| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| W-5705C | Sig. 2.0 |

## PHASING DIAGRAM

PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

## TABLE OF OPERATION

| SIGNAL FACE | PHASE 01+05 | 01+06 | 02+05 | 02+06 | 03 | 04 | 07 | FLASH |
|---|---|---|---|---|---|---|---|---|
| 11 | ← | ← | R | R | R | R | R | R |
| 21, 22 | R | R | G | G | R | R | R | Y |
| 23 | R | R | G | G | R/← | R | R | Y |
| 31 | R | R | R | R | ← | ← | R | R |
| 32 | R | R | R | R | G ← | G ← | R | R |
| 33 | R/→ | R/→ | R | R | G | G | R | R |
| 34, 35 | R | R | R | R | G | R | R | R |
| 41, 42, 43, 44 | R | R | R | R | R | G | R | R |
| 51 | ← | R | ← | R | R | R | R | R |
| 61 | R | G | R | G | R | R | R | Y |
| 62 | R | G | R | G | R | R | R/→ | Y |
| 71 | R | R | R | R | R | R | G ← | R |
| 72 | R | R | R | R | R | R | G | R |
| 91 | ↖ G ← | ↖ G ← | ↖ G ← | ↖ G ← | G | R | ↖ G ← | R |
| 92 | G | G | G | G | G | R | G | R |

## SIGNAL FACE I.D.

All Heads L.E.D.

## 2033 SOFTWARE w/ 2070 CONTROLLER
## LOOP & DETECTOR UNIT INSTALLATION CHART

| INDUCTIVE LOOPS | | | | | | DETECTOR PROGRAMMING | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TIMING | | ATTRIBUTES | | | | | | | | STATUS | |
| LOOP NO. | SIZE (ft) | TURNS | DIST. FROM STOPBAR (ft) | NEW | EXISTING | NEMA PHASE | DELAY | CARRY (STRETCH) | 1 FULL TIME DELAY | 2 PROTECTED (LEAD) | 3 RESERVED | 4 COUNT | 5 EXTENSION | 6 TYPE 3 | 7 CALLING | 8 ALTERNATE | SYSTEM LOOPS | NEW | EXISTING |
| 1A | 6X40 | 2-4-2 | 0 | - | X | 1 | - SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 1B | 6X40 | 2-4-2 | 0 | - | X | 1 | 15 SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 2A, 2B, 2C | 6X6 | EXIST | 300 | - | X | 2 | - SEC. | 1.6 SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 2D, 2E, 2F | 6X6 | EXIST | 90 | - | X | 2 | - SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 3A, 3B | 6X40 | 2-4-2 | 0 | - | X | 3 | - SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 3C, 3D, 3E | 6X40 | 2-4-2 | 0 | - | X | 3 | - SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 4A | 6X40 | 2-4-2 | 0 | - | X | 4 | - SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 4B | 6X40 | 2-4-2 | 0 | - | X | 4 | - SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 5A | 6X40 | 2-4-2 | 0 | - | X | 5 | - SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 6A, 6B | 6X6 | EXIST | 300 | - | X | 6 | - SEC. | 1.6 SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 6C, 6D | 6X6 | EXIST | 90 | - | X | 6 | - SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 7A | 6X40 | 2-4-2 | 0 | - | X | 7 | - SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| 7B | 6X40 | 2-4-2 | 0 | - | X | 7 | 10 SEC. | - SEC. | - | - | - | - | X | - | X | - | - | - | X |
| SI22 | 6X6 | EXIST | +140 | - | X | - | - SEC. | - SEC. | - | - | - | - | - | - | - | - | X | - | X |
| SI23 | 6X6 | EXIST | +140 | - | X | - | - SEC. | - SEC. | - | - | - | - | - | - | - | - | X | - | X |
| SI24 | 6X6 | EXIST | +140 | - | X | - | - SEC. | - SEC. | - | - | - | - | - | - | - | - | X | - | X |

## 7 Phase
## Fully Actuated
## (Durham Signal System)

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phases 3, 4, and/or 7 may be reversed.
5. Set all detector units to presence mode.
6. Program all timing information into phase banks 1, 2, and 3 unless otherwise noted.
7. Set phase bank 3 maximum limit to 250 seconds for phases used.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Install new 2070 controller with 2033 software in existing cabinet.

Proposed Metal Pole Locations

## LEGEND

| PROPOSED | | EXISTING |
|---|---|---|
| | Traffic Signal Head | |
| | Modified Signal Head | N/A |
| | Sign | |
| | Pedestrian Signal Head With Push Button & Sign | |
| | Signal Pole with Guy | |
| | Signal Pole with Sidewalk Guy | |
| | Inductive Loop Detector | |
| | Controller & Cabinet | |
| | Junction Box | |
| | 2-in Underground Conduit | |
| N/A | Right of Way | |
| | Directional Arrow | |
| | Metal Strain Pole | |
| | Luminaire Assembly | |
| (A) | Left Arrow "ONLY" Sign (R3-5L) | (A) |
| (B) | Combined Through and Left Arrow Sign (R3-6L) | (B) |
| (C) | Right Arrow "ONLY" Sign (R3-5R) | (C) |
| (D) | "LEFT TURN YIELD ON GREEN" Sign (R10-12) | (D) |
| (E) | "NO TURN ON RED" Sign (R10-11) | (E) |

## TIMING CHART
2033 SOFTWARE w/ 2070 CONTROLLER

| PHASE | 01 | 02 | 03 | 04 | 05 | 06 | 07 | OL1 | OL2 | OL3 |
|---|---|---|---|---|---|---|---|---|---|---|
| MINIMUM INITIAL * | 7 SEC. | 12 SEC. | 7 SEC. | 7 SEC. | 7 SEC. | 12 SEC. | 7 SEC. | | | |
| VEHICLE EXTENSION * | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | | | |
| YELLOW CHANGE INT. | 3.0 SEC. | 4.5 SEC. | 3.9 SEC. | 4.1 SEC. | 3.0 SEC. | 4.4 SEC. | 4.2 SEC. | 3.0 SEC. | 3.7 SEC. | 4.0 SEC. |
| RED CLEARANCE | 3.2 SEC. | 1.3 SEC. | 1.0 SEC. | 2.2 SEC. | 3.2 SEC. | 1.3 SEC. | 2.3 SEC. | 1.9 SEC. | 1.2 SEC. | 2.6 SEC. |
| MAXIMUM LIMIT * | 15 SEC. | 60 SEC. | 20 SEC. | 20 SEC. | 15 SEC. | 60 SEC. | 20 SEC. | | | |
| RECALL POSITION | NONE | VEH. RECALL | NONE | NONE | NONE | VEH. RECALL | NONE | | | |
| VEHICLE CALL MEMORY | NONLOCK | YELLOW LOCK | NONLOCK | NONLOCK | NONLOCK | YELLOW LOCK | NONLOCK | | | |
| DOUBLE ENTRY | OFF | OFF | OFF | OFF | OFF | OFF | OFF | | | |
| WALK * | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | | | |
| FLASHING DON'T WALK | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | | | |
| TYPE 3 LIMIT | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | | | |
| ALTERNATE EXTENSION | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | | | |
| ADD PER VEHICLE * | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | | | |
| MAXIMUM INITIAL * | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | | | |
| MAXIMUM GAP* | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | | | |
| REDUCE 0.1 SEC EVERY * | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | – SEC. | | | |
| MINIMUM GAP | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | 2.0 SEC. | | | |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

# US 15-501 Business
# (Durham-Chapel Hill Boulevard)
# at
## Westgate Drive/SR 1301 (Petty Road) & Service Road

Division 5 Durham County Durham

| | | | |
|---|---|---|---|
| PLAN DATE: | May 2017 | REVIEWED BY: | |
| PREPARED BY: | C.E. Carter | REVIEWED BY: | |

SCALE 0 50 1"=50'

| REVISIONS | INIT. | DATE |
|---|---|---|
| | | |

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 430320FAA2654C3... 8/31/2017 DATE

SIG. INVENTORY NO. 05-0143

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