

Legend

- | | | | | | |
|--|-----------------------------------|--|------------------------------------|--|-----------------------|
| | Intersection Detection Unit (IDU) | | Existing Traffic Signal Mast Arm | | Existing Street Light |
| | Magnetometer Radio Unit | | Existing Traffic Signal Controller | | |
| | Magnetometer Access Point | | Existing Signal Pullbox | | |
| | Magnetometer | | | | |

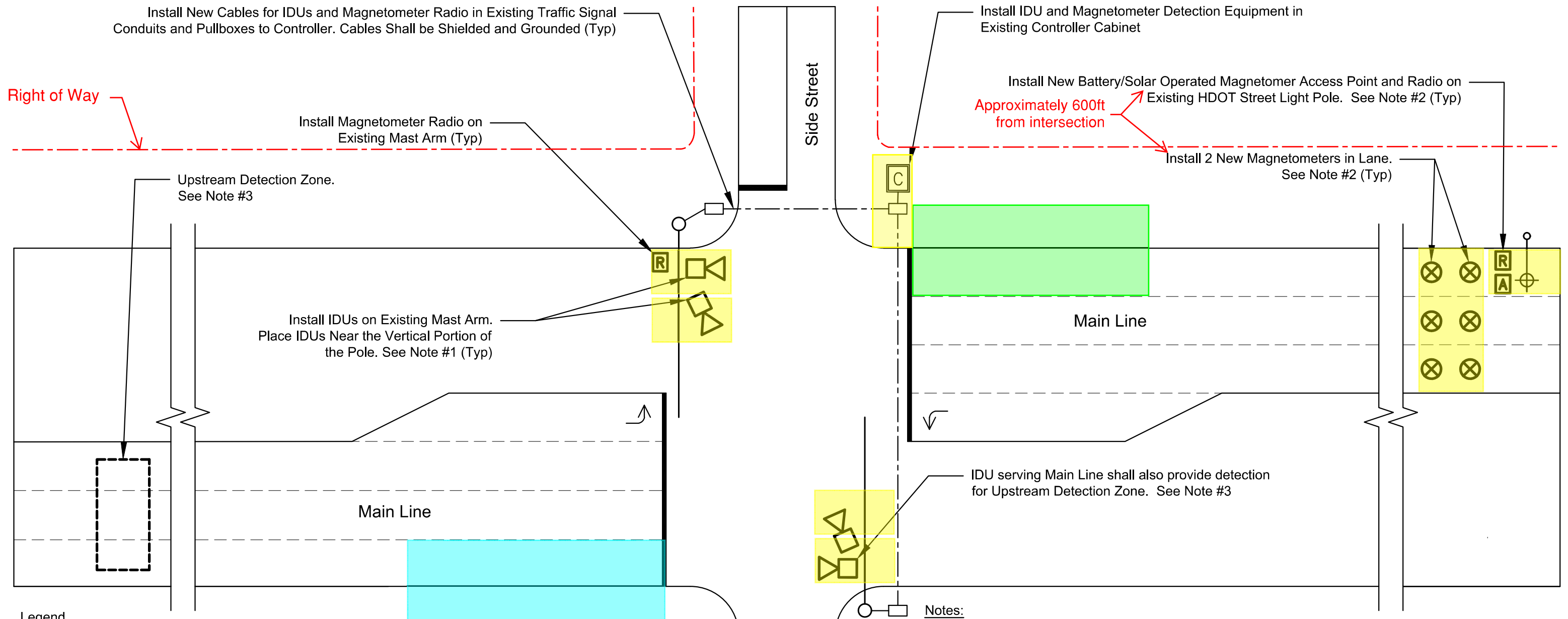
- | | | | |
|--|--------------------------------|--|--------------------------------------|
| | Area of Potential Effect (APE) | | Parking Area (Road Shoulder or Lane) |
| | Public Right of Way | | Alternate Parking Area |

Notes:

1. One IDU shall be provided for each approach to facilitate complete vehicle presence detection (for all approaches and movements) and for ATCS operations. IDUs shall also provide advance detection that is equal to the existing condition. If an existing mast arm serving a side street is present, the IDU providing detection for that approach shall be installed on the side street mast arm.
2. Provide in-roadway magnetometers at midblock location to facilitate ATCS cycle change functionality on the Main Line. Distance from intersection to be determined by Contractor's Traffic Engineer. Install Magnetometer Radio and Access Points as needed to provide magnetometer detection information back to the controller.
3. For IDU and magnetometer radio installation on existing mast arms, contractor to utilize existing holes and minimize drilling of holes to the furthest extent possible.
4. Contractor to submit intersection installation plan and mounting details before construction.

Appendix M-2: Typical Installation Detail for ATCS Detection (4-Way) and Mid Block Magnetometer Detection for 2 Approaches

Not To Scale
 Corresponding Symbol on USGS Map Figure



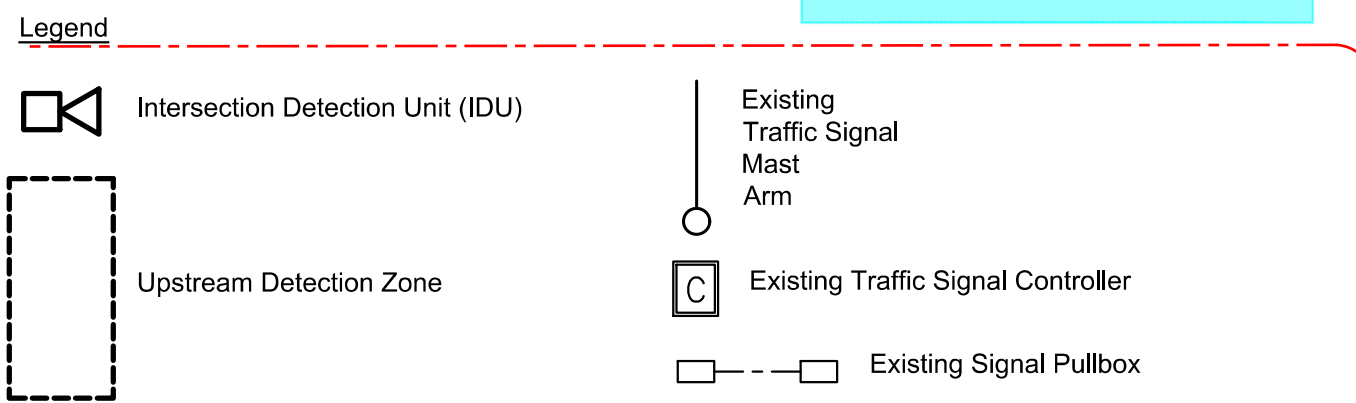
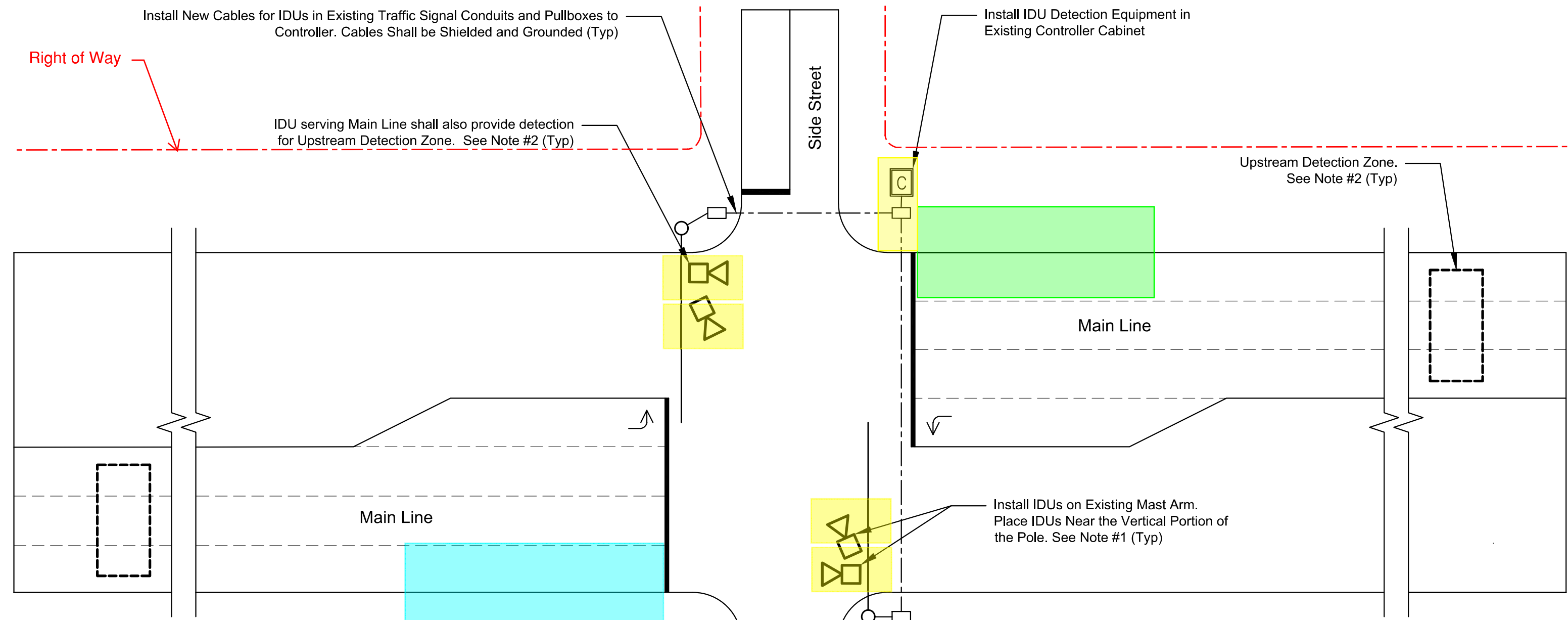
Legend

	Intersection Detection Unit (IDU)		Existing Traffic Signal Mast Arm		Existing Street Light
	Magnetometer Radio Unit		Existing Traffic Signal Controller		
	Magnetometer Access Point		Existing Signal Pullbox		
	Magnetometer				
	Upstream Detection Zone		Area of Potential Effect (APE)		
	Alternate Parking Area		Parking Area (Road Shoulder or Lane)		
			Public Right of Way		
			Corresponding Symbol on USGS Map Figure		

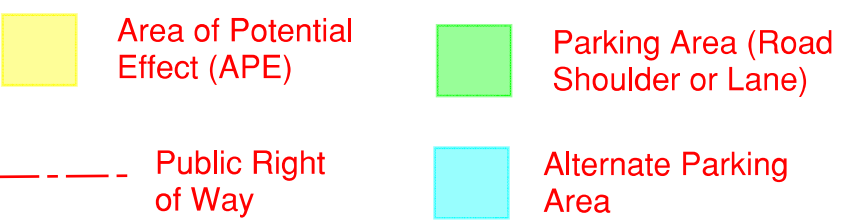
- Notes:**
1. One IDU shall be provided for each approach to facilitate complete vehicle presence detection (for all approaches and movements) and for ATCS operations. IDUs shall also provide advance detection that is equal to the existing condition. If an existing mast arm serving a side street is present, the IDU providing detection for that approach shall be installed on the side street mast arm.
 2. Provide in-roadway magnetometers at midblock location to facilitate ATCS cycle change functionality on the Main Line. Distance from intersection to be determined by Contractor's Traffic Engineer. Install Magnetometer Radio and Access Points as needed to provide magnetometer detection information back to the controller.
 3. For approaches where Mid-Block Magnetometers cannot be installed, the IDU shall be used to detect vehicles at an upstream location to facilitate ATCS cycle change functionality on the Main Line. Distance of the upstream location from intersection to be determined by Contractor's Traffic Engineer.
 4. For IDU and magnetometer radio installation on existing mast arms, contractor to utilize existing holes and minimize drilling of holes to the furthest extent possible.
 5. Contractor to submit intersection installation plan and mounting details before construction.

Appendix M-3: Typical Installation Detail for ATCS Detection (4-Way) and Mid Block Magnetometer Detection for 1 Approach

Not To Scale



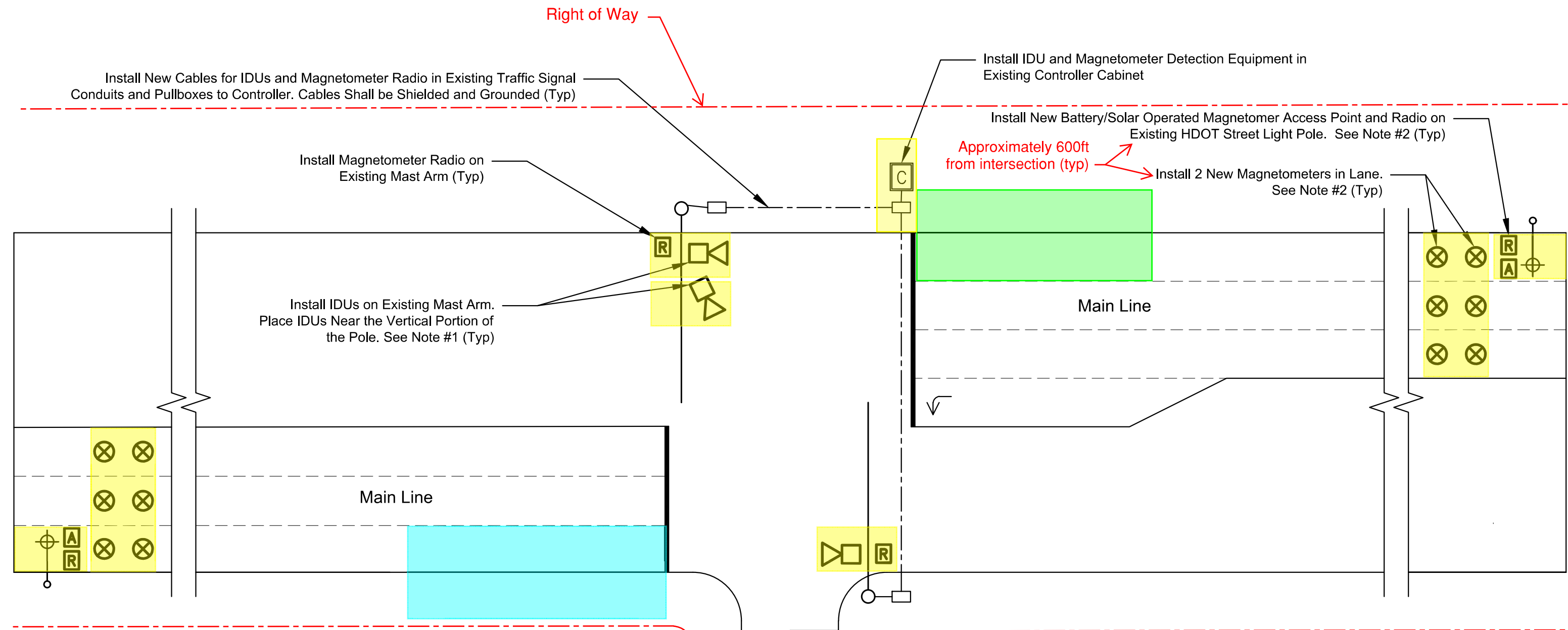
- Notes:**
1. One IDU shall be provided for each approach to facilitate complete vehicle presence detection (for all approaches and movements) and for ATCS operations. IDUs shall also provide advance detection that is equal to the existing condition. If an existing mast arm serving a side street is present, the IDU providing detection for that approach shall be installed on the side street mast arm.
 2. For intersections where Mid-Block Magnetometers cannot be installed, the IDU shall be used to detect vehicles at an upstream location to facilitate ATCS cycle change functionality on the Main Line. Distance of the upstream location from intersection to be determined by Contractor's Traffic Engineer.
 3. For IDU installation on existing mast arms, contractor to utilize existing holes and minimize drilling of holes to the furthest extent possible.
 4. Contractor to submit intersection installation plan and mounting details before construction.



Appendix M-4: Typical Installation Detail for ATCS Detection (4-Way) and no Mid-Block Magnetometer Detection

Not To Scale

Corresponding Symbol on USGS Map Figure



Install New Cables for IDUs and Magnetometer Radio in Existing Traffic Signal Conduits and Pullboxes to Controller. Cables Shall be Shielded and Grounded (Typ)

Install Magnetometer Radio on Existing Mast Arm (Typ)

Install IDUs on Existing Mast Arm. Place IDUs Near the Vertical Portion of the Pole. See Note #1 (Typ)

Install IDU and Magnetometer Detection Equipment in Existing Controller Cabinet

Install New Battery/Solar Operated Magnetomer Access Point and Radio on Existing HDOT Street Light Pole. See Note #2 (Typ)








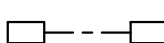
Approximately 600ft from intersection (typ)





Install 2 New Magnetometers in Lane. See Note #2 (Typ)

Notes:

1. One IDU shall be provided for each approach to facilitate complete vehicle presence detection (for all approaches and movements) and for ATCS operations. IDUs shall also provide advance detection that is equal to the existing condition. If an existing mast arm serving a side street is present, the IDU providing detection for that approach shall be installed on the side street mast arm.
2. Provide in-roadway magnetometers at midblock location to facilitate ATCS cycle change functionality on the Main Line. Distance from intersection to be determined by Contractor's Traffic Engineer. Install Magnetometer Radio and Access Points as needed to provide magnetometer detection information back to the controller.
3. For IDU and magnetometer radio installation on existing mast arms, contractor to utilize existing holes and minimize drilling of holes to the furthest extent possible.
4. Contractor to submit intersection installation plan and mounting details before construction.

Legend

-  Intersection Detection Unit (IDU)
-  Magnetometer Radio Unit
-  Magnetometer Access Point
-  Magnetometer
-  Existing Traffic Signal Mast Arm
-  Existing Street Light
-  Existing Traffic Signal Controller
-  Existing Signal Pullbox



-  Area of Potential Effect (APE)
-  Parking Area (Road Shoulder or Lane)
-  Public Right of Way
-  Alternate Parking Area

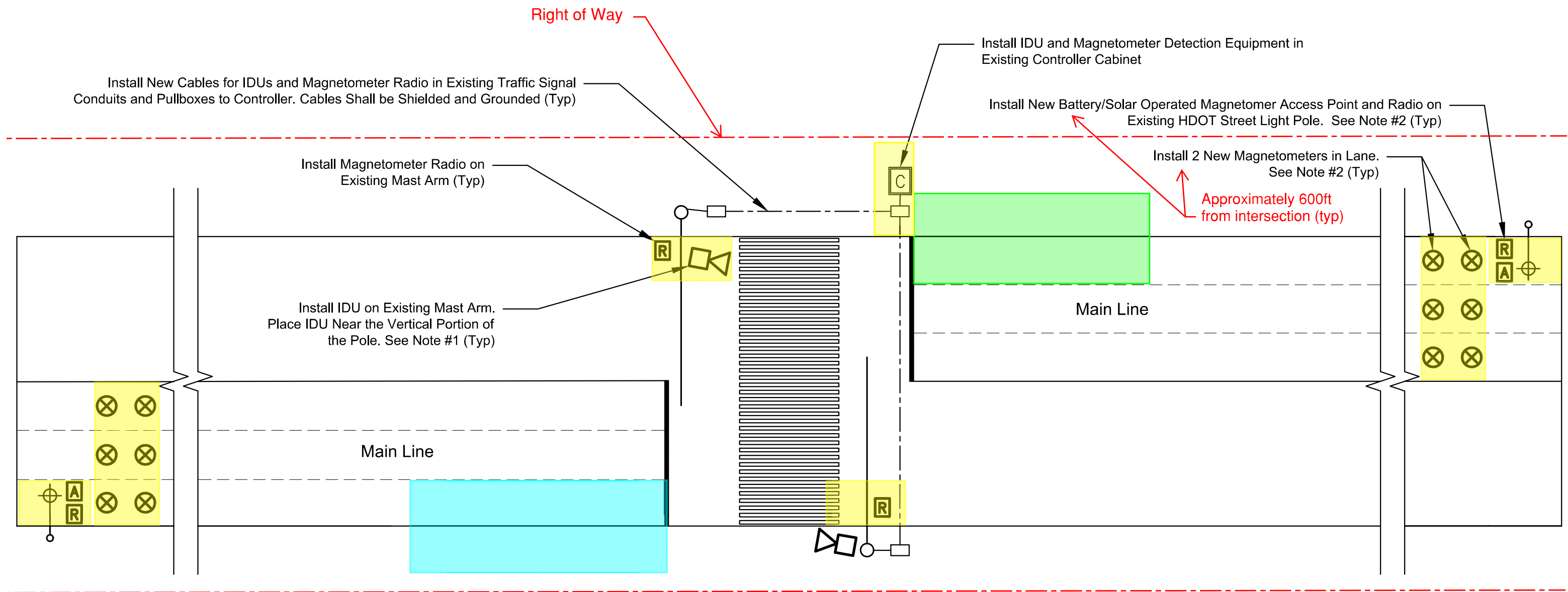
Appendix M-5: Typical Installation Detail for ATCS Detection (3-Way) and Mid Block Magnetometer Detection for 2 Approaches

Not To Scale







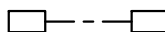

 Corresponding Symbol on USGS Map Figure





Corresponding Symbol on USGS Map Figure for alternate configurations

-  3-Way ATCS Detection with only 1 Mid Block Magnetometer Detection approach (see M-3)
-  3-Way ATCS Detection with no Mid Block Magnetometer Detection (see M-4)



Legend

- | | | | | | |
|--|-----------------------------------|---|------------------------------------|--|-----------------------|
|  | Intersection Detection Unit (IDU) |  | Existing Traffic Signal Mast Arm |  | Existing Street Light |
|  | Magnetometer Radio Unit |  | Existing Traffic Signal Controller | | |
|  | Magnetometer Access Point |  | Existing Signal Pullbox | | |
|  | Magnetometer | | | | |

- | | | | |
|--|--------------------------------|---|--------------------------------------|
|  | Area of Potential Effect (APE) |  | Parking Area (Road Shoulder or Lane) |
|  | Public Right of Way |  | Alternate Parking Area |

Appendix M-6: Typical Installation Detail for ATCS Detection (2-Way) and Mid Block Magnetometer Detection for 2 Approaches



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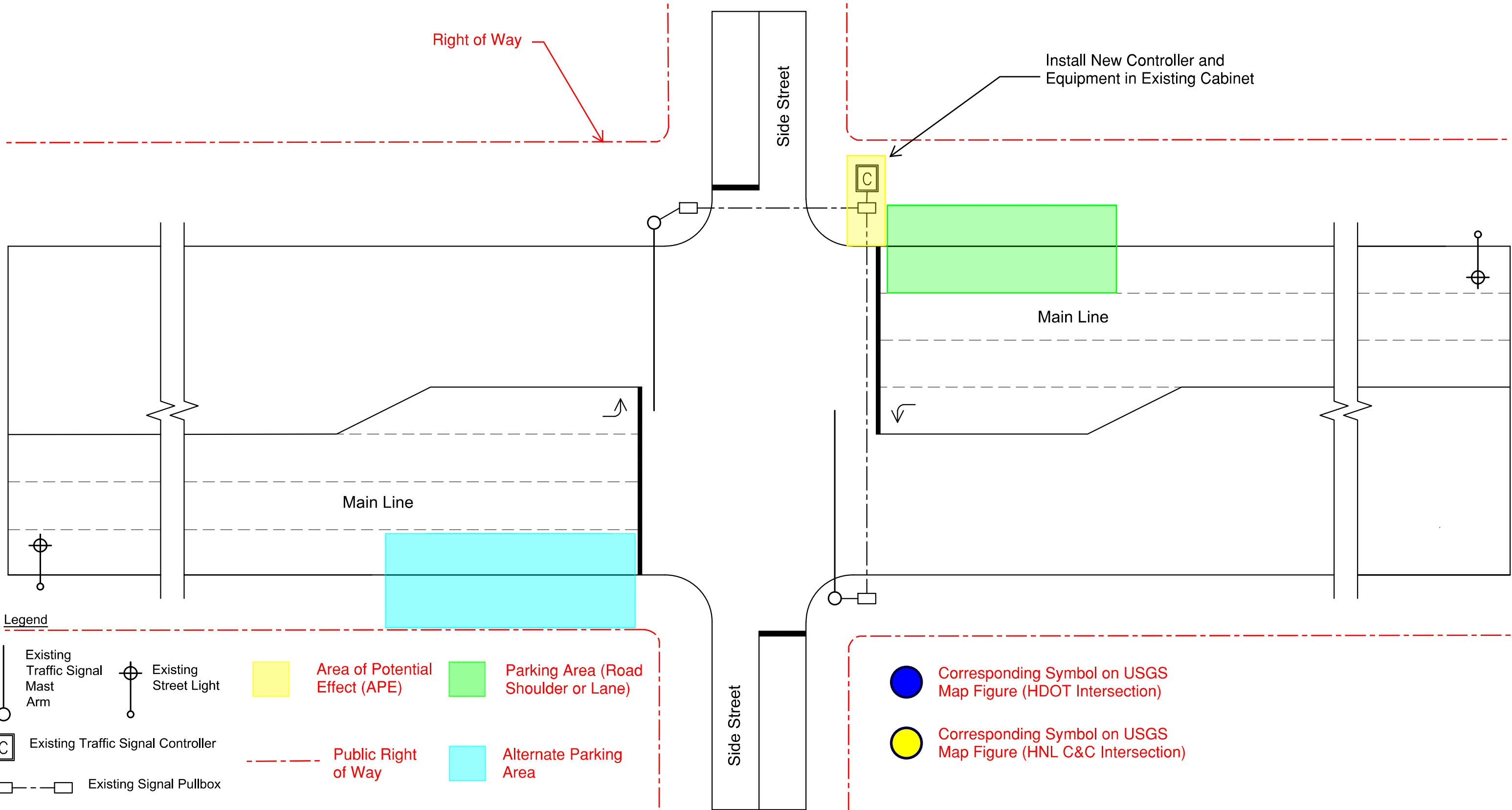
 Corresponding Symbol on USGS Map Figure

Notes:

1. One IDU shall be provided for each approach to facilitate complete vehicle presence detection (for all approaches and movements) and for ATCS operations. IDUs shall also provide advance detection that is equal to the existing condition. If an existing mast arm serving a side street is present, the IDU providing detection for that approach shall be installed on the side street mast arm.
2. Provide in-roadway magnetometers at midblock location to facilitate ATCS cycle change functionality on the Main Line. Distance from intersection to be determined by Contractor's Traffic Engineer. Install Magnetometer Radio and Access Points as needed to provide magnetometer detection information back to the controller.
3. For IDU and magnetometer radio installation on existing mast arms, contractor to utilize existing holes and minimize drilling of holes to the furthest extent possible.
4. Contractor to submit intersection installation plan and mounting details before construction.

Corresponding Symbol on USGS Map Figure for alternate configurations

- | | |
|---|--|
|  | 2-Way ATCS detection with only 1 Mid Block Magnetometer Detection approach (see M-3) |
|  | 2-Way ATCS detection with no Mid Block Magnetometer Detection (see M-4) |



**Appendix M-X: Typical Installation Detail for Controller Installation Only
(No ATCS Detection)**

Not To Scale