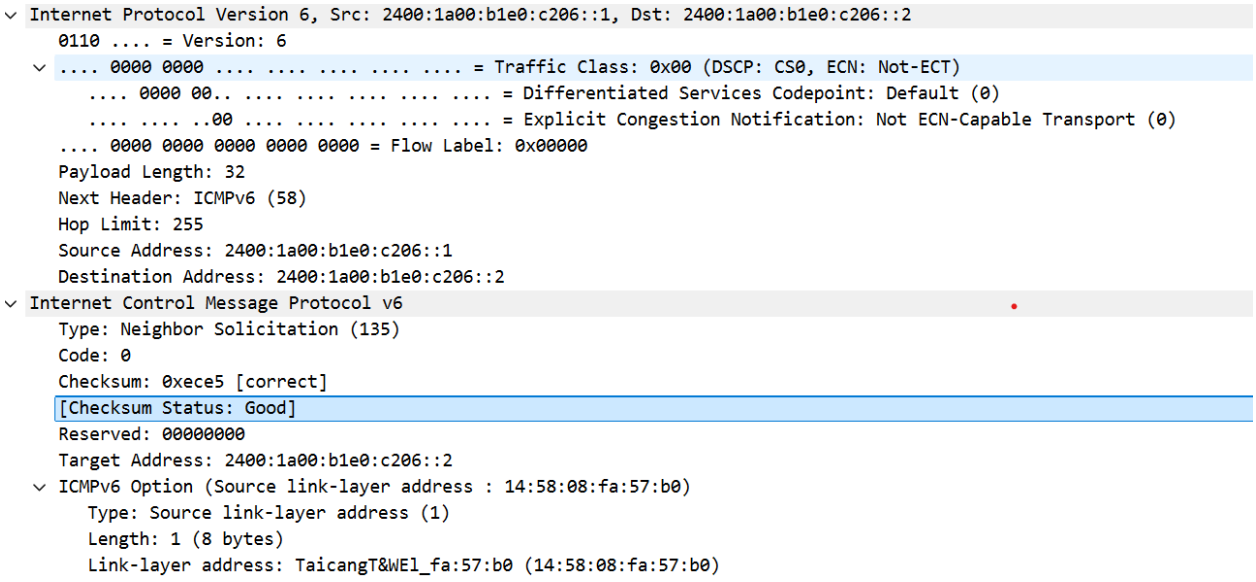

Here's a detailed explanation of how these fields are used and why they have specific values:

1. **Version**: IPv6 is designed to replace IPv4, so the version field is 6 to distinguish it from IPv4 packets (4).
2. **Traffic Class**: This field allows for differentiated services, which can be used to assign priorities to certain types of traffic, such as voice or video, for better handling.
3. **Flow Label**: Enables routers to identify and handle packets that belong to the same flow differently from other packets, ensuring consistent treatment and avoiding reordering.
4. **Payload Length**: Indicates the size of the payload. This helps routers and the destination host know how much data to expect, facilitating proper packet reassembly and processing.
5. **Next Header**: Identifies the type of the next header following the IPv6 header. This can be a transport layer protocol like TCP or UDP, or it could be another extension header used by IPv6.
6. **Hop Limit**: Prevents packets from circulating endlessly in case of routing loops. Each router that forwards the packet decreases this value by one, and the packet is discarded when the hop limit reaches zero.

7. **Source Address**: Uniquely identifies the sender's address. IPv6 addresses are 128 bits long, providing a vast address space to accommodate the growing number of devices on the internet.
8. **Destination Address**: Uniquely identifies the recipient's address. The 128-bit length of IPv6 addresses helps in hierarchical addressing and route aggregation, improving routing efficiency.