	-
PLAN 3 (PM PEAK)	1530 - 1900	-
PLAN 4 (WKD MID)	-	1000 - 1800
FREE OPERATIONS	0000 - 0600 1900 - 2400	0000 - 1000 1800 - 2400

COORDINATION CYCLE / SPLIT OFFSET SCHEDULE

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5
CYCLE LENGTH	90	110	110	90	FREE OPERATIONS
OFFSET	82	12	84	83	
SPLIT TIME Ø1	12	16	16	15	
SPLIT TIME Ø2	46	54	54	42	
SPLIT TIME Ø3	16	20	23	18	
SPLIT TIME Ø4	16	20	17	15	
SPLIT TIME Ø5	19	20	16	17	
SPLIT TIME Ø6	39	50	54	40	

COORDINATION NOTES:

1. OFFSET: BEGINNING OF Ø2&Ø6 YELLOW.
2. Ø2&Ø6 "CALL NOT ACTUATED" DURING COORDINATION.
3. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
4. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.
5. CONTRACTOR SHALL FINE-TUNE THE TIMING AND COORDINATION PARAMETERS IN THE PRESENCE OF THE ENGINEER AND CITY OF PORTSMOUTH REPRESENTATIVES FOLLOWING INSTALLATION.
6. UPON PUSH BUTTON ACTIVATION, COORDINATION WILL TERMINATE AND SERVICE PEDESTRIAN PHASE. COORDINATION WILL RESUME FOLLOWING TERMINATION OF PEDESTRIAN PHASE.

GENERAL NOTES:

1. CROSSWALKS NOT SHOWN ON TRAFFIC SIGNAL PLANS FOR VISUAL CLARITY OF TRAFFIC SIGNAL EQUIPMENT. PLEASE REFERENCE GENERAL LAYOUT PLANS FOR CROSSWALKS.

CONSTRUCTION NOTES:

1. THE CONSTRUCTION SHALL CONFORM WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, BUREAU OF HIGHWAY DESIGN SPECIFICATIONS UNLESS OTHERWISE NOTED.
2. PEDESTRIAN PUSH BUTTONS SHALL BE PERPENDICULAR TO THE CROSSWALK PATH OF TRAVEL, WITH THE ARROW PROVIDED ON THE PUSH BUTTON PARALLEL TO THE CROSSWALK PATH OF TRAVEL.
3. WHERE TWO APS PEDESTRIAN PUSH BUTTONS ARE NOT SEPARATED BY MORE THAN 10 FEET, THE AUDIBLE WALK INDICATION SHALL BE A SPEECH WALK MESSAGE.
4. ALL SIGNAL CABLING SHALL BE REPLACED IN EXISTING CONDUITS.
5. THE CONTRACTOR SHALL EXAMINE THE EXISTING CONDUIT AND REPAIR ANY DAMAGED CONDUIT PRIOR TO RE-CABLING.
6. RETAIN ALL EXISTING TRAFFIC SIGNAL CONDUIT AND PULL BOXES UNLESS OTHERWISE NOTED.
7. EXISTING CONDUIT LAYOUT IS APPROXIMATE AND SHALL BE CONFIRMED BY THE CONTRACTOR.
8. ALL PROPOSED CONCRETE PULL BOX FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-1.
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PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S3

SHEET 16 OF 28

SIGNAL HEAD DATA

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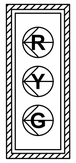	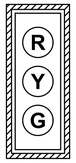	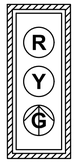	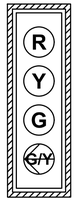	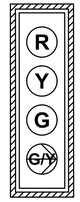	
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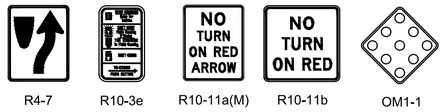
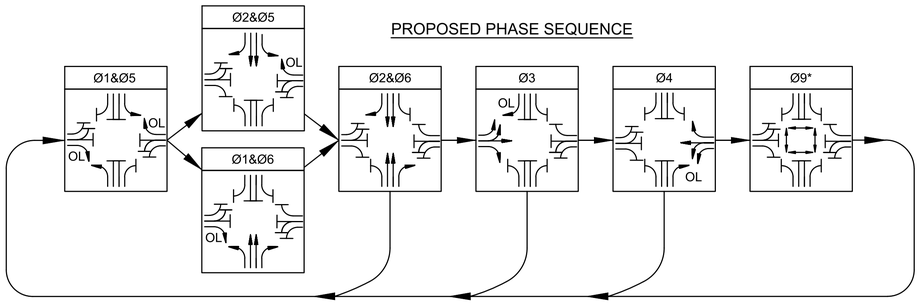


R4-7 R10-3e R10-11a(M) R10-11b OM1-1

SIGNS ALSO APPEAR ON SIGN SUMMARY (SHEET T1)

PROPOSED PHASE SEQUENCE



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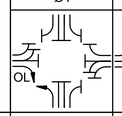
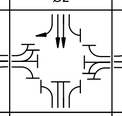
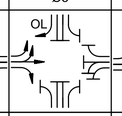
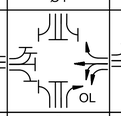
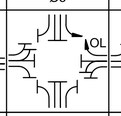
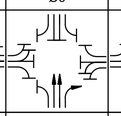
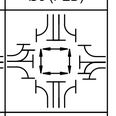
SIGNAL PHASING & TIMING																				
	Ø1			Ø2			Ø3			Ø4			Ø5			Ø6			Ø9 (PED)		
																					
INITIAL INTERVAL	6			10			6			6			6			10					
VEHICLE EXTENSION	3			3			3			3			3			3					
MAXIMUM 1	6			44			8			8			10			40					
MAXIMUM 2																					
YELLOW		3.5			3.5			3.5			3.5			3.5			3.5				
ALL RED			2.5			2.5			2.5			2.5			2.5			2.5			
PEDESTRIAN WALK																			7.0		
PEDESTRIAN CLEAR																				29.0	
FLASH	FR			FY			FR			FR			FR			FY			OUT		
RECALL	OFF			SOFT			OFF			OFF			OFF			SOFT			OFF		
DETECTOR	NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			LOCK		
PREEMPT PRIORITY	PREEMPT 1			PREEMPT 2			PREEMPT 3			PREEMPT 4			PREEMPT 2			PREEMPT 1			-		

SEQUENCE & TIMING NOTES:

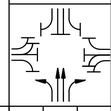
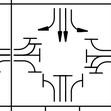
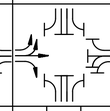
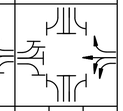
1. AUTOMATIC FLASHING OPERATION PER M.U.T.C.D. SECTION 4D.12.
2. PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.
3. OL = OVERLAP
4. FR = FLASH RED, FY = FLASH YELLOW
5. MAXIMUM 1 = FREE OPERATION
6. MAXIMUM 2 = DURING COORDINATION
7. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
8. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
9. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
10. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD		
	STREET	DIRECTION	LANE	CALL Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL
CAMERA V1	DURGIN LANE	EASTBOUND	RIGHT	Ø3	VIDEO			
	DURGIN LANE	EASTBOUND	LEFT-THRU	Ø3	VIDEO			
	DURGIN LANE	EASTBOUND	LEFT	Ø3	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	RIGHT	Ø2	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	THRU	Ø2	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	LEFT	Ø5	VIDEO			
	BJ'S DRIVEWAY	WESTBOUND	RIGHT	Ø4	VIDEO			
	BJ'S DRIVEWAY	WESTBOUND	LEFT-THRU	Ø4	VIDEO			
	BJ'S DRIVEWAY	WESTBOUND	LEFT	Ø4	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	RIGHT	Ø6	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	THRU	Ø6	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	LEFT	Ø1	VIDEO			

VIDEO DETECTOR NOTES:

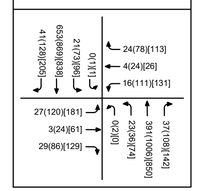
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY.

PREEMPTION PHASING AND PRIORITY				
	PREEMPT 1	PREEMPT 2	PREEMPT 3	PREEMPT 4
				
INITIAL INTERVAL	*		*		*		*	
VEHICLE EXTENSION								
MAXIMUM 1								
MAXIMUM 2								
YELLOW	3.5		3.5		3.5		3.5	
ALL RED		2.5		2.5		2.5		2.5
PEDESTRIAN WALK								
PEDESTRIAN CLEAR								
FLASH	-		-		-		-	
RECALL	-		-		-		-	
DETECTOR	-		-		-		-	
PREEMPT CALL	Ø1&Ø6		Ø2&Ø5		Ø3		Ø4	

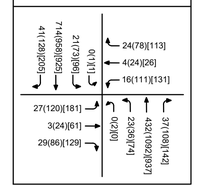
EMERGENCY PREEMPTION NOTES:

1. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR PREEMPT 1 (OR PREEMPT 2, PREEMPT 3, PREEMPT 4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE 1 (OR 2, 3, 4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PREEMPTION PHASE CLEARANCE (AS NOTED IN CHART) AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PREEMPTION PHASES AS NECESSARY.
4. NORMAL CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.
5. CONFIRMATION STROBE (RED) SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.
6. OVERLAPS SHALL NOT BE ACTIVATED DURING EMERGENCY PREEMPTION CALLS.

2017 SYSTEM DESIGN VOLUMES AM (PM) [SAT]



2027 SYSTEM DESIGN VOLUMES AM (PM) [SAT]



ITEM # 616.192

0 20 50 100

SCALE: 1" = 20'

TEC, Inc.

65 Glenn Street
Lawrence, MA 01843
(978) 794-1792

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

www.TheEngineeringCorp.com

DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 40'

PREPARED FOR

City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
2	FINAL DESIGN	MARCH 3, 2017
3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

DRAWING TITLE

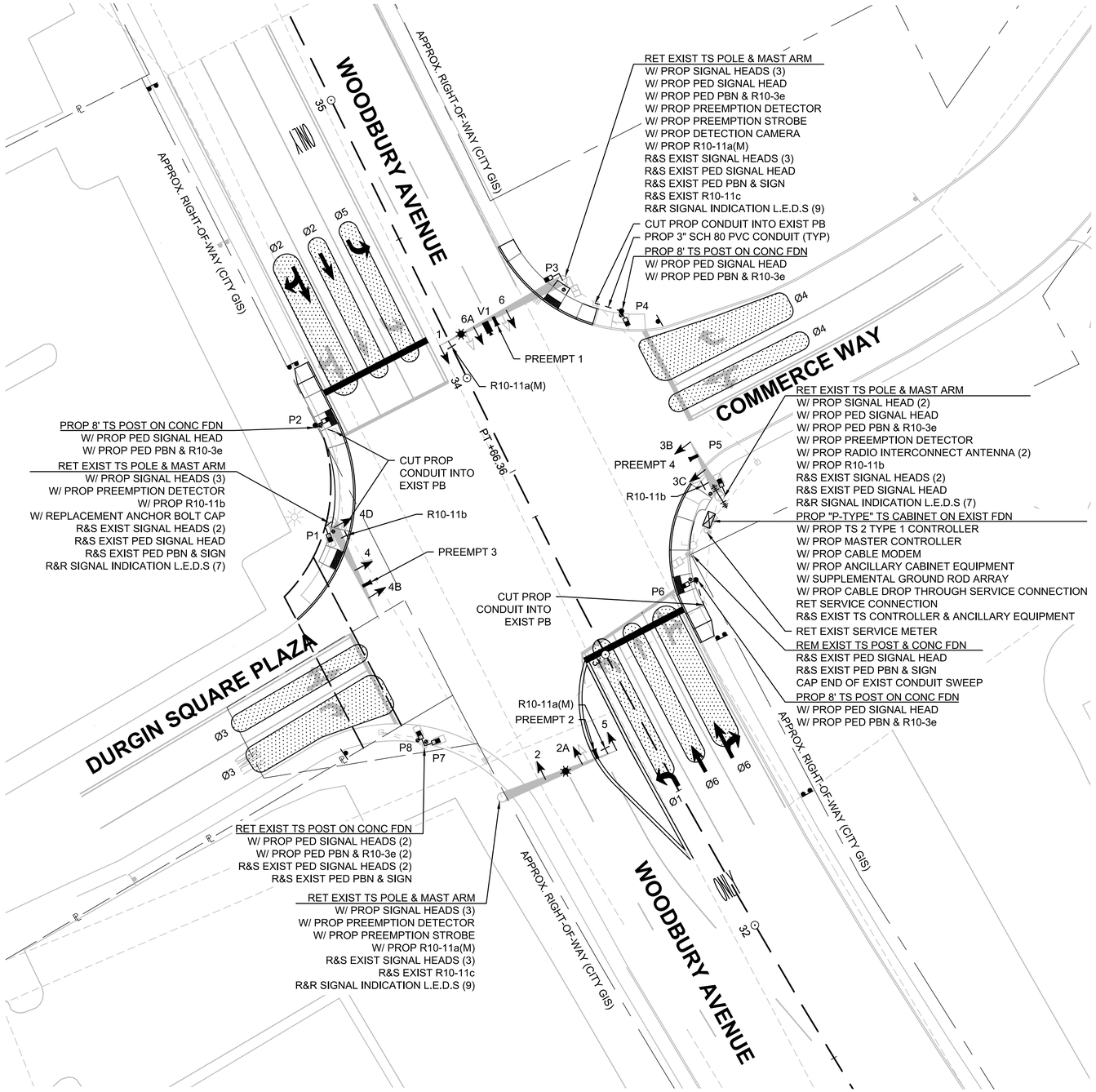
Traffic Signal Plan
Woodbury Ave @ Durgin Lane

PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S4

SHEET 17 OF 28



TIME BASED SCHEDULE

	MON. - FRI.	SAT. - SUN.
PLAN 1 (AM PEAK)	0600 - 1000	-
PLAN 2 (MIDDAY)	1000 - 1530	-
PLAN 3 (PM PEAK)	1530 - 1900	-
PLAN 4 (WKD MID)	-	1000 - 1800
FREE OPERATIONS	0000 - 0600 1900 - 2400	0000 - 1000 1800 - 2400

COORDINATION CYCLE / SPLIT OFFSET SCHEDULE

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5
CYCLE LENGTH	90	110	110	90	FREE OPERATIONS
OFFSET	0	0	0	0	
SPLIT TIME Ø1	12	21	22	17	
SPLIT TIME Ø2	54	47	60	49	
SPLIT TIME Ø3	12	28	14	12	
SPLIT TIME Ø4	12	14	14	12	
SPLIT TIME Ø5	27	14	14	15	
SPLIT TIME Ø6	39	54	68	51	

COORDINATION NOTES:

1. OFFSET: BEGINNING OF Ø2&Ø6 YELLOW.
2. Ø2&Ø6 "CALL NOT ACTUATED" DURING COORDINATION.
3. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
4. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.
5. OFFSET REFERENCE INTERSECTION.
6. CONTRACTOR SHALL FINE-TUNE THE TIMING AND COORDINATION PARAMETERS IN THE PRESENCE OF THE ENGINEER AND CITY OF PORTSMOUTH REPRESENTATIVES FOLLOWING INSTALLATION.
7. UPON PUSH BUTTON ACTIVATION, COORDINATION WILL TERMINATE AND SERVICE PEDESTRIAN PHASE. COORDINATION WILL RESUME FOLLOWING TERMINATION OF PEDESTRIAN PHASE.

GENERAL NOTES:

1. CROSSWALKS NOT SHOWN ON TRAFFIC SIGNAL PLANS FOR VISUAL CLARITY OF TRAFFIC SIGNAL EQUIPMENT. PLEASE REFERENCE GENERAL LAYOUT PLANS FOR CROSSWALKS.

CONSTRUCTION NOTES:

1. THE CONSTRUCTION SHALL CONFORM WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, BUREAU OF HIGHWAY DESIGN SPECIFICATIONS UNLESS OTHERWISE NOTED.
2. PEDESTRIAN PUSH BUTTONS SHALL BE PERPENDICULAR TO THE CROSSWALK PATH OF TRAVEL, WITH THE ARROW PROVIDED ON THE PUSH BUTTON PARALLEL TO THE CROSSWALK PATH OF TRAVEL.
3. WHERE TWO APS PEDESTRIAN PUSH BUTTONS ARE NOT SEPARATED BY MORE THAN 10 FEET, THE AUDIBLE WALK INDICATION SHALL BE A SPEECH WALK MESSAGE.
4. ALL SIGNAL CABLING SHALL BE REPLACED IN EXISTING CONDUITS.
5. THE CONTRACTOR SHALL EXAMINE THE EXISTING CONDUIT AND REPAIR ANY DAMAGED CONDUIT PRIOR TO RE-CABLING.
6. RETAIN ALL EXISTING TRAFFIC SIGNAL CONDUIT AND PULL BOXES UNLESS OTHERWISE NOTED.
7. EXISTING CONDUIT LAYOUT IS APPROXIMATE AND SHALL BE CONFIRMED BY THE CONTRACTOR.
8. ALL PROPOSED CONCRETE PULL BOX FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-1.
9. ALL PROPOSED TRAFFIC SIGNAL CABINET AND TRAFFIC SIGNAL PEDESTAL FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-2.
10. ALL PROPOSED TRAFFIC SIGNAL POLE AND MAST ARM FOUNDATIONS SHALL COMPLY TO NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARDS (2016).
11. ALL R&R SIGNAL INDICATION L.E.D.S SHALL BE REMOVED FROM UPSTREAM INTERSECTIONS AND RESET TO DOWNSTREAM INTERSECTIONS, ACCORDINGLY, WITH THE QUANTITY OF EACH SIGNAL INDICATION COLOR (GREEN, AMBER, AND RED) DETERMINED BASED ON THE SPECIFIC NEED AT EACH INTERSECTION.

ITEM # 616.193

0 20 50 100

SCALE: 1" = 20'

TEC, Inc.

65 Glenn Street
Lawrence, MA 01843
(978) 794-1792

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

www.TheEngineeringCorp.com

DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 40'

PREPARED FOR

City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
2	FINAL DESIGN	MARCH 3, 2017
3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

DRAWING TITLE

Traffic Signal Plan Woodbury Ave @ Commerce Way

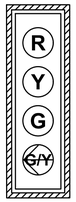
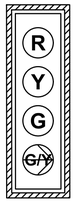
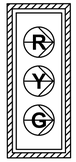
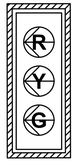
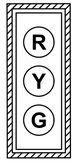
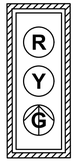
PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S5

SHEET 18 OF 28

SIGNAL HEAD DATA

PROPOSED						
3B,4B	3C	4D	1,5	2,4,6	2A,6A	P1-P8
						
ALL 12" L.E.D. LENSES, 5" BACKPLATES W/ 2" REFLECTIVE STRIPS, AND TUNNEL VISORS (POLYCARBONATE HOUSINGS)						ALL 16" L.E.D. W/ COUNTDOWN INDICATION

PROPOSED SIGNAL-MOUNTED SIGN SUMMARY


R10-3e

R10-11a(M)

R10-11b

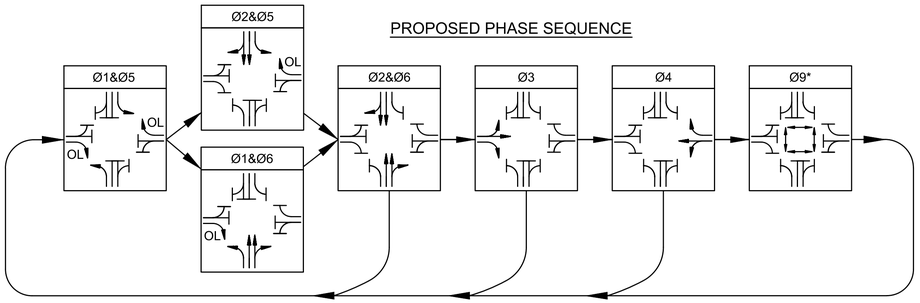
SIGNS ALSO APPEAR ON SIGN SUMMARY (SHEET T1)

DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD		
	STREET	DIRECTION	LANE	CALL Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL
CAMERA V1	DURGIN SQUARE PLAZA	EASTBOUND	RIGHT	Ø3	VIDEO			
	DURGIN SQUARE PLAZA	EASTBOUND	LEFT-THRU	Ø3	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	THRU-RIGHT	Ø2	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	THRU	Ø2	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	LEFT	Ø5	VIDEO			
	COMMERCE WAY	WESTBOUND	RIGHT	Ø4	VIDEO			
	COMMERCE WAY	WESTBOUND	LEFT-THRU	Ø4	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	THRU-RIGHT	Ø6	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	THRU	Ø6	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	LEFT	Ø1	VIDEO			

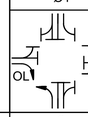
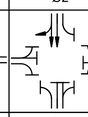
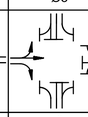
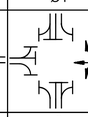
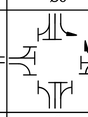
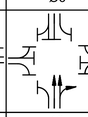
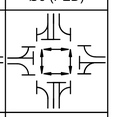
VIDEO DETECTOR NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY.

PROPOSED PHASE SEQUENCE



* PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.

PROPOSED NEMA DUAL RING CONTROLLER

SIGNAL PHASING & TIMING																							
	Ø1			Ø2			Ø3			Ø4			Ø5			Ø6			Ø9 (PED)		
																					
INITIAL INTERVAL	6			10			6			6			6			10						
VEHICLE EXTENSION	3			3			3			3			3			3						
MAXIMUM 1	8			40			6			12			8			40						
MAXIMUM 2																							
YELLOW		3.5			3.5			3.5			3.5			3.5			3.5						
ALL RED			2.5			2.5			2.5			2.0			2.5			2.5					
PEDESTRIAN WALK																			7.0				
PEDESTRIAN CLEAR																						28.0	
FLASH	FR			FY			FR			FR			FR			FY			OUT				
RECALL	OFF			SOFT			OFF			OFF			OFF			SOFT			OFF				
DETECTOR	NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			LOCK				
PREEMPT PRIORITY	PREEMPT 1			PREEMPT 2			PREEMPT 4			PREEMPT 3			PREEMPT 2			PREEMPT 1			-				

SEQUENCE & TIMING NOTES:
1. AUTOMATIC FLASHING OPERATION PER M.U.T.C.D. SECTION 4D.12.
2. PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.
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5. MAXIMUM 1 = FREE OPERATION
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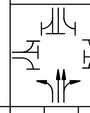
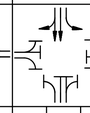
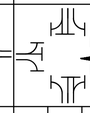
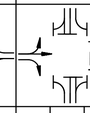
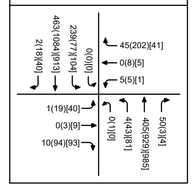
7. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
8. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
9. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
10. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

PREEMPTION PHASING AND PRIORITY

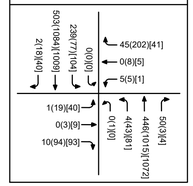
	PREEMPT 1			PREEMPT 2			PREEMPT 3			PREEMPT 4		
												
INITIAL INTERVAL	*			*			*			*		
VEHICLE EXTENSION												
MAXIMUM 1												
MAXIMUM 2												
YELLOW		3.5			3.5			3.5			3.5	
ALL RED			2.5			2.5			2.5			2.0
PEDESTRIAN WALK												
PEDESTRIAN CLEAR												
FLASH	-			-			-			-		
RECALL	-			-			-			-		
DETECTOR	-			-			-			-		
PREEMPT CALL	Ø1&Ø6			Ø2&Ø5			Ø4			Ø3		

EMERGENCY PREEMPTION NOTES:
1. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR PREEMPT 1 (OR PREEMPT 2, PREEMPT 3, PREEMPT 4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE 1 (OR 2, 3, 4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PREEMPTION PHASE CLEARANCE (AS NOTED IN CHART) AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PREEMPTION PHASES AS NECESSARY.
4. NORMAL CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.
5. CONFIRMATION STROBE (RED) SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.
6. OVERLAPS SHALL NOT BE ACTIVATED DURING EMERGENCY PREEMPTION CALLS.

2017 SYSTEM DESIGN VOLUMES AM (PM) [SAT]



2027 SYSTEM DESIGN VOLUMES AM (PM) [SAT]



ITEM # 616.193

0 20 50 100

SCALE: 1" = 20'

TEC, Inc.

65 Glenn Street
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(978) 794-1792

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

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DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 40'

PREPARED FOR

City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
2	FINAL DESIGN	MARCH 3, 2017
3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

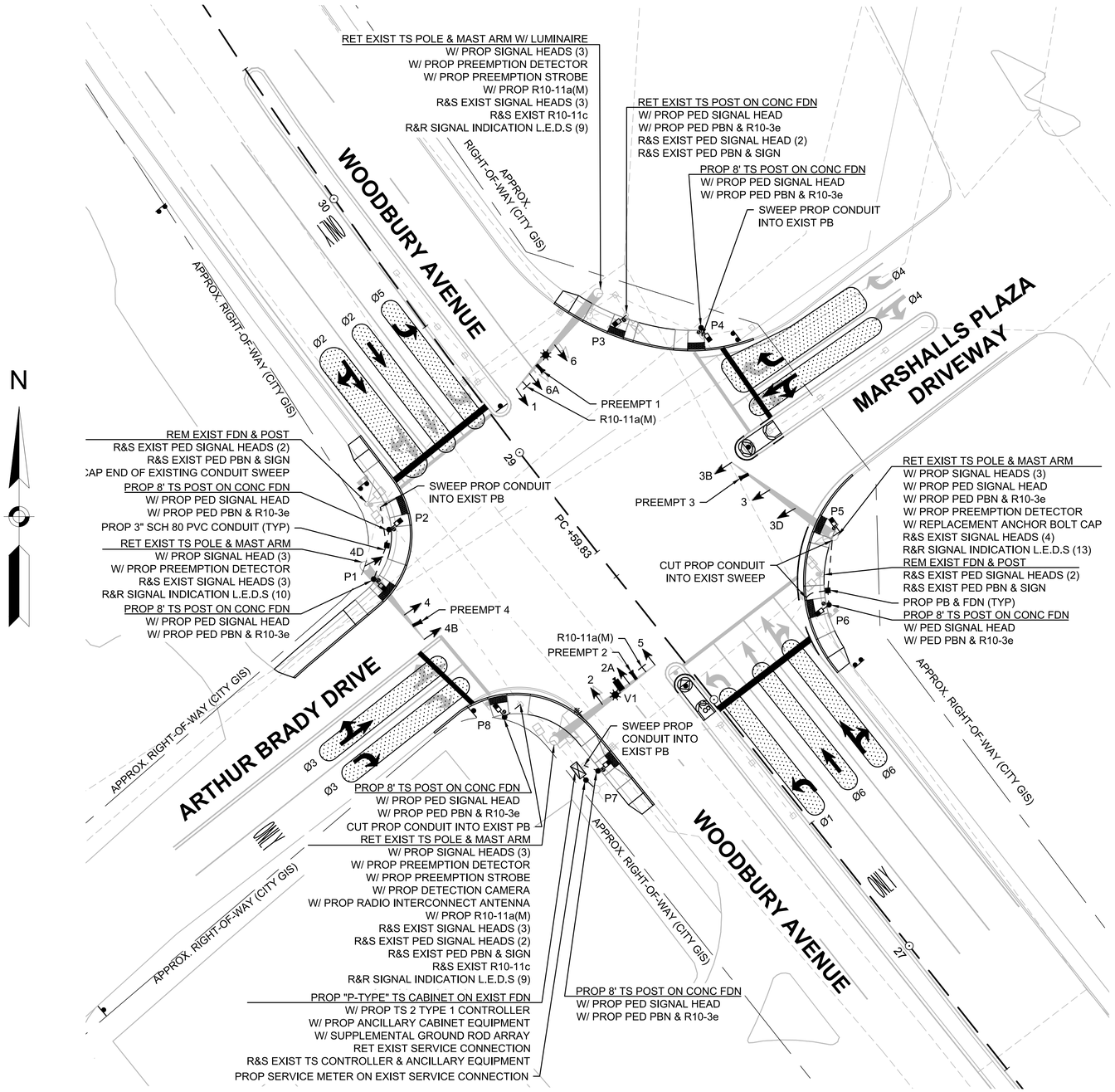
DRAWING TITLE

Traffic Signal Plan Woodbury Ave @ Commerce Way

PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S6



TIME BASED SCHEDULE

	MON. - FRI.	SAT. - SUN.
PLAN 1 (AM PEAK)	0600 - 1000	-
PLAN 2 (MIDDAY)	1000 - 1530	-
PLAN 3 (PM PEAK)	1530 - 1900	-
PLAN 4 (WKD MID)	-	1000 - 1800
FREE OPERATIONS	0000 - 0600 1900 - 2400	0000 - 1000 1800 - 2400

COORDINATION CYCLE / SPLIT OFFSET SCHEDULE

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5
CYCLE LENGTH	90	110	110	90	FREE OPERATIONS
OFFSET	43	87	54	72	
SPLIT TIME Ø1	16	23	18	21	
SPLIT TIME Ø2	46	45	56	36	
SPLIT TIME Ø3	14	21	18	16	
SPLIT TIME Ø4	14	21	18	17	
SPLIT TIME Ø5	16	30	22	21	
SPLIT TIME Ø6	46	38	52	36	

COORDINATION NOTES:

1. OFFSET: BEGINNING OF Ø2&Ø6 YELLOW.
2. Ø2&Ø6 "CALL NOT ACTUATED" DURING COORDINATION.
3. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
4. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.
5. CONTRACTOR SHALL FINE-TUNE THE TIMING AND COORDINATION PARAMETERS IN THE PRESENCE OF THE ENGINEER AND CITY OF PORTSMOUTH REPRESENTATIVES FOLLOWING INSTALLATION.
6. UPON PUSH BUTTON ACTIVATION, COORDINATION WILL TERMINATE AND SERVICE PEDESTRIAN PHASE. COORDINATION WILL RESUME FOLLOWING TERMINATION OF PEDESTRIAN PHASE.

GENERAL NOTES:

1. CROSSWALKS NOT SHOWN ON TRAFFIC SIGNAL PLANS FOR VISUAL CLARITY OF TRAFFIC SIGNAL EQUIPMENT. PLEASE REFERENCE GENERAL LAYOUT PLANS FOR CROSSWALKS.

CONSTRUCTION NOTES:

1. THE CONSTRUCTION SHALL CONFORM WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, BUREAU OF HIGHWAY DESIGN SPECIFICATIONS UNLESS OTHERWISE NOTED.
2. PEDESTRIAN PUSH BUTTONS SHALL BE PERPENDICULAR TO THE CROSSWALK PATH OF TRAVEL, WITH THE ARROW PROVIDED ON THE PUSH BUTTON PARALLEL TO THE CROSSWALK PATH OF TRAVEL.
3. WHERE TWO APS PEDESTRIAN PUSH BUTTONS ARE NOT SEPARATED BY MORE THAN 10 FEET, THE AUDIBLE WALK INDICATION SHALL BE A SPEECH WALK MESSAGE.
4. ALL SIGNAL CABLING SHALL BE REPLACED IN EXISTING CONDUITS.
5. THE CONTRACTOR SHALL EXAMINE THE EXISTING CONDUIT AND REPAIR ANY DAMAGED CONDUIT PRIOR TO RE-CABLING.
6. RETAIN ALL EXISTING TRAFFIC SIGNAL CONDUIT AND PULL BOXES UNLESS OTHERWISE NOTED.
7. EXISTING CONDUIT LAYOUT IS APPROXIMATE AND SHALL BE CONFIRMED BY THE CONTRACTOR.
8. ALL PROPOSED CONCRETE PULL BOX FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-1.
9. ALL PROPOSED TRAFFIC SIGNAL CABINET AND TRAFFIC SIGNAL PEDESTAL FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-2.
10. ALL PROPOSED TRAFFIC SIGNAL POLE AND MAST ARM FOUNDATIONS SHALL COMPLY TO NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARDS (2016).
11. ALL R&R SIGNAL INDICATION L.E.D.S SHALL BE REMOVED FROM UPSTREAM INTERSECTIONS AND RESET TO DOWNSTREAM INTERSECTIONS, ACCORDINGLY, WITH THE QUANTITY OF EACH SIGNAL INDICATION COLOR (GREEN, AMBER, AND RED) DETERMINED BASED ON THE SPECIFIC NEED AT EACH INTERSECTION.

ITEM # 616.194

0 20 50 100

SCALE: 1" = 20'

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ISSUED FOR

Construction

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Woodbury Avenue Traffic Signal Interconnect
Project #29781

PROJECT LOCATION

Portsmouth,
New Hampshire

DRAWING TITLE

Traffic Signal Plan
Woodbury Ave @
Arthur Brady Dr

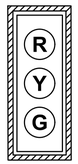
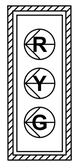
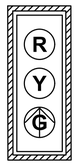
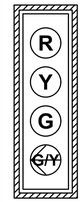
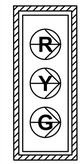
PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S7

SHEET 20 OF 28

SIGNAL HEAD DATA

PROPOSED					
2,3,4,6	1,5	2A,6A	3B,4B	3D,4D	P1-P8
					
ALL 12" L.E.D. LENSES, 5" BACKPLATES W/ 2" REFLECTIVE STRIPS, AND TUNNEL VISORS (POLYCARBONATE HOUSINGS)					ALL 16" L.E.D. W/ COUNTDOWN INDICATION

PROPOSED SIGNAL-MOUNTED SIGN SUMMARY

R10-3e R10-11a(M)

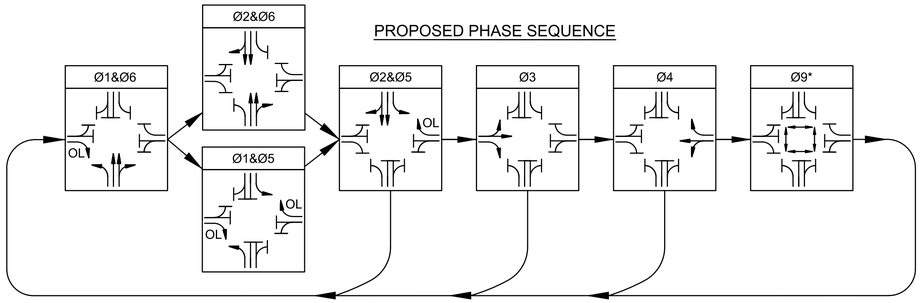
SIGNS ALSO APPEAR ON SIGN SUMMARY (SHEET T1)

DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD		
	STREET	DIRECTION	LANE	CALL Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL
CAMERA V1	ARTHUR BRADY DRIVE	EASTBOUND	RIGHT	Ø3	VIDEO			
	ARTHUR BRADY DRIVE	EASTBOUND	LEFT-THRU	Ø3	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	THRU-RIGHT	Ø2	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	THRU	Ø2	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	LEFT	Ø5	VIDEO			
	MARSHALL'S DRIVEWAY	WESTBOUND	RIGHT	Ø4	VIDEO			
	MARSHALL'S DRIVEWAY	WESTBOUND	LEFT-THRU	Ø4	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	THRU-RIGHT	Ø6	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	THRU	Ø6	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	LEFT	Ø1	VIDEO			

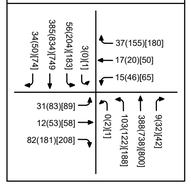
VIDEO DETECTOR NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY.

PROPOSED PHASE SEQUENCE



* PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.

2017 SYSTEM DESIGN VOLUMES AM (PM) [SAT]

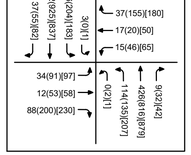


PREEMPTION PHASING AND PRIORITY

	PREEMPT 1	PREEMPT 2	PREEMPT 3	PREEMPT 4
INITIAL INTERVAL	*	*	*	*
VEHICLE EXTENSION				
MAXIMUM 1				
MAXIMUM 2				
YELLOW	3.5	3.5	3.5	3.5
ALL RED	2.5	2.5	2.5	2.0
PEDESTRIAN WALK				
PEDESTRIAN CLEAR				
FLASH	-	-	-	-
RECALL	-	-	-	-
DETECTOR	-	-	-	-
PREEMPT CALL	Ø1&Ø6	Ø2&Ø5	Ø3	Ø4

EMERGENCY PREEMPTION NOTES:
1. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR PREEMPT 1 (OR PREEMPT 2, PREEMPT 3, PREEMPT 4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE 1 (OR 2, 3, 4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PREEMPTION PHASE CLEARANCE (AS NOTED IN CHART) AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PREEMPTION PHASES AS NECESSARY.
4. NORMAL CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.
5. CONFIRMATION STROBE (RED) SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.
6. OVERLAPS SHALL NOT BE ACTIVATED DURING EMERGENCY PREEMPTION CALLS.

2027 SYSTEM DESIGN VOLUMES AM (PM) [SAT]

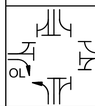
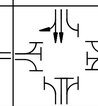
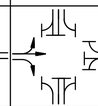
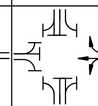
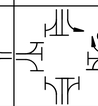
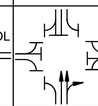
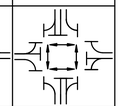


ITEM # 616.194

0 20 50 100

SCALE: 1" = 20'

PROPOSED NEMA DUAL RING CONTROLLER

SIGNAL PHASING & TIMING	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø9 (PED)
							
INITIAL INTERVAL	6	10	6	6	6	10	
VEHICLE EXTENSION	3	3	3	3	3	3	
MAXIMUM 1	11	37	7	11	19	29	
MAXIMUM 2							
YELLOW	3.5	3.5	3.5	3.5	3.5	3.5	
ALL RED	2.5	2.5	2.5	2.0	2.5	2.5	
PEDESTRIAN WALK							7.0
PEDESTRIAN CLEAR							25.0
FLASH	FR	FY	FR	FR	FR	FY	OUT
RECALL	OFF	SOFT	OFF	OFF	SOFT	MIN	OFF
DETECTOR	NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	LOCK
PREEMPT PRIORITY	PREEMPT 1	PREEMPT 2	PREEMPT 3	PREEMPT 4	PREEMPT 2	PREEMPT 1	-

SEQUENCE & TIMING NOTES:
1. AUTOMATIC FLASHING OPERATION PER M.U.T.C.D. SECTION 4D.12.
2. PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.
3. OL = OVERLAP
4. FR = FLASH RED, FY = FLASH YELLOW
5. MAXIMUM 1 = FREE OPERATION
6. MAXIMUM 2 = DURING COORDINATION
7. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
8. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
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DRAWING TITLE

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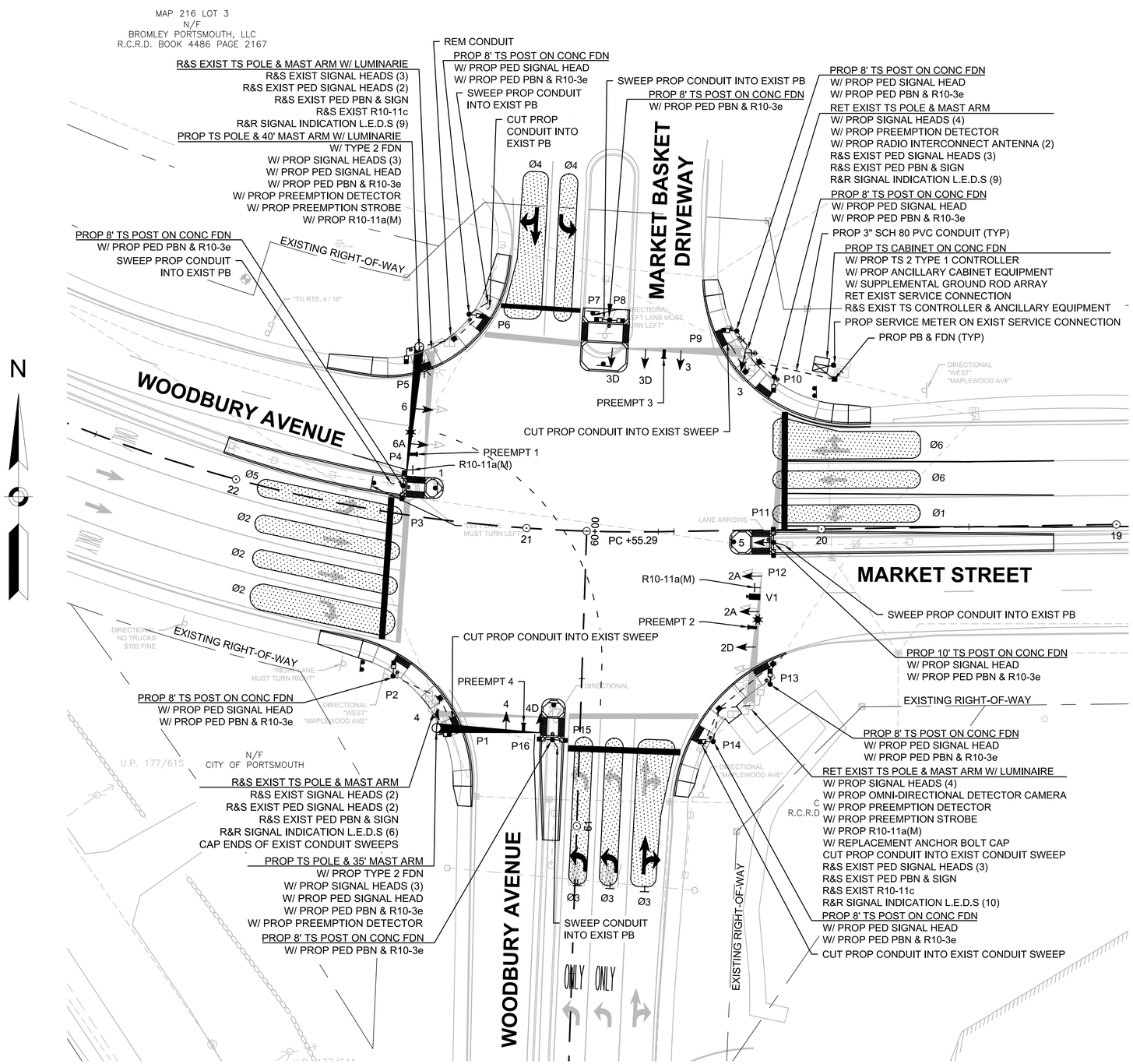
PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S8

SHEET 21 OF 28



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PLAN 1 (AM PEAK)	0600 - 1000	-
PLAN 2 (MIDDAY)	1000 - 1530	-
PLAN 3 (PM PEAK)	1530 - 1900	-
PLAN 4 (WKD MID)	-	1000 - 1800
FREE OPERATIONS	0000 - 0600 1900 - 2400	0000 - 1000 1800 - 2400

COORDINATION CYCLE / SPLIT OFFSET SCHEDULE

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5
CYCLE LENGTH	90	110	110	90	FREE OPERATIONS
OFFSET	53	28	96	22	
SPLIT TIME Ø1	13(18)	13(19)	13(21)	13(15)	
SPLIT TIME Ø2	23(40)	30(44)	42(42)	23(37)	
SPLIT TIME Ø3	13(14)	13(21)	13(25)	13(18)	
SPLIT TIME Ø4	13(18)	13(26)	14(22)	13(20)	
SPLIT TIME Ø5	13(13)	13(13)	13(13)	13(13)	
SPLIT TIME Ø6	23(45)	30(50)	42(50)	23(39)	
SPLIT TIME Ø9	28(0)				

COORDINATION NOTES:

1. OFFSET: BEGINNING OF Ø2&Ø6 YELLOW.
2. Ø2&Ø6 "CALL NOT ACTUATED" DURING COORDINATION.
3. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
4. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.
5. CONTRACTOR SHALL FINE-TUNE THE TIMING AND COORDINATION PARAMETERS IN THE PRESENCE OF THE ENGINEER AND CITY OF PORTSMOUTH REPRESENTATIVES FOLLOWING INSTALLATION.
6. EXCLUSIVE PEDESTRIAN PHASE TO BE PROGRAMMED WITHIN COORDINATED CYCLE. IF EXCLUSIVE PEDESTRIAN PUSH BUTTON PHASE IS NOT ACTIVATED DURING CYCLE, ADDITIONAL TIME SHALL BE APPROPRIATED PER PHASE SPLITS AS SHOWN IN COORDINATION DATA (XX).

GENERAL NOTES:

1. CROSSWALKS NOT SHOWN ON TRAFFIC SIGNAL PLANS FOR VISUAL CLARITY OF TRAFFIC SIGNAL EQUIPMENT. PLEASE REFERENCE GENERAL LAYOUT PLANS FOR CROSSWALKS.

CONSTRUCTION NOTES:

1. THE CONSTRUCTION SHALL CONFORM WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, BUREAU OF HIGHWAY DESIGN SPECIFICATIONS UNLESS OTHERWISE NOTED.
2. PEDESTRIAN PUSH BUTTONS SHALL BE PERPENDICULAR TO THE CROSSWALK PATH OF TRAVEL, WITH THE ARROW PROVIDED ON THE PUSH BUTTON PARALLEL TO THE CROSSWALK PATH OF TRAVEL.
3. WHERE TWO APS PEDESTRIAN PUSH BUTTONS ARE NOT SEPARATED BY MORE THAN 10 FEET, THE AUDIBLE WALK INDICATION SHALL BE A SPEECH WALK MESSAGE.
4. ALL SIGNAL CABLING SHALL BE REPLACED IN EXISTING CONDUITS.
5. THE CONTRACTOR SHALL EXAMINE THE EXISTING CONDUIT AND REPAIR ANY DAMAGED CONDUIT PRIOR TO RE-CABLING.
6. RETAIN ALL EXISTING TRAFFIC SIGNAL CONDUIT AND PULL BOXES UNLESS OTHERWISE NOTED.
7. EXISTING CONDUIT LAYOUT IS APPROXIMATE AND SHALL BE CONFIRMED BY THE CONTRACTOR.
8. ALL PROPOSED CONCRETE PULL BOX FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-1.
9. ALL PROPOSED TRAFFIC SIGNAL CABINET AND TRAFFIC SIGNAL PEDESTAL FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-2.
10. ALL PROPOSED TRAFFIC SIGNAL POLE AND MAST ARM FOUNDATIONS SHALL COMPLY TO NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARDS (2016).
11. ALL R&R SIGNAL INDICATION L.E.D.S SHALL BE REMOVED FROM UPSTREAM INTERSECTIONS AND RESET TO DOWNSTREAM INTERSECTIONS, ACCORDINGLY, WITH THE QUANTITY OF EACH SIGNAL INDICATION COLOR (GREEN, AMBER, AND RED) DETERMINED BASED ON THE SPECIFIC NEED AT EACH INTERSECTION.

ITEM # 616.195

0 20 50 100

SCALE: 1" = 20'

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DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 40'

PREPARED FOR

City of Portsmouth
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REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
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3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

DRAWING TITLE

Traffic Signal Plan
Woodbury Ave @ Market St

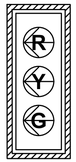
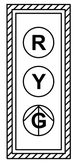
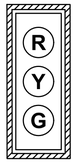
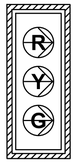
PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S9

SHEET 22 OF 28

SIGNAL HEAD DATA

PROPOSED				
1,3D,4D,5	2A,6A	3,4,6	2D	P1-P16
				
ALL 12" LENSES, 5" BACKPLATES W/ 2" REFLECTIVE STRIPS, AND TUNNEL VISORS (POLYCARBONATE HOUSINGS)				ALL 16" L.E.D. W/ COUNTDOWN INDICATION

PROPOSED SIGNAL-MOUNTED SIGN SUMMARY

R10-3e

R10-11a(M)

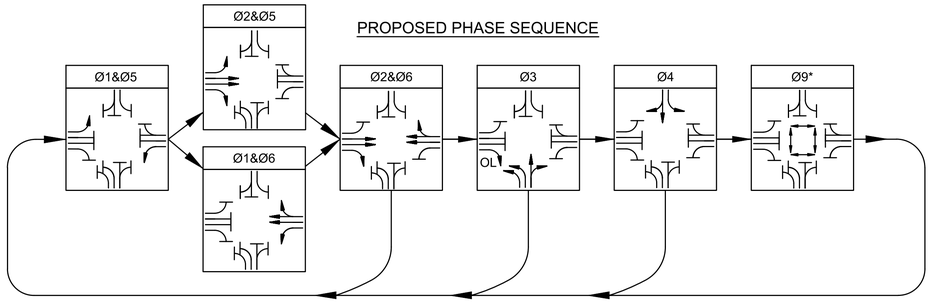
SIGNS ALSO APPEAR ON SIGN SUMMARY (SHEET T1)

DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD		
	STREET	DIRECTION	LANE	CALL Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL
CAMERA V1	WOODBURY AVENUE	EASTBOUND	RIGHT	Ø2	VIDEO			
	WOODBURY AVENUE	EASTBOUND	THRU	Ø2	VIDEO			
	WOODBURY AVENUE	EASTBOUND	LEFT	Ø5	VIDEO			
	MARKET BASKET DRIVEWAY	SOUTHBOUND	THRU-RIGHT	Ø4	VIDEO			
	MARKET BASKET DRIVEWAY	SOUTHBOUND	LEFT	Ø4	VIDEO			
	MARKET STREET	SOUTHBOUND	THRU-RIGHT	Ø6	VIDEO			
	MARKET STREET	WESTBOUND	THRU	Ø6	VIDEO			
	MARKET STREET	WESTBOUND	LEFT	Ø1	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	THRU-RIGHT	Ø3	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	LEFT	Ø3	VIDEO			

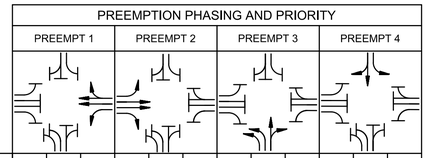
VIDEO DETECTOR NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY.

PROPOSED PHASE SEQUENCE



* PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.

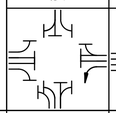
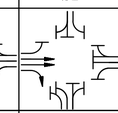
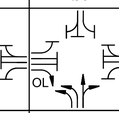
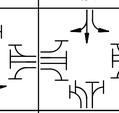
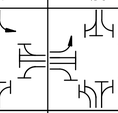
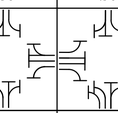
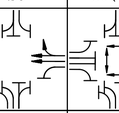
PREEMPTION PHASING AND PRIORITY



INITIAL INTERVAL	*			*			*			*		
VEHICLE EXTENSION												
MAXIMUM 1												
MAXIMUM 2												
YELLOW		3.5			3.5			3.5			3.5	
ALL RED			3.0			3.0			3.0			3.0
PEDESTRIAN WALK												
PEDESTRIAN CLEAR												
FLASH	-			-			-			-		
RECALL	-			-			-			-		
DETECTOR	-			-			-			-		
PREEMPT CALL	Ø1&Ø6			Ø2&Ø5			Ø3			Ø4		

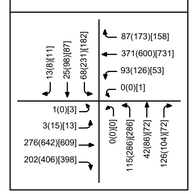
EMERGENCY PREEMPTION NOTES:
1. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR PREEMPT 1 (OR PREEMPT 2, PREEMPT 3, PREEMPT 4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE 1 (OR 2, 3, 4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PREEMPTION PHASE CLEARANCE (AS NOTED IN CHART) AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PREEMPTION PHASES AS NECESSARY.
4. NORMAL CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.
5. CONFIRMATION STROBE (RED) SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.
6. OVERLAPS SHALL NOT BE ACTIVATED DURING EMERGENCY PREEMPTION CALLS.

PROPOSED NEMA DUAL RING CONTROLLER

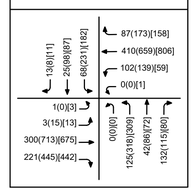
SIGNAL PHASING & TIMING																				
	Ø1			Ø2			Ø3			Ø4			Ø5			Ø6			Ø9 (PED)		
																					
INITIAL INTERVAL	6			10			6			6			6			10					
VEHICLE EXTENSION	3			3			3			3			3			3					
MAXIMUM 1	12			26			11			17			8			30					
MAXIMUM 2																					
YELLOW		3.5			3.5			3.5			3.5			3.5			3.5				
ALL RED			3.0			3.0			3.0			3.0			3.0			3.0			
PEDESTRIAN WALK																			7.0		
PEDESTRIAN CLEAR																					21.0
FLASH	FR			FY			FR			FR			FR			FY			OUT		
RECALL	OFF			SOFT			OFF			OFF			OFF			SOFT			OFF		
DETECTOR	NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			LOCK		
PREEMPT PRIORITY	PREEMPT 1			PREEMPT 2			PREEMPT 3			PREEMPT 4			PREEMPT 2			PREEMPT 1			-		

SEQUENCE & TIMING NOTES:
1. AUTOMATIC FLASHING OPERATION PER M.U.T.C.D. SECTION 4D.12.
2. PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.
3. OL = OVERLAP
4. FR = FLASH RED, FY = FLASH YELLOW
5. MAXIMUM 1 = FREE OPERATION
6. MAXIMUM 2 = DURING COORDINATION
7. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
8. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
9. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
10. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

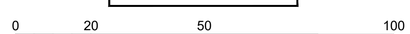
2017 SYSTEM DESIGN VOLUMES AM (PM) [SAT]



2027 SYSTEM DESIGN VOLUMES AM (PM) [SAT]



ITEM # 616.195



SCALE: 1" = 20'

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DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 40'

PREPARED FOR

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3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect Project #29781

PROJECT LOCATION

Portsmouth, New Hampshire

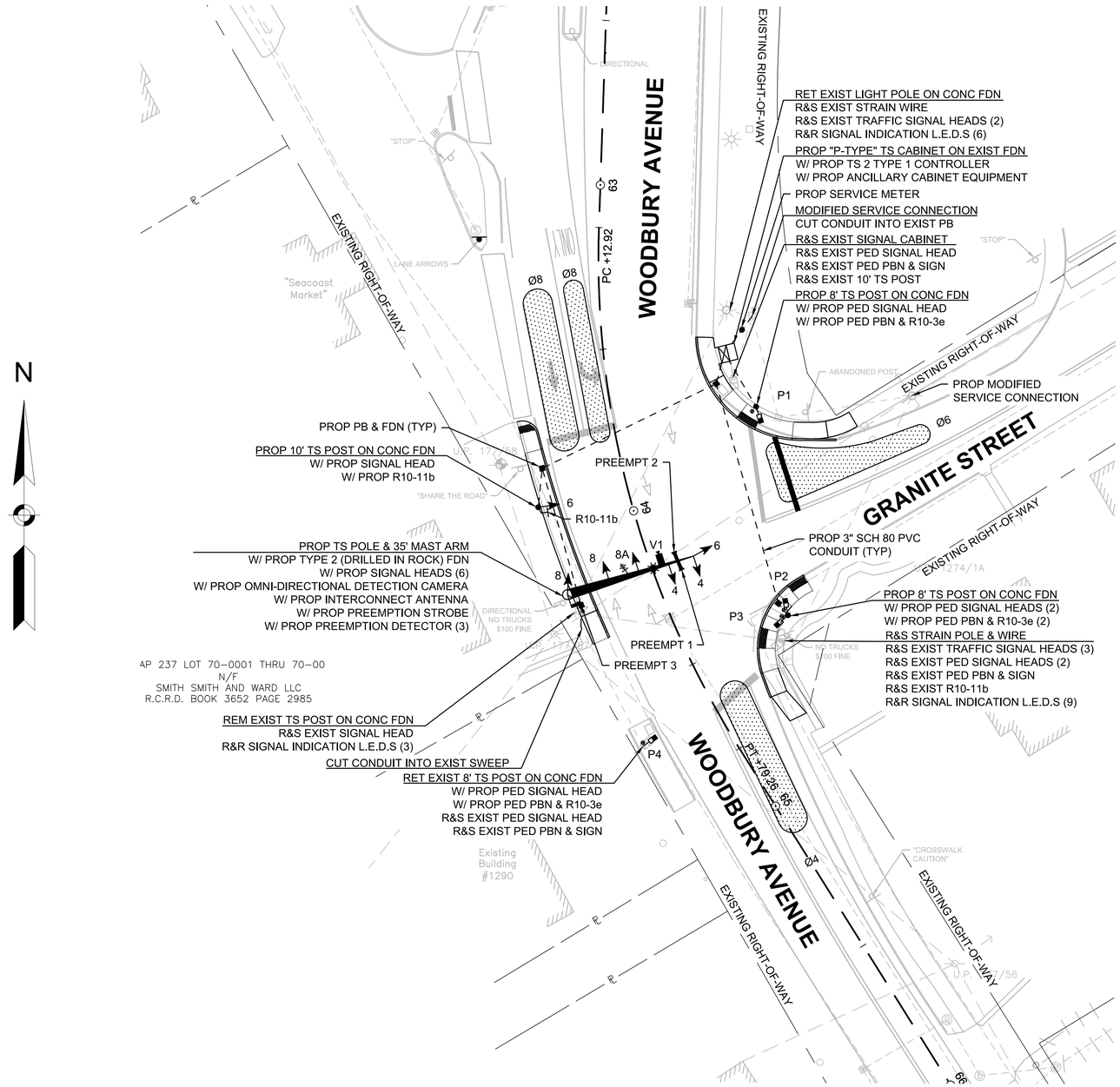
DRAWING TITLE

Traffic Signal Plan Woodbury Ave @ Market St

PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S10



TIME BASED SCHEDULE

	MON. - FRI.	SAT. - SUN.
PLAN 1 (AM PEAK)	0600 - 1000	-
PLAN 2 (MIDDAY)	1000 - 1530	-
PLAN 3 (PM PEAK)	1530 - 1900	-
PLAN 4 (WKD MID)	-	1000 - 1800
FREE OPERATIONS	0000 - 0600 1900 - 2400	0000 - 1000 1800 - 2400

COORDINATION CYCLE / SPLIT OFFSET SCHEDULE

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5
CYCLE LENGTH	90	110	110	90	FREE OPERATIONS
OFFSET	49	103	92	8	
SPLIT TIME Ø4	60	83	83	63	
SPLIT TIME Ø6	30	27	27	27	
SPLIT TIME Ø8	60	83	83	63	

COORDINATION NOTES:
1. OFFSET: BEGINNING OF Ø2&Ø6 YELLOW.
2. Ø2&Ø6 "CALL NOT ACTUATED" DURING COORDINATION.
3. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
4. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.
5. CONTRACTOR SHALL FINE-TUNE THE TIMING AND COORDINATION PARAMETERS IN THE PRESENCE OF THE ENGINEER AND CITY OF PORTSMOUTH REPRESENTATIVES FOLLOWING INSTALLATION.
6. UPON PUSH BUTTON ACTIVATION, COORDINATION WILL TERMINATE AND SERVICE PEDESTRIAN PHASE. COORDINATION WILL RESUME FOLLOWING TERMINATION OF PEDESTRIAN PHASE.

GENERAL NOTES:
1. CROSSWALKS NOT SHOWN ON TRAFFIC SIGNAL PLANS FOR VISUAL CLARITY OF TRAFFIC SIGNAL EQUIPMENT. PLEASE REFERENCE GENERAL LAYOUT PLANS FOR CROSSWALKS.

CONSTRUCTION NOTES:
1. THE CONSTRUCTION SHALL CONFORM WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, BUREAU OF HIGHWAY DESIGN SPECIFICATIONS UNLESS OTHERWISE NOTED.
2. PEDESTRIAN PUSH BUTTONS SHALL BE PERPENDICULAR TO THE CROSSWALK PATH OF TRAVEL, WITH THE ARROW PROVIDED ON THE PUSH BUTTON PARALLEL TO THE CROSSWALK PATH OF TRAVEL.
3. WHERE TWO APS PEDESTRIAN PUSH BUTTONS ARE NOT SEPARATED BY MORE THAN 10 FEET, THE AUDIBLE WALK INDICATION SHALL BE A SPEECH WALK MESSAGE.
4. ALL SIGNAL CABLING SHALL BE REPLACED IN EXISTING CONDUITS.
5. THE CONTRACTOR SHALL EXAMINE THE EXISTING CONDUIT AND REPAIR ANY DAMAGED CONDUIT PRIOR TO RE-CABLING.
6. SOIL BORINGS INDICATE LEDGE AT 3 TO 4 FEET BELOW SURFACE GRADE. MAST ARM FOUNDATION AT THIS LOCATION SHALL BE DRILLED TO PENETRATE INTO BEDROCK A MINIMUM OF 3 FEET AND PINNED. FOUNDATION DETAILS SHALL BE PROVIDED AS PART OF THE FINAL DESIGN.
7. RETAIN ALL EXISTING TRAFFIC SIGNAL CONDUIT AND PULL BOXES UNLESS OTHERWISE NOTED.
8. EXISTING CONDUIT LAYOUT IS APPROXIMATE AND SHALL BE CONFIRMED BY THE CONTRACTOR.
9. ALL PROPOSED CONCRETE PULL BOX FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-1.
10. ALL PROPOSED TRAFFIC SIGNAL CABINET AND TRAFFIC SIGNAL PEDESTAL FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-2.
11. ALL PROPOSED TRAFFIC SIGNAL POLE AND MAST ARM FOUNDATIONS SHALL COMPLY TO NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARDS (2016).
11. ALL R&R SIGNAL INDICATION L.E.D.S SHALL BE REMOVED FROM UPSTREAM INTERSECTIONS AND RESET TO DOWNSTREAM INTERSECTIONS. ACCORDINGLY, WITH THE QUANTITY OF EACH SIGNAL INDICATION COLOR (GREEN, AMBER, AND RED) DETERMINED BASED ON THE SPECIFIC NEED AT EACH INTERSECTION.

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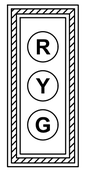
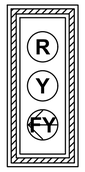
PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

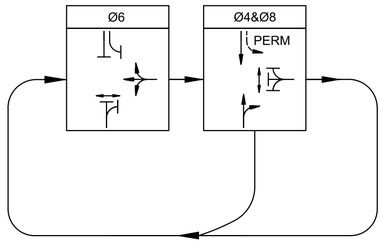
DRAWING NO.
S11

SHEET 24 OF 28

SIGNAL HEAD DATA

PROPOSED		
4,6,8	8A	P1-P4
		
ALL 12" LENSES, 5" BACKPLATES W/ 2" REFLECTIVE STRIPS, & TUNNEL VISORS (POLYCARBONATE HOUSINGS)		ALL 16" L.E.D. W/ COUNTDOWN INDICATION

PROPOSED PHASE SEQUENCE



PROPOSED SIGNAL-MOUNTED SIGN SUMMARY

R10-3e

R10-11b

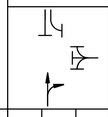
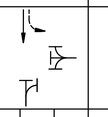
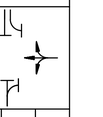
SIGNS ALSO APPEAR ON SIGN SUMMARY (SHEET T1)

DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD		
	STREET	DIRECTION	LANE	CALL Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL
CAMERA V1	WOODBURY AVENUE	SOUTHBOUND	THRU	Ø8	VIDEO			
	WOODBURY AVENUE	SOUTHBOUND	LEFT	Ø8	VIDEO			
	GRANITE STREET	WESTBOUND	LEFT-RIGHT	Ø6	VIDEO			
	WOODBURY AVENUE	NORTHBOUND	THRU-RIGHT	Ø4	VIDEO			

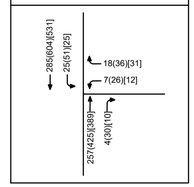
VIDEO DETECTOR NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY.

PREEMPTION PHASING AND PRIORITY

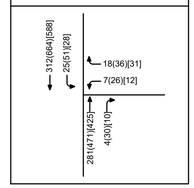
	PREEMPT D1			PREEMPT 2			PREEMPT 3		
									
INITIAL INTERVAL	*			*			*		
VEHICLE EXTENSION									
MAXIMUM 1									
MAXIMUM 2									
YELLOW		3.5			3.5			3.0	
ALL RED			1.5			1.5			2.0
PEDESTRIAN WALK									
PEDESTRIAN CLEAR									
FLASH	-			-			-		
RECALL	-			-			-		
DETECTOR	-			-			-		
PREEMPT CALL	Ø4			Ø8			Ø6		

EMERGENCY PREEMPTION NOTES:
1. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE SERVICED ON A FIRST DETECTED FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR PREEMPT 1 (OR PREEMPT 2, PREEMPT 3) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE 1 (OR 2, 3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PREEMPTION PHASE CLEARANCE (AS NOTED IN CHART) AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PREEMPTION PHASES AS NECESSARY.
4. NORMAL CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.
5. CONFIRMATION STROBE (RED) SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.
6. OVERLAPS SHALL NOT BE ACTIVATED DURING EMERGENCY PREEMPTION CALLS.

2017 SYSTEM DESIGN VOLUMES AM (PM) [SAT]



2027 SYSTEM DESIGN VOLUMES AM (PM) [SAT]



PROPOSED NEMA DUAL RING CONTROLLER

SIGNAL PHASING & TIMING	Ø4			Ø6			Ø8		
									
INITIAL INTERVAL	10			6			10		
VEHICLE EXTENSION	3			3			3		
MAXIMUM 1	28			25			28		
MAXIMUM 2									
YELLOW		3.5			3.0			3.5	
ALL RED			2.5			2.0			2.5
PEDESTRIAN WALK	7.0			7.0			7.0		
PEDESTRIAN CLEAR		11.0	4.0		9.0	4.0		11.0	4.0
FLASH	FR			FR			FR		
RECALL	SOFT			OFF			SOFT		
DETECTOR	NON-LOCK			NON-LOCK			NON-LOCK		
PREEMPT PRIORITY	PREEMPT 1			-			PREEMPT 2		

SEQUENCE & TIMING NOTES:
1. AUTOMATIC FLASHING OPERATION PER M.U.T.C.D. SECTION 4D.12.
2. PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.
3. PERM = PERMISSIVE LEFT-TURN
4. FR = FLASH RED, FY = FLASH YELLOW
5. MAXIMUM 1 = FREE OPERATION
6. MAXIMUM 2 = DURING COORDINATION
7. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
8. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
9. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
10. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

ITEM # 616.196

0 20 50 100

SCALE: 1" = 20'

TEC, Inc.

65 Glenn Street
Lawrence, MA 01843
(978) 794-1792

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

www.TheEngineeringCorp.com

DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 40'

PREPARED FOR

City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

NHDOT
Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
2	FINAL DESIGN	MARCH 3, 2017
3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect
Project #29781

PROJECT LOCATION

Portsmouth,
New Hampshire

DRAWING TITLE

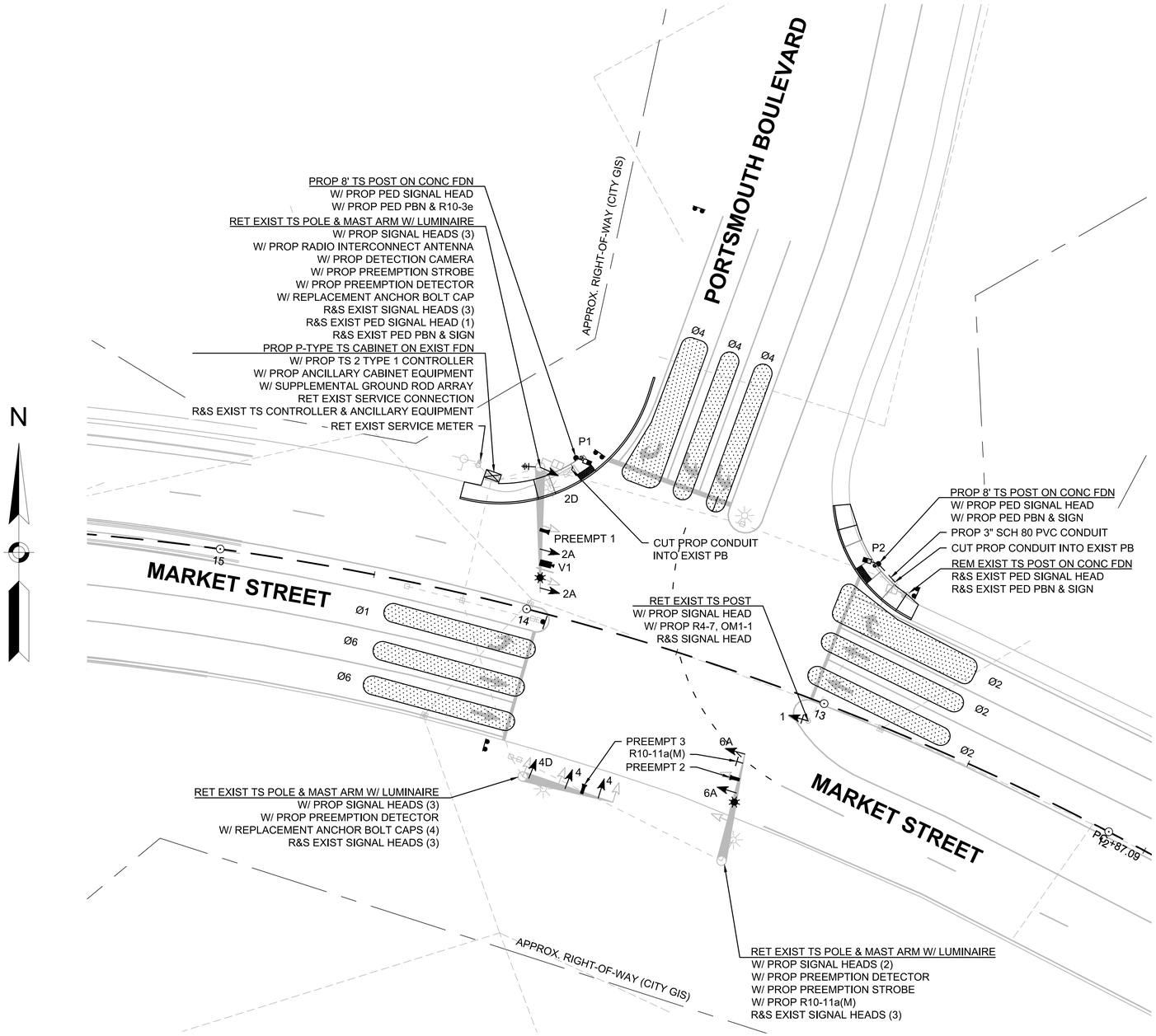
Traffic Signal Plan
Woodbury Ave @ Granite St

PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S12

SHEET 25 OF 28



TIME BASED SCHEDULE

	MON. - FRI.	SAT. - SUN.
PLAN 1 (AM PEAK)	0600 - 1000	-
PLAN 2 (MIDDAY)	1000 - 1530	-
PLAN 3 (PM PEAK)	1530 - 1900	-
PLAN 4 (WKD MID)	-	1000 - 1800
FREE OPERATIONS	0000 - 0600 1900 - 2400	0000 - 1000 1800 - 2400

COORDINATION CYCLE / SPLIT OFFSET SCHEDULE

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5
CYCLE LENGTH	90	110	110	90	FREE OPERATIONS
OFFSET	61	46	9	47	
SPLIT TIME Ø1	25	27	21	18	
SPLIT TIME Ø2	50	57	61	57	
SPLIT TIME Ø3	15	26	28	15	
SPLIT TIME Ø6	75	84	82	75	

COORDINATION NOTES:

1. OFFSET: BEGINNING OF Ø2&Ø6 YELLOW.
2. Ø2&Ø6 "CALL NOT ACTUATED" DURING COORDINATION.
3. SPLIT TIMES EQUAL GREEN PLUS CLEARANCES.
4. INHIBIT MAX TERMINATION SHALL BE IN EFFECT DURING COORDINATION.
5. CONTRACTOR SHALL FINE-TUNE THE TIMING AND COORDINATION PARAMETERS IN THE PRESENCE OF THE ENGINEER AND CITY OF PORTSMOUTH REPRESENTATIVES FOLLOWING INSTALLATION.
6. UPON PUSH BUTTON ACTIVATION, COORDINATION WILL TERMINATE AND SERVICE PEDESTRIAN PHASE. COORDINATION WILL RESUME FOLLOWING TERMINATION OF PEDESTRIAN PHASE.

GENERAL NOTES:

1. CROSSWALKS NOT SHOWN ON TRAFFIC SIGNAL PLANS FOR VISUAL CLARITY OF TRAFFIC SIGNAL EQUIPMENT. PLEASE REFERENCE GENERAL LAYOUT PLANS FOR CROSSWALKS.

CONSTRUCTION NOTES:

1. THE CONSTRUCTION SHALL CONFORM WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, BUREAU OF HIGHWAY DESIGN SPECIFICATIONS UNLESS OTHERWISE NOTED.
2. PEDESTRIAN PUSH BUTTONS SHALL BE PERPENDICULAR TO THE CROSSWALK PATH OF TRAVEL, WITH THE ARROW PROVIDED ON THE PUSH BUTTON PARALLEL TO THE CROSSWALK PATH OF TRAVEL.
3. WHERE TWO APS PEDESTRIAN PUSH BUTTONS ARE NOT SEPARATED BY MORE THAN 10 FEET, THE AUDIBLE WALK INDICATION SHALL BE A SPEECH WALK MESSAGE.
4. ALL SIGNAL CABLING SHALL BE REPLACED IN EXISTING CONDUITS.
5. THE CONTRACTOR SHALL EXAMINE THE EXISTING CONDUIT AND REPAIR ANY DAMAGED CONDUIT PRIOR TO RE-CABLING.
6. RETAIN ALL EXISTING TRAFFIC SIGNAL CONDUIT AND PULL BOXES UNLESS OTHERWISE NOTED.
7. EXISTING CONDUIT LAYOUT IS APPROXIMATE AND SHALL BE CONFIRMED BY THE CONTRACTOR.
8. ALL PROPOSED CONCRETE PULL BOX FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-1.
9. ALL PROPOSED TRAFFIC SIGNAL CABINET AND TRAFFIC SIGNAL PEDESTAL FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION SIGNAL AND LIGHTING STANDARD SL-2.
10. ALL PROPOSED TRAFFIC SIGNAL POLE AND MAST ARM FOUNDATIONS SHALL COMPLY TO NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARDS (2016).
11. ALL R&R SIGNAL INDICATION L.E.D.S SHALL BE REMOVED FROM UPSTREAM INTERSECTIONS AND RESET TO DOWNSTREAM INTERSECTIONS, ACCORDINGLY, WITH THE QUANTITY OF EACH SIGNAL INDICATION COLOR (GREEN, AMBER, AND RED) DETERMINED BASED ON THE SPECIFIC NEED AT EACH INTERSECTION.

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0 20 50 100

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Market St @
Portsmouth Blvd

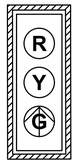
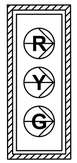
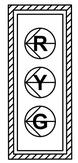
PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S13

SHEET 26 OF 28

SIGNAL HEAD DATA

PROPOSED			
2A,6A	2D,4D	1,4	P1-P2
			
ALL 12" L.E.D. LENSES, 5" BACKPLATES W/ 2" REFLECTIVE STRIPS, AND TUNNEL VISORS (POLYCARBONATE HOUSINGS)			ALL 16" L.E.D. W/ COUNTDOWN INDICATION

PROPOSED SIGNAL-MOUNTED SIGN SUMMARY

R4-7 R10-3e R10-11a(M) OM1-1

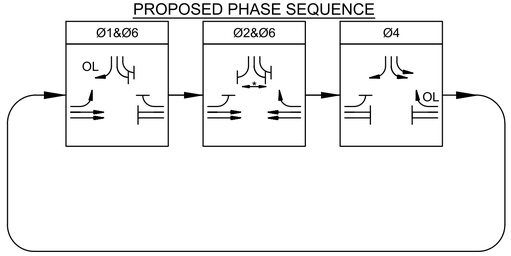
SIGNS ALSO APPEAR ON SIGN SUMMARY (SHEET T1)

DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD		
	STREET	DIRECTION	LANE	CALL Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL
CAMERA V1	MARKET STREET	EASTBOUND	THRU	Ø6	VIDEO			
	MARKET STREET	EASTBOUND	LEFT	Ø1	VIDEO			
	PORTSMOUTH BOULEVARD	SOUTHBOUND	RIGHT	Ø4	VIDEO			
	PORTSMOUTH BOULEVARD	SOUTHBOUND	LEFT	Ø4	VIDEO			
	MARKET STREET	WESTBOUND	RIGHT	Ø2	VIDEO			
	MARKET STREET	WESTBOUND	THRU	Ø2	VIDEO			

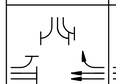
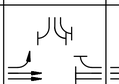
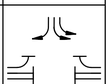
VIDEO DETECTOR NOTES:
1. DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY.

PROPOSED PHASE SEQUENCE



* PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.

PREEMPTION PHASING AND PRIORITY

	PREEMPT 1			PREEMPT 2			PREEMPT 3		
									
INITIAL INTERVAL	*			*			*		
VEHICLE EXTENSION									
MAXIMUM 1									
MAXIMUM 2									
YELLOW		3.5			3.5			3.5	
ALL RED			2.5			2.5			2.0
PEDESTRIAN WALK									
PEDESTRIAN CLEAR									
FLASH	-			-			-		
RECALL	-			-			-		
DETECTOR	-			-			-		
PREEMPT CALL	Ø2			Ø1&Ø6			Ø4		

EMERGENCY PREEMPTION NOTES:
1. EMERGENCY VEHICLE PREEMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
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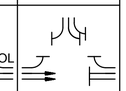
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR PREEMPT 1 (OR PREEMPT 2, PREEMPT 3) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PREEMPTION PHASE 1 (OR 2, 3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PREEMPTION PHASE CLEARANCE (AS NOTED IN CHART) AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PREEMPTION PHASES AS NECESSARY.
4. NORMAL CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.
5. CONFIRMATION STROBE (RED) SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.
6. OVERLAPS SHALL NOT BE ACTIVATED DURING EMERGENCY PREEMPTION CALLS.

PROPOSED NEMA DUAL RING CONTROLLER

SIGNAL PHASING & TIMING												
	Ø1			Ø2			Ø3			Ø6		
												
INITIAL INTERVAL	6			10			6			10		
VEHICLE EXTENSION	3			3			3			3		
MAXIMUM 1	13			37			22			56		
MAXIMUM 2												
YELLOW		3.5			3.5			3.5			3.5	
ALL RED			2.5			2.5			2.5			2.5
PEDESTRIAN WALK				7.0								
PEDESTRIAN CLEAR					27.0							
FLASH	FR			FY			FR			FY		
RECALL	OFF			SOFT			OFF			SOFT		
DETECTOR	NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK		
PREEMPT PRIORITY	PREEMPT 2			PREEMPT 1			PREEMPT 3			PREEMPT 2		

SEQUENCE & TIMING NOTES:
1. AUTOMATIC FLASHING OPERATION PER M.U.T.C.D. SECTION 4D.12.
2. PEDESTRIAN PHASE UPON PUSH BUTTON ACTIVATION ONLY.
3. OL = OVERLAP
4. FR = FLASH RED, FY = FLASH YELLOW
5. MAXIMUM 1 = FREE OPERATION
6. MAXIMUM 2 = DURING COORDINATION
7. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
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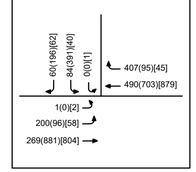

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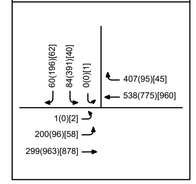

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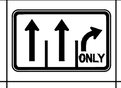
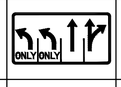
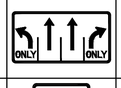
Market St @ Portsmouth Blvd

PROJECT NO.
T0543

TEC CAD FILE
T0543_Traffic Signal Plans.dwg

DRAWING NO.
S14

SHEET 27 OF 28

TRAFFIC SIGN SUMMARY												
IDENTIFICATION NUMBER	SIZE OF SIGN (in)			TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT	LEGEND	LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK-GROUND	LEGEND	BORDER		
R3-5	30	36		SEE 2009 MUTCD FOR DIMENSIONS			2	WHITE	BLACK	BLACK	7.50	15.00
R3-6(R)	30	36					1	WHITE	BLACK	BLACK	7.50	7.50
R3-8(13)	36	30					1	WHITE	BLACK	BLACK	7.50	7.50
R3-8(25)	36	30					7	WHITE	BLACK	BLACK	7.50	52.50
R3-8(115)	42	30					2	WHITE	BLACK	BLACK	8.75	17.50
R3-8(125)	42	30					3	WHITE	BLACK	BLACK	8.75	26.25
R3-8(133)	42	30					2	WHITE	BLACK	BLACK	8.75	17.50
R3-8(134)	42	30					10	WHITE	BLACK	BLACK	8.75	87.50
R3-8(335)	42	30					2	WHITE	BLACK	BLACK	8.75	17.50
R3-8(1134)	48	30					2	WHITE	BLACK	BLACK	10.00	20.00
R3-8(1335)	48	30					8	WHITE	BLACK	BLACK	10.00	80.00
R4-7	24	30					15	WHITE	BLACK	BLACK	5.00	75.00
R4-7a	24	30					1	WHITE	BLACK	BLACK	5.00	5.00
R10-11a(M)	36	48					10	WHITE	BLACK	BLACK	12.00	120.00
R10-11b	36	36					4	WHITE	BLACK	BLACK	9.00	36.00
OM1-1	24	24					15	FL. YELLOW	YELLOW	YELLOW	4.00	60.00

NOTES:

1. THE MINIMUM MOUNTING HEIGHT OF POST-MOUNTED SIGNS, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE TOP OF CURB OR SIDEWALK, OR THE ELEVATION OF THE NEAR EDGE OF TRAVEL WAY, SHALL BE 7 FEET UNLESS OTHERWISE SPECIFIED.
2. SEE TRAFFIC SIGNAL PLANS FOR SIGNS TO BE MOUNTED ON SIGNAL EQUIPMENT.

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(978) 794-1792

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

www.TheEngineeringCorp.com

DESIGNED BY	SWG
DRAWN BY	DSH/EA/ERP/APR
CHECKED BY	KRD/SWG
DATE	APRIL 17, 2017
SCALE	1" = 20'

PREPARED FOR

City of Portsmouth
1 Junkins Ave.
Portsmouth, NH 03801

Bureau of Planning and Community Assistance
7 Hazen Drive
Concord, NH 03302

REVISIONS

1	PRELIMINARY DESIGN	OCTOBER 7, 2016
2	FINAL DESIGN	MARCH 3, 2017
3	CONSTRUCTION	APRIL 17, 2017

ISSUED FOR

Construction

PROJECT TITLE

Woodbury Avenue Traffic Signal Interconnect
Project #29781

PROJECT LOCATION

Portsmouth,
New Hampshire

DRAWING TITLE

Sign Summary

PROJECT NO.
T0543

TEC CAD FILE
T0543_Sign Summary.dwg

DRAWING NO.
T1

SHEET 28 OF 28