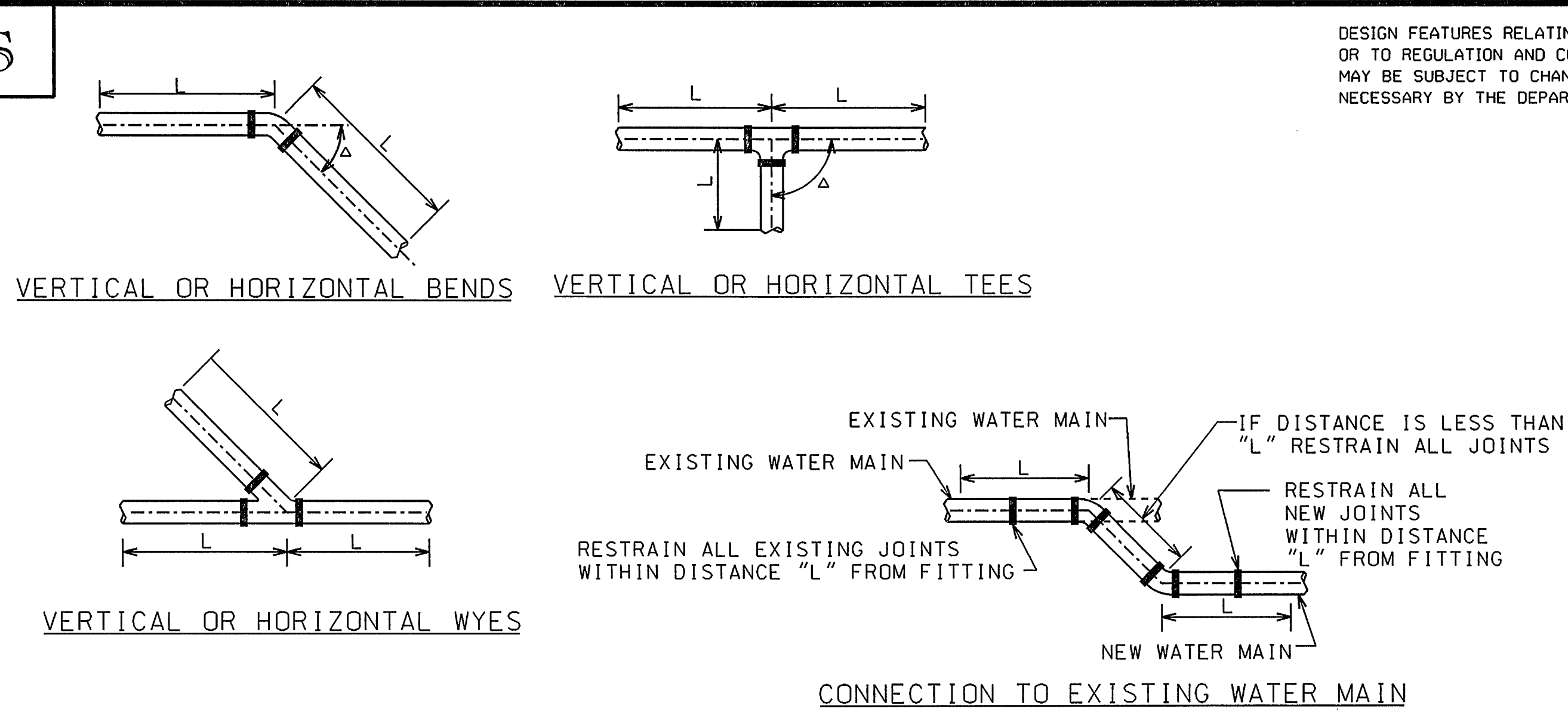


WATER - STANDARD DETAILS

| CONSTRUCTION DATA    |   |       |         |       |           |       |            |       |
|----------------------|---|-------|---------|-------|-----------|-------|------------|-------|
| PIPE<br>SIZE<br>(mm) | L = MINIMUM LENGTH OF RESTRAINED PIPE (m) |       |         |       |           |       |            |       |
|                      | △ = 90°                                   |       | △ = 45° |       | △ = 22.5° |       | △ = 11.25° |       |
|                      | HORIZ.                                    | VERT. | HORIZ.  | VERT. | HORIZ.    | VERT. | HORIZ.     | VERT. |
| 100                  | 11.0                                      | 11.3  | 4.6     | 4.5   | 2.2       | 2.2   | 1.2        | 1.2   |
| 150                  | 15.6                                      | 17.1  | 6.4     | 7.1   | 3.1       | 3.4   | 1.6        | 1.9   |
| 200                  | 21.1                                      | 23.2  | 8.9     | 9.5   | 4.3       | 4.6   | 2.2        | 2.2   |
| 250                  | 29.3                                      | 34.5  | 12.2    | 14.4  | 5.8       | 7.1   | 2.8        | 3.4   |
| 300                  | 37.5                                      | 45.2  | 15.6    | 18.6  | 7.4       | 8.9   | 3.7        | 4.3   |



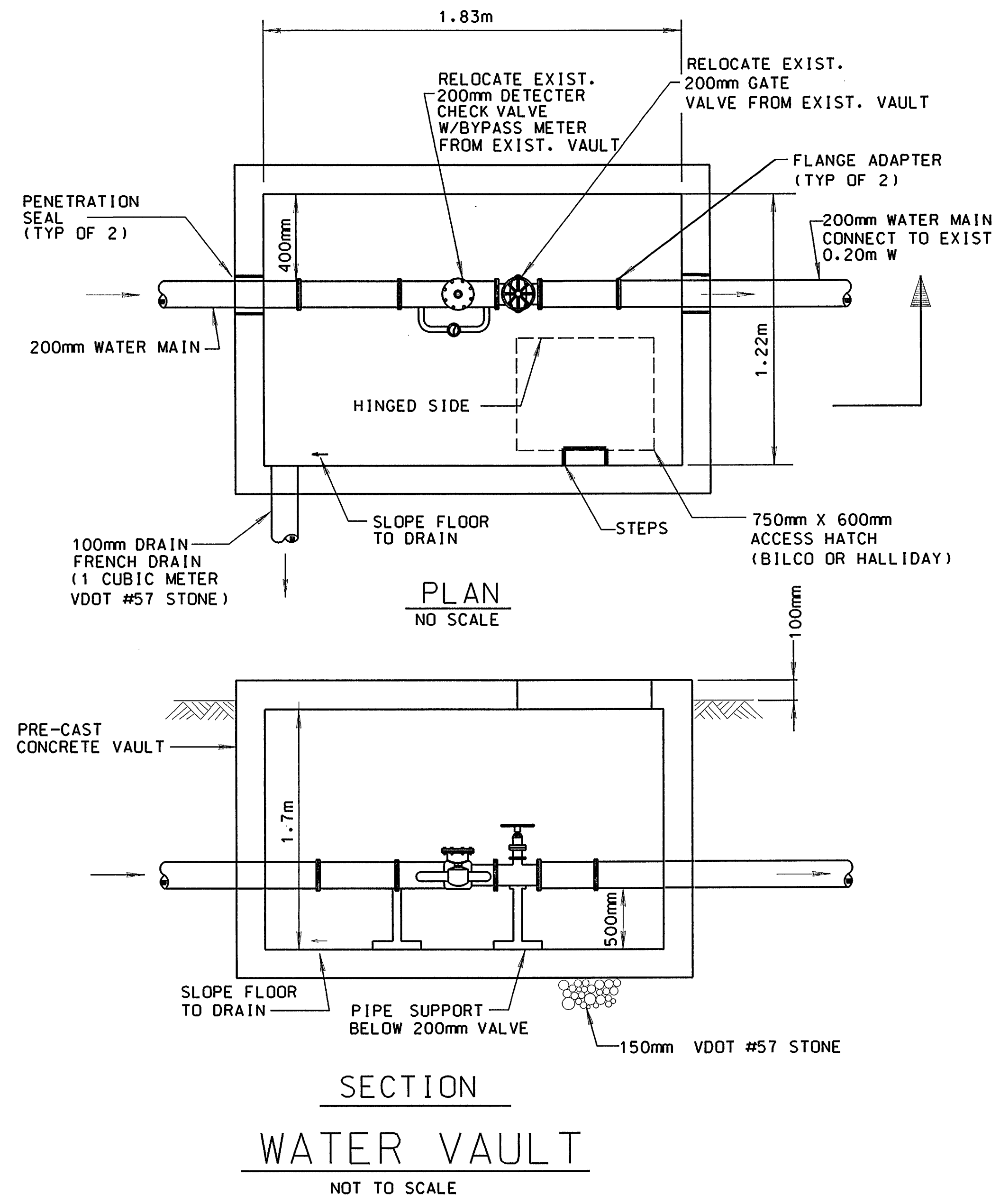
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

| REVISED | PHWA REGION | STATE | FEDERAL AID PROJECT | ROUTE | STATE PROJECT      | SHEET NO. |
|---------|-------------|-------|---------------------|-------|--------------------|-----------|
|         | 3           | VA    |                     | 601   | 0601-080-233,C-501 | 12(12)    |

- NOTE:
- MECHANICAL JOINT RESTRAINING DEVICES SHALL BE EBAA IRON, INC. MEGALUG, WITH A WORKING PRESSURE OF 250 PSI AND A MINIMUM DESIGN SAFETY FACTOR OF 2.
  - THE RESTRAINED LENGTH OF WATER MAIN IS BASED ON THE FOLLOWING: AN INTERNAL PRESSURE OF 200 PSI, 900mm OF PIPE COVER, AND A SOIL TYPE CLASSIFICATION OF "MH".
  - PLUGS SHALL BE RESTRAINED BASED ON THE RESTRAINED LENGTH FOR 90° VERTICAL BENDS.
  - VALVES, TEES, AND WYES SHALL BE RESTRAINED BASED ON THE RESTRAINED LENGTH FOR 45° HORIZONTAL BENDS.
  - EXISTING WATER MAIN ADJACENT TO PROPOSED BENDS, WYES, VALVES, TEES, AND PLUGS SHALL BE UNCOVERED AND THE EXISTING JOINTS SHALL BE RESTRAINED FOR THE LENGTH INDICATED, IF THE EXISTING WATER MAIN WILL NOT ACCEPT THE MECHANICAL JOINT RESTRAINING MECHANISM, THE EXISTING WATER MAIN SHALL BE REPLACED WITH DUCTILE IRON WATER MAIN FOR THE LENGTH INDICATED.

TYPICAL DETAILS AND CONSTRUCTION DATA – MECHANICAL JOINT RESTRAINING DEVICES

NOT TO SCALE



SURVEYED BY: TIM VERMAATEN (804) 786-5483  
SUPERVISED BY: BRADLEY C. CRAIG, MATTHEW & CRAIG INC. (540) 345-9342  
DESIGNED BY: BRADLEY C. CRAIG, MATTHEW & CRAIG INC. (540) 345-9342  
CADD OPERATOR: MATTHEW & CRAIG INC. (540) 345-9342  
REVISED BY:

#TIME#STAMP#